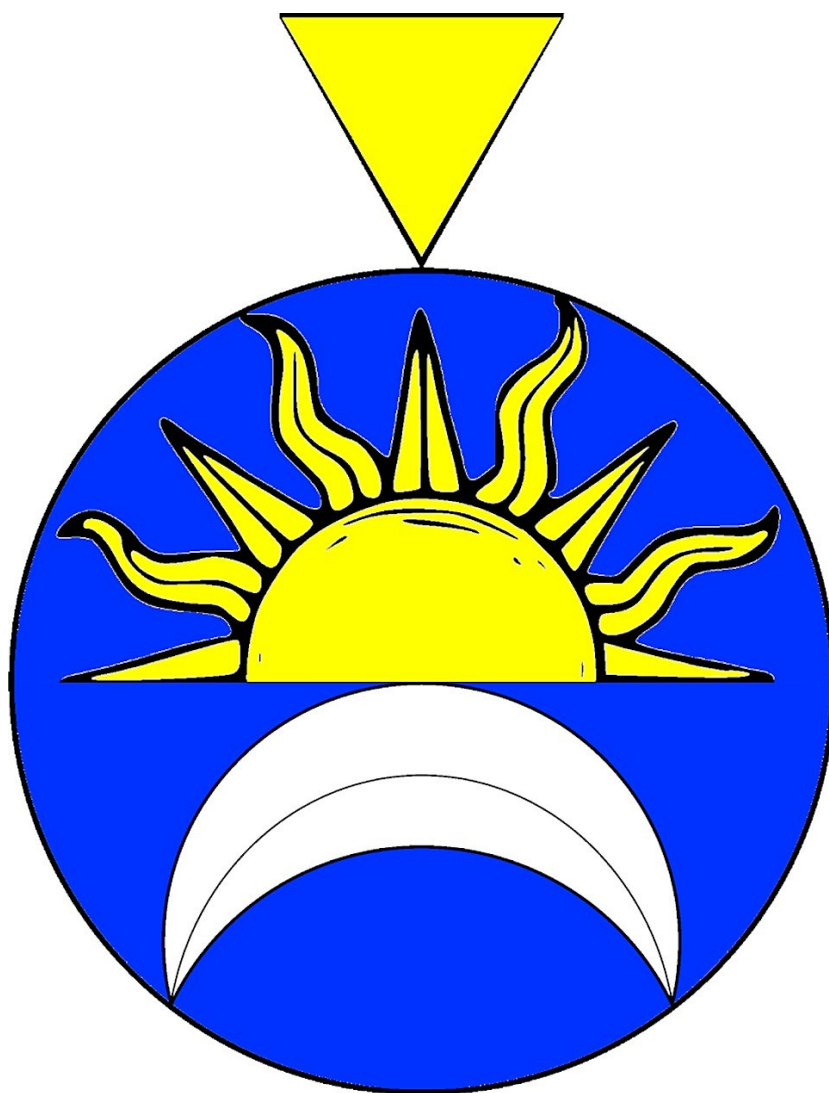
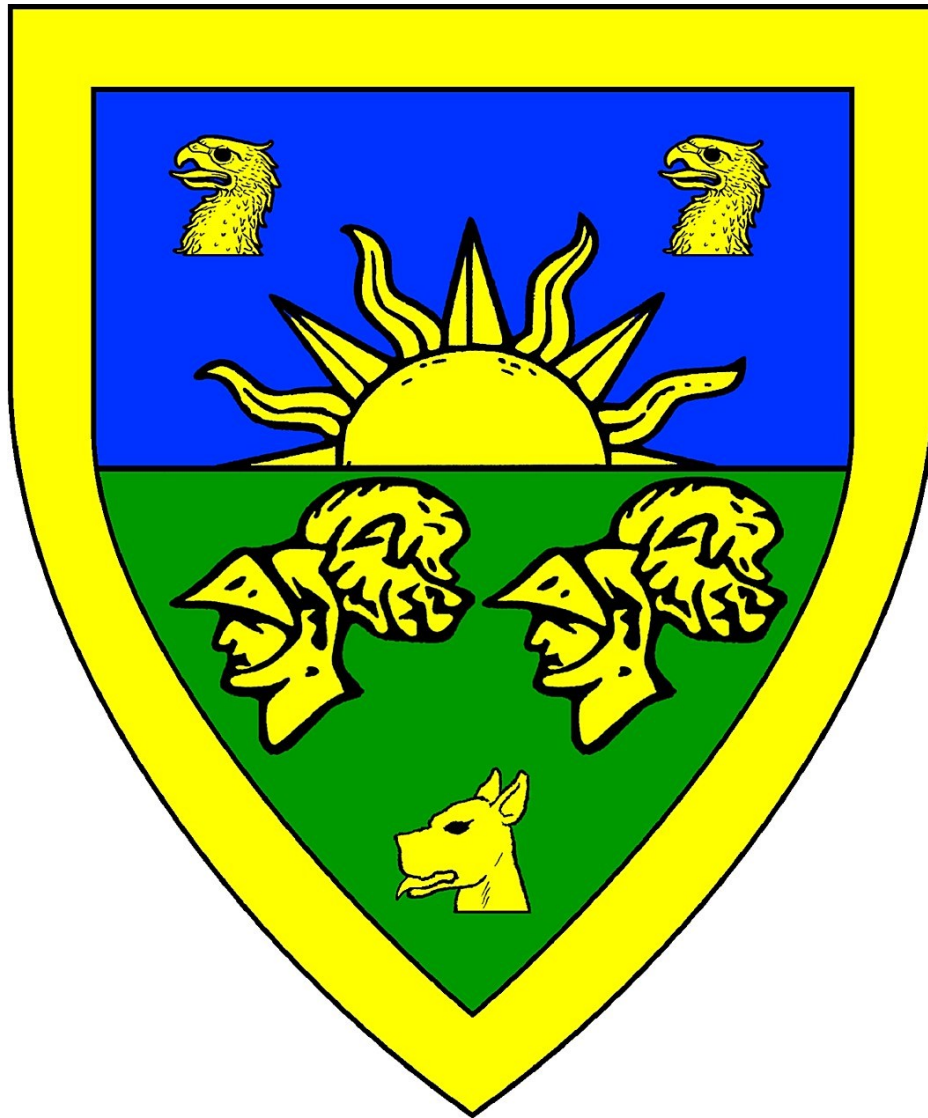




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Currents of Mechanical Thought:

The Clock of the Nations and its Antecedents, 800–1962

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sehen Bravercks zu Straßburg im Münster/diß 1574. Jahr vollendet zu sehen.

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SS2450

Mit Röm. Keyserlichen Majestat Befreyung auff zehen Jahr.

DEDICATION.

This work is dedicated to my mother and father,
consiliatrix et magister,
and to my four grandparents.

Ora pro nobis, Sanctus Albertus Magnus, mea patronus.

ACKNOWLEDGMENTS.

I thank my patient readers, Drs. Carl Davila and Katherine Clark-Walter, and the staff at Drake Memorial Library. The College at Brockport, State University of New York's Department of History allowed me to pursue the research topic of my own choosing, and I am grateful for this intellectual latitude. I thank Dr. Anne Macpherson, chair of the department, for her coordination. I also thank Mr. Nabil al-Rashdi of the Library and Information Technology Department for his extemporaneous translation of the Arabic inscription visible in the illustration of al-Jazari's castle clock, the thirty-third plate in E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*.

Since many automata I cataloged have no historical or contemporaneous pictorial depictions, I thank Mr. Matthew Simon Ryan Cavalletto, who permitted my use of a heraldic image repository he and his colleagues have assembled from pre-Modern, Early Modern, and contemporary sources. Recourse to this repository allowed the conventionalization of visual representations for automata in this document. Although Mr. Cavalletto's permissions obviated a need for images specific to every identified automaton or automaton-bearing device, I nevertheless thank Dr. E.R. Truitt; Mr. Mark Elling Rosheim; Dr. Thomas Ditzinger, a representative of Springer, Mr. Rosheim's publisher; and Dr. Philip Butterworth. Each graciously provided usage permissions for images in their respective publications and/or suggested external resources, such as the National Library of France. While the final realization of my work does not include these images, I will remember these permissions if I should ever host the contents of the thesis' largest appendix, which offers the sum of research undertaken for this project, on a website.

I thank Dr. Leandra Bedini of UNC Greensboro; Elizabeth King; Caitlin Wilson, Lead Associate Editor of the online journal *Blackbird* at Virginia Commonwealth University; and all others who have corresponded with me regarding this project. Everything I have done has necessarily been based upon information, and I appreciate all provisions of the same. If anyone has in some way supported this project and been omitted from these acknowledgements, they too receive my gratitude.

STATEMENT OF INTELLECTUAL INTEGRITY.

I, Christopher Patrick Pursel, MSIS, do hereby state that this work, “Currents of Mechanical Thought: The Clock of the Nations and its Antecedents, 800–1962,” is solely my own contribution. Any similarities to other scholarly works are coincidental, and all such works reviewed during the research underlying this master’s thesis have been duly referenced, when necessary and/or appropriate, pursuant to conventions of the Chicago Manual of Style. Further, I wish to state that I neither used artificial intelligence software of any kind, including generative artificial intelligences, nor any other computer automation software in the composition of this thesis document and its appendices. Accordingly, any errors or omissions are my exclusive responsibility.

ABSTRACT.

This master's thesis posits seven currents of thought applicable to pre-Modern and Early Modern automata. All currents of thought and evidentiary automata were conceived in the years 476–1650 CE per the thesis' contentions, research, and scheme of periodization. It regards "automata" as works of technology with figural, biological designs. The proposed currents are interpreted through identification and discussion of automata dating from the noted eras. This thesis includes a catalog of pre-Modern and Early Modern automata drawn from consulted resources, with each entry interpreted according to the thesis' argumentation. English-language scholarship comprised the work's research base.

KEYWORDS.

- 01.** History.
- 02.** Automata.
- 03.** Robots.
- 04.** Pre-Modern.
- 05.** Medieval.
- 06.** Early Modern.
- 07.** Renaissance.
- 08.** Technology.
- 09.** Culture.
- 10.** Ideas.

FOURTH APPENDIX: INSTANCES.

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“My songs are of time and distance. The sadness is in you. Watch my arms. There is only the dance. These things you treasure are shells.”

--- The Boxmaker, in Chapter 31, “Voices,” from the novel *Count Zero*, as authored by William Gibson and published in the year 1986.

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Bibliography page(s) 702 (*et seq.*).

INTRODUCTORY REMARKS, “FOURTH APPENDIX: INSTANCES.”

In this section, the thesis will apply its proposed elaboration of Kang’s typological system to four hundred and two instances of pre-Modern and Early Modern automata, which were all systematically identified during its research concerning the topic of Old-World automata from the fall of the Western Roman Empire to the mid-seventeenth century and the final years of the English Civil War. The reader is advised of the following points: firstly, that the cataloged instances of pre-Modern and Early Modern automata hereinafter presented do not comprise a complete list of all automata from the pre-Modern and Early Modern periods, but only those which were encountered in works of scholarship cited by the thesis, which were mostly, but not exclusively, secondary or tertiary sources; secondly, that when readers are referred to primary sources by the thesis’ scholarly apparatus other than those which were read in the course of its own research, page numbers gleaned from other scholars’ notes have mostly been omitted, since to include such page numbers from unread works could be considered intellectually dishonest; and thirdly, that on the rare occasions a primary source which has not been read in full is presented with a page number, it will specifically be identified as a work which was not consulted, and an explanation of the circumstances which gave rise to the inclusion of a numbered page or pages with its reference will then be provided. Folio notations are preserved. The thesis read three primary sources during research, which were namely *The Sketchbook of Villard de Honnecourt*, al-Jazari’s *Book of Knowledge of Ingenious Mechanical Devices*, and the Banu Musa’s *Book of Ingenious Devices*. These three

were read in the translations into English which are cited in the thesis' literature review and bibliography, as the thesis' author has no command of the French or Arabic languages as they existed in the pre-Modern or Early Modern periods, although he does have an elementary proficiency in Latin.

The identification, cataloging, and presentation of instances which exemplify the thesis' topic, pre-Modern and Early Modern automata, was a significant and time-consuming undertaking, and its outcome as presented in this section is intended as a highly serious, large-scale survey of these automata that is hoped to be of real, substantial value to scholars interested in intellectual and cultural history, the histories of science and technology, and subsets of these fields, such as the studies of pre-Modern and Early Modern literature, material culture, and conceptualizations associated with magic, demonology, and the occult. To the thesis' knowledge, no other survey of the specific and discrete instances which underlie the given topic has ever been mounted at the offered scale, with prior attempts noting fewer instances or dismissing a cataloging project for this topic as a futile or meaningless endeavor. Of course, if all history is predicated upon evidence, just as are all the sciences, this cannot be the case, as the collection and presentation of such evidence is a spur to further research and, more generally, the preservation and transmission of knowledge. If future scholars are spared the toil undertaken to present even four hundred and nine acknowledged instances of automata from the stated periods ($n = 409$), and can make use of the presented survey, the thesis' author will be satisfied.

An acknowledgment is made to the unrelated works of Ewart Oakeshott, whose typological system of classification for European swords was a conceptual inspiration to the author in the contemplation of his own model. Like Oakeshott's system for swords, it is hoped that the system proposed by the thesis, and applied in this and the other appendices, will be of real use to scholars and those who work with surviving automata as curators, docents, and interpreters. Like Oakeshott's system, it was devised with a view to giving a species of material culture primacy of consideration, rather than theoretical or ideological models, and making the observed characteristics of that species of material culture the bases which inform the design of the modeling system. As an elaborator of Kang's system, the author obviously owes a greater debt to Kang than to Oakeshott, but like Oakeshott, he has undertaken the refinement of an existing organizational system, and not from dissatisfaction with a prior scholar's work, but with a view to tracing the historical development of the sequence of ideas which, in this case, inform the appearances of biological simulacra rather than weapons of war. If Kang himself, or his immediate followers, should happen to read this passage, they should know that the author's system is not proposed to necessarily be superior to Kang's system, and that, in this author's experience, Kang's system proved to be quite robust and surpassingly applicable to the topic for which it was designed.

As an observation before proceeding, the final counts established by this appendix for each of the four types used to organize its contents are of statistical interest, and possible statistical application. As readers are hopefully already aware,

this appendix presents an elaboration of Kang's typology which operates within his existing system of four types. The thesis' author has found that the first and second types, which represent two different types of fictitious automata, and the fourth type, which represents legendary automata, both amounted to approximately sixty instances in the considered sample of four hundred and nine considered automata (fifty-six instances as the sum of the first and second types, and fifty-eight automata as the total under the fourth type), while the third type, real and actual automata, amounted to approximately three hundred instances (two hundred and ninety-five as the total under the third type). This suggests that, for every hundred real and actual automata in the third type, twenty fictitious automata will exist in the combined first and second types, and in the fourth type. This is only an observation, and since the thesis' author is already aware of many more instances of real-world automata not included in this appendix than fictitious or legendary automata, it is likely that this observation can only hold to a point, which would be when every fictitious or legendary automaton of the Old World for the twelve hundred years of the considered interval, 450 – 1650, was already identified. In other words, the author believes that there were more real and actual automata than could support an unlimited extrapolation of the observed ratio in the numeric relationships between Kang's types. However, the author is quite confident that the gaps to concretely establish this ratio in this appendix could be filled, and that there are therefore four additional instances of fictitious automata, five additional instances of real and actual automata, and two legendary instances of legendary automata which date from the thesis' considered

period. Identifying these and the many other automata of those years is work left to other scholars.

Another, related observation is that the minute quantity of automata entered under the first type, which is the rarest of the four types, also shows an identifiable trend: since there are four instances under the first type, and four hundred and nine instances altogether, it can also be stated that, for approximately every hundred instances entered under the second, third, and fourth Kang types, one instance was entered under Kang's first type. It is the thesis' belief that Kang's first type contains so few instances because, as a category involving the agency of superhuman intelligences, it can only apply to works of fiction in the pre-Modern and Early Modern periods (as is consistent with Kang's design); and in these periods, works of fiction did not often directly ascribe the creation of automata to supernatural agency, but more often ascribed the creation of automata to the agency of human beings as users of various types of magic, whether as manipulators of natural forces, binders of demons, or as animators of inanimate matter. That relationship is shown by this appendix in the ratio of instances between those placed under Kang's first type and those placed under Kang's second type, where the former type has four instances, and the later type has fifty-two, which means that for approximately every ten entries placed under the Kang's second type, one entry was placed under Kang's first type, although as with all the observed numerical relationships between Kang's types, this ratio is coarse and inexact.

When reviewing this appendix, readers should consider the following points: firstly, when the text makes reference to the scale of cataloged automata as “small,” “medium,” or “large,” the “small” scale should be understood to denote a size smaller than that associated with the scale of an average biological human; the “medium” scale should be understood to denote a size equivalent with that of an average biological human; and the “large” scale should be understood to denote a size larger than that of an average biological human. If automata with the figures of human children are not scaled to a size smaller than the represented child’s stage of biological development, such automata are also categorized to have a “medium” scale, despite being smaller than adult humans, provided that “child” is understood to signify a juvenile who has attained the age of reason in approximately the seventh year of life, and not a babe-in-arms, infant, or toddler. Regardless of the age of its depicted subject, a humanoid automaton larger in scale than the average size of an adult human is considered “large,” meaning that a hypothetical automaton with the figure of a human infant would still be categorized as “large,” despite the age of the subject which it represents. When automata which depict human adults are scaled down slightly for technical or aesthetic reasons, they are still considered to have a “medium” scale, even if sized with the physical scale of pre-adolescent children. From a position of respect, these considerations of scale do not, on their face, account for the sizes of juveniles and adults with dwarfism or similar conditions, and the author would only correlate an automaton’s scale with such conditions if it was explicitly named or unambiguously represented as a depiction of a person with such a

condition by its historical author, designer, and/or builder, as for, example, if the figures in the famous painting *Las Meninas* were realized as automata, although that work, both by its medium and date, is beyond the thesis' scope. The same is true for the various conditions, such as hyperthyroidism, which produce great height in biological humans; a "large" automaton is not taken by the author as a depiction of someone with gigantism unless unambiguously identified as such by its creator. All the above points are extensible to non-humanoid automata.

While identifying categories of encountered automaton figures, which are namely animaloid, humanoid, demi-humanoid, insectoid, reptiloid, and crustaceanoid (the "demi" prefix, while also occasionally applicable to non-humanoid subjects, was not tracked in the thesis' working notes, and does not figure in the thesis' controlled vocabulary), the author noted certain overarching patterns in their subject matter, and these are termed "forms" in the systematized presentations offered by the thesis for pre-Modern and Early Modern automata in this appendix. Rather than being Platonic or Neoplatonic, these "forms" are closer to Jungian archetypes. They mostly, but not exclusively, were developed from analysis of humanoid automata; most are generalizable beyond the specific medium of automata, and study of the same; some are conceptual opposites of others, such as the dichotomies of "ruler" and "servant," "hero" and "villain;" and two, "thing of brass" and "divinatory intelligence," have a higher degree of specialized applicability to automata than the others. A list of the fifteen forms included by the thesis is not offered in this preamble, and readers are referred to the third appendix, where they are presented by name.

While the attributes tracked by the thesis, including the forms, have already been stated as the bases of the indexes and statistical presentations in the prior appendices, notwithstanding their absence from this preamble, the “currents” assigned in accordance with the thesis’ own modeling system were not tracked as attributes, meaning that they only appear on a per-instance basis in this appendix. All assignments of “currents” in this appendix are positive, meaning that they are identified in the cases of each instance on specific grounds. However, these assignments are provisional, for the author, working as an individual in the development of his system, and in the implementation thereof to those instances of pre-Modern and Early Modern automata identified in the course of his research, may conceivably have failed to note the applicability of a certain current to a current instance, although the opposite error, the erroneous application of a current designator to a given instance, is believed by the author to be less likely, given the nature of his system. Accordingly, readers are invited to publish their own explanations of how any current of thought should apply to any instance where that current was not noted by the author in this section, so long as these explanations are truly based in verifiable evidence and not tenuous, meeting the expectations of scholarship. Argumentation that a given current should apply to a given instance, or in what the author believes would be a rarer circumstance, that it should not apply, represent opportunities for future scholarship, and the author would be pleased if other authors chose to use his system in their own works.

A related case of opportunities for further scholarship is suggested by the admitted non-exhaustiveness of this appendix; there are many cathedral automata and monumental clocks of the considered periods which were not noted in the course of the literature reviewed by this thesis, and as the thesis also admits, only those instances of pre-Modern and Early Modern automata which were at least mentioned by the authors of the publications which the thesis did consult were tracked by it to comprise the contents of this appendix. Thus, further publications using the author's proposed system are not only made possible by potential argumentation as to the applicability or non-applicability of a postulated current to an identified instance, but also by the application of postulated current(s) to instances not present in this appendix. Because the thesis' author sought to avoid independent research, electing to instead base the body of evidence for his model in automata already noted in centuries of historical publications, he himself is already aware of perhaps a dozen or more instances which are not enumerated by this appendix. Where practical, he has noted a few of these instances in the footnotes created for enumerated instances, but the salient point to draw from the establishment that this section is not a comprehensive statement of all pre-Modern and Early Modern automata to ever exist historically is that there yet remains room for other scholars to continue the author's work of systematically cataloging and situating these other pre-Modern and Early Modern automata within the thesis' model, which is an elaboration of Kang's typology. The author is of the opinion that the work of assembling this appendix was

a novel and meaningful contribution to the scholarship of the named historical periods, and he hopes that other authors will find it a useful introduction to its topic.

Of course, another opportunity afforded to other scholars by the publication of this appendix, and the thesis to which it is attached, is the publication of rebuttals against the author of the same, either for alleged factual errors, or for errors of interpretation. So far as publications concerned with asserting faults are concerned, the author would welcome those which address the former category of errors, as he would be interested in correcting any mistaken dates, attributions of artisanal production or patronage, and other matters of fact which may be found inaccurate; but as to the latter category of alleged errors, those related to the thesis' model, readers should be aware that, so far as possible, the author will defend his model from detractors and answer its critics in writing. Many years of the author's life have been expended in identifying instances of pre-Modern and Early Modern automata, and then situating them within the model proposed by the author in the attached thesis, so it is only reasonable to expect a reaction of this kind. In defending his work, the author will, of course, attempt to remain civil.

The same scholars positioned to potentially attack the modeling and cataloging effort of the author and his thesis, or to praise these works, are those who are most likely already aware that the act of assembling catalogs of antique automata, however briefly by comparison with this appendix, was a common exercise among intellectual authors of the centuries under scrutiny, a trend which continued after the thesis' imposed terminal date, January 1, 1651, throughout the remainder of the

seventeenth century, and indeed, up to and including the author's moment in contemporary time, as directly evidenced by the author's own efforts. If nothing else, it is hoped that the building of this catalog, such as it is, will spare readers the toil of combing through works of scholarship in search of citable presentations of automata, as the author has done, and that it will therefore be of utility to established scholars in the furtherance of works concerned with pre-Modern and Early Modern automata, with this subject a legitimate topic in the intellectual, artistic, economic, and political histories of the Old World.

To avoid misinterpretation, the author's admission that his participation in an exercise which was the pastime of Montaigne represents an intriguing proposition to his sensibilities, like the activities of historical reenactment, should not negate the fact that, as author of this appendix and thesis, he is a man of his own time. Thus, however tempting it may seem to dismiss this catalog as an anachronistic display of older methodologies in scholarship, especially those seen in the philological works of the nineteenth and early twentieth centuries, the thesis and its appendices are neither forwarded as a curiosity, nor an expression of sentimentality (or, for that matter, dissent), but as tools which must have occasionally consulted the scholarly works of those same nineteenth and early twentieth centuries for the simple reason that, like much else in specialized fields of historical inquiry (e.g. medieval studies and Egyptology), the published contributions of greatest practical value for interpretative purposes sometimes date from the time of philologists and adventurers. Similarly, but

not equivalently, this appendix is intended as a utility to preserve knowledge for future scholars.

All parties reading this introduction and the remainder of the fourth appendix in whole or in part are invited to contact the author if they identify any errors in its formatting, typography, presentations of material facts, or any other defects. As with all works of scholarship, the thesis' bibliography lists the works consulted by the author in the research for the graduate thesis to which this section is appended, and readers are similarly invited to contact the author if, upon reviewing his citations and checking the materials to which he makes reference, any errors of interpretation noted in the works of other scholars are detected; as admitted, some of the materials read in this thesis' research are old, and the meanings of their contents may have been altered or superseded by the findings of newer publications. One objective in preparing this appendix was to preempt the suggestion that studies of automata are so-called "old wine in new bottles," an argument which the author hopes to defeat by presenting more instances than he has elsewhere seen, thus equipping future scholars with an authoritative list of the four hundred and nine instances identified here, so that they, in turn, may proceed to more substantive discussions of these automata, rather than repeating the work expended by the author in the preparation of this appendix. To contact the author, send correspondence to the email address cppursel@gmail.com. Just as in the thesis' front matter, the author takes responsibility for any issues which may be found in his thesis, and while not desirous of criticism for its own sake, he would be eager to learn of any shortcomings in this appendix, for he contemplates the

eventual presentation of its contents in at least one separate publication. All readers of this document, including the thesis' two reviewing readers, Doctors Carl Davila and Katherine Clark-Walter, are thanked for their attentive engagement with the totality of the author's work for his thesis, including this fourth appendix.

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INSTANCES 01: KANG'S FIRST TYPE.

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**Kang Type 001, Instance 001 of 004, Cumulative Instance 001 of 409:
The War-Chariot of Amphiras in *Le Roman de Thebes*.¹**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the “medium” scale defined for evaluative purposes. Its power source is unknown; involvement of a divine figure in its delivery need not have necessitated that the operation of this instance proceeded solely from supernatural power. It contained figures of a male musician, a trumpeter; and a male musician, a piper. Thus, its figures partook of the categorical form termed “musician” by this thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting, or device to which the figures were affixed in that material, was a chariot. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally

¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Truitt, *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 51; and Sullivan, *Medieval Automata: The 'Chambre de Beautés' in Benoit's Roman de Troie*, page 4. The above information reflects the extent of knowledge gleaned from the identified secondary sources. A secondary source not consulted and presented for purposes of this thesis, Paul M. Clogan’s “New Directions in Twelfth-Century Courtly Narrative: *Le Roman de Thèbes*,” suggests that King Henry II of England and/or Eleanor of Aquitaine may have patronized the author of the *Roman de Thèbes*, who is identified by Clogan as a Norman. This information may locate composition of the romance in Normandy, although neither this location nor the foregoing ascriptions of patronage are definite. The edition of *Le Roman de Troie* known to this thesis from consultation of the above works was edited by Leopold Constans and published at Paris, France in the year 1890, during the era of the French Third Republic. That date of publication is not an approximation. The author has not personally read the above primary source. For those interested in the same, and who are proficient in French, a digital copy of the 1890 edition cited by E.R. Truitt, which is also referenced by this thesis, is available on the Internet Archive (<https://www.archive.org>) as of the year 2021 under the searchable call number “AFA-9010,” where it has been available since March 14, 2009. The specified lines relating to the war-chariot of Amphiras are taken from Truitt’s fifty-ninth and sixty-second footnotes in *Medieval Robots: Mechanism, Magic, Nature, and Art*.

**Kang Type 001, Instance 001 of 004, Cumulative Instance 001 of 409:
The War-Chariot of Amphiras in *Le Roman de Thebes*.**

including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 001, Instance 002 of 004, Cumulative Instance 002 of 409:
Talus in *The Faerie Queene*.²**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the “medium” scale defined for evaluative purposes. Its power source is unknown; involvement of a divine figure in its delivery need not have necessitated that the operation of this instance proceeded solely from supernatural power. It contained a figure of a generic man. As described in the consulted sources, this instance’s figure partook of the forms termed “servant” and “death” by this thesis, as the figure was answerable to a human master and was directly responsible for killing humans as acts of its own will. Depending upon subjective evaluations not undertaken for purposes of this presentation, it may or may not have partaken of the form termed “villain” by this thesis. On review, this instance’s automaton figure was assigned an individual character name in its source material, “Talus.” There is no setting associated with Talus, as it was a freestanding automaton. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions

² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Kang, *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 65. Kang’s description on page 65 emphasizes the mutability of Talus’ role. He calls Talus both a “loyal servant” and “an implacable executioner,” but reading these quoted descriptors neither necessitates that Talus was presented as a liveried servant/slave per the conceptions and sensibilities of Elizabethan England, unlike al-Jazari’s automata, who are definitively presented as slaves without the European conventionalization of livery, nor that Talus was recognizably clad as a hooded headsman of the recognizable and similarly-conventionalized type associated with the term “executioner.” Talus was either a servant or executioner based upon his relationship to Artegall and his independent behavior, and Kang’s application of these descriptors is therefore assumed to be figurative in both instances. The edition of *The Faerie Queene* known to this thesis from consultation of the above work was authored by Edmund Spenser and published at Oxford, England in the year 1909, during the era of the United Kingdom. That date of publication is not an approximation. While *The Faerie Queene* was not read or consulted for the specific purpose of authoring this appendix and thesis, its origins with the patronage of Queen Elizabeth I and her courtiers, especially Sir Walter Raleigh, is common knowledge. A brief review of information appertaining to an omnibus first edition of *The Faerie Queene* sold under item no. 108643 by Bauman Rare Books of New York, Philadelphia, and Las Vegas confirms the historical appearance of this work in London, where it was printed by William Ponsonbie in 1596. Thus, for purposes of this appendix and thesis, the provenance of *The Faerie Queene*, which contains Talus the fictive automaton, is considered equivalent to Talus’ provenance in terms of geographic location and patronage relationships, as has been and will be the case throughout the appendix and thesis – and these terms for Talus the fictive automaton apply in the same senses as would those of a designed and/or constructed automaton sorted under Kang’s third type. The above primary source is provided by Kang as the thirty-seventh footnote for “Between Magic and Mechanics: The Automaton in the Middle Ages and the Renaissance,” the second chapter of his cited book.

**Kang Type 001, Instance 002 of 004, Cumulative Instance 002 of 409:
Talus in *The Faerie Queene*.**

associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 001, Instance 003 of 004, Cumulative Instance 003 of 409:
Tervagant in *Le Jeu de Saint-Nicholas*.³**

Given that it corresponds to a character role from a performed play, and would have been played by a human actor in makeup and costume, this fictitious instance of automata is considered “false” by this thesis’ definition. In the absence of evidence to the contrary, its figure is interpreted to have been of the “medium” scale defined for evaluative purposes. As a costumed actor representing an automaton, its power was supplied by organic human energy. It contained a figure of a male god. Thus, it partook of the forms “god,” “thing of brass,” and “villain,” as this automaton, within the fiction of the play, is a supernatural manifestation of the god wrongly apprehended as the object of Muslims’ worship by medieval Christians, exists therein, and is the animating force of, a brazen statue, and is the play’s antagonist and foil to the beneficent Saint Nicholas, who is, in turn, represented by a stationary and inanimate wooden statue. On review, this instance’s automaton figure was assigned an individual character name in its source material, “Tervagant.” The setting in which Tervagant appears in that material was a temple-like building, an ignorant approximation of a mosque. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to

³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Filson’s *Engineering Gods*, page 270. The edition of *Le Jeu de Saint-Nicolas de Jehan Bodel* known to this thesis from consultation of the above work was edited by Albert Henry and published at Geneva, Switzerland. Rather than the date of publication for Henry’s edition, the thesis’ notes record that the play, which was eponymously authored by Jehan Bodel, was performed in the year 1201. That date of performance is not an approximation.

Kang Type 001, Instance 003 of 004, Cumulative Instance 003 of 409:
Tervagant in *Le Jeu de Saint-Nicholas*.

automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 001, Instance 004 of 004, Cumulative Instance 004 of 409:
The Women of the Lords' Masque in *The Description, Speeches and Songs, of the Lords' Masque*.⁴**

Given that it corresponds to character roles from a performed entertainment, and would have been played by human actors in makeup and costume, this fictitious instance of automata is considered “false” by this thesis’ definition. In the absence of evidence to the contrary, its figures are interpreted to have been of the “medium” scale defined for evaluative purposes. As costumed actresses representing automata, this instance’s power was supplied by organic human energy. It contained figures of female dancers. These figures did not partake of any forms established by the thesis, and on review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was the stage set erected for the program with which they were associated. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization,

⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Filson’s *Engineering Gods*, pages 271---272. The edition of *The Description, Speeches and Songs, of the Lords' Masque, Presented in the Banqueting-House on the Marriage Night of the High and Mighty Count Palatine and the Royally Descended [The] Lady Elizabeth* known to this thesis from consultation of the above work was edited by Herbert Evans and published at New York, New York, in the United States of America, as of the year 1898. That date of publication is not an approximation.

Kang Type 001, Instance 004 of 004, Cumulative Instance 004 of 409:
The Women of the Lords' Masque in *The Description, Speeches and Songs, of the Lords' Masque*.

and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

INSTANCES 02: KANG'S SECOND TYPE.

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**Kang Type 002, Instance 001 of 052, Cumulative Instance 005 of 409:
Tristan's Giant in *Le Roman de Tristan par Thomas*.⁵**

⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Flowers Braswell's "The Magic of Machinery: A Context for Chaucer's 'Franklin's Tale,'" page 104; Sherwood's "Magic and Mechanics in Medieval Fiction," page 568; Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 100; Ambrosetti's *Cultural Roots of Technology*, pages 139 and 140; and Filson's *Engineering Gods*, page 188. Patronage for Thomas of Britain's work is traditionally attributed to King Henry II of England and/or Eleanor of Aquitaine, and Brother Robert's work to King Haakon IV of Norway. However, these attributions are not known to have a definitive textual basis, instead reflecting the likeliest candidates positioned and able to have respectively patronized Thomas and Robert. On review, none of the above secondary sources establishes a named patron or named patrons for either Thomas' romance or its Old Norse translation. That this automaton wields a club is noteworthy, and the trope of fictitious pre-Modern and Early Modern automata brandishing clubs and blunt weapons will be discussed in subsequent entries. While a detailed description of this automaton is lacking, there is no reason to believe that the figure of a giant that swung a club could not be constructed in the romance's era without magic, even in works of fiction where magic is efficacious, and there is no reason to believe that the principal builder of this and the other automata in Tristan's Hall of Statues, a giant, used magic in the creation of these works, although the giant was himself a magical creature. In its simplest possible configuration, the automaton giant, built in its maker's image, need only have rotated on a pivot when somehow triggered by an interloper, and in a more complex, and perhaps needlessly complex, configuration, it need only have moved its arm or arms up and down to attack any interloper with its club. As will be shown in the other entries for the Hall of Statues' automata (entries II-21–24), Brother Robert, author of the only extant description of this Hall, a monumental "vault" per Truitt's description on page 100, clearly envisioned the automata it contains as mechanically plausible objects, not magical devices that could not be constructed with medieval, or indeed with contemporaneous technology. Since the automata in this Hall, and in some other sources and settings, have a veneer of "magic," usually by their association with a magical creature, by their appearance in a work of fiction that otherwise features the unambiguous operation of magic, or even by the use of magic as a literary device to enhance the power of an otherwise-realistic automaton beyond scientific and technological constraints, both Kang's second type and this thesis' third current of thought apply, although only tenuously in this and certain other cases. It is certainly much easier to call an automaton magical when a primary source places its creation squarely within the realm of the occult, and to the thesis' knowledge, such a placement is not made by Brother Robert or his predecessor, Thomas of Britain, for this entry. The editions of the primary sources known to this thesis from consultations of the above works are as follows: the edition of *Le Roman de Tristan par Thomas* is not recorded by the thesis' working notes as such, and these notes rather record that this work was authored by Thomas of England in the Kingdom of England thereabout the year 1155, with this date of dissemination being an approximation; the edition of *Tristrans Saga Ok Isondar* was edited by Paul Schach and published at Lincoln, Nebraska, in the United States of America, in the year 1973, with this date not being an approximation; and the edition of *The Romance of Tristram and Ysolt by Thomas of Britain, Translated from the Old French and Old Norse* was prepared and translated by Roger Loomis and published at New York, New York, in the United States of America, in the year 1931, with this date of publication not being an approximation. The likely patron for *Le Roman de Tristan par Thomas* and its author, Thomas of England, was Queen Eleanor of Aquitaine. The third primary source given above is provided by the second footnote in Merriam Sherwood's "Magic and Mechanics in Medieval Fiction." Bédier's edition of Thomas' *Roman de Tristan*, the one used and cited by Sherwood in her reference to its three hundred and twelfth page, is available on the Internet Archive, where it was posted in 2008. Truitt's fifteenth endnote for her fourth chapter "The Quick and the Dead: Corpses, Memorial Statues, and Automata" also references Bédier's edition, as well as those published by Loomis and Schach. As

**Kang Type 002, Instance 001 of 052, Cumulative Instance 005 of 409:
Tristan's Giant in *Le Roman de Tristan par Thomas*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the “large” scale defined for evaluative purposes. Its power source is unknown; involvement of a fantastical figure in its delivery need not have necessitated that the operation of this instance proceeded solely from supernatural power. It contained a figure of a giant, and specifically, the giant responsible for its construction, which this thesis takes to have been male. As described in the consulted sources, this instance’s figure partook of the forms termed “gatekeeper” and “monster” by this thesis, as the figure guarded an entranceway, was made to resemble what, by the conceptualizations of the Middle Ages, was a monstrous creature, and was capable of perpetrating acts of violence against humans by swinging a club at unauthorized entrants to the space which it guarded at a threshold. On review, the automaton figure of the giant was not assigned an individual character name in its source material. The setting in which it appeared and space which it guarded was a tomb built for Isolt by this same giant at Tristan’s behest. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

Truitt explains on her 100th page, the automaton described by this entry is only preserved in Old Norse translations of Thomas of Britain’s Old French romance, as the latter work is not known to presently exist in a complete copy. Bédier’s edition in modern French amalgamated the Old French and Old Norse source matter, while Loomis at least used both the Old French and Old Norse sources in preparing his modern English translation. Schach, by contrast, translates only from Old Norse into modern English.

**Kang Type 002, Instance 002 of 052, Cumulative Instance 006 of 409:
The Singing Birds of the Emir of Babylon in *Floire et Blancheflor*.⁶**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the “small” scale defined for evaluative purposes. Its power source was aeolian, that is, wind-driven. It contained the figures of generic birds of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “things of brass” by the thesis, as the birds are said to be brazen or of a color suggesting brass. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a garden. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the

⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Flowers Braswell’s “The Magic of Machinery: A Context for Chaucer’s ‘Franklin’s Tale,’” page 104; Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 126; Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 568; Sullivan’s “Medieval Automata: The ‘Chambre de Beautés’ in Benoit’s *Roman de Troie*,” page 5; and Filson’s *Engineering Gods*, page 187. No source reviewed in preparation of this form contains either substantive identifications or speculations regarding the patronage relationships underlying transmittal of *Floire et Blancheflor*. Based upon its approximate “Date of Origin” and language, it might be connected to the influence of Eleanor of Aquitaine, the patron associated with other twelfth-century French romances with representations of automata. The edition of *Floire et Blancheflor* known to this thesis from consultations of the above works is not recorded by the thesis’ working notes as such, and these notes rather record that this work was authored anonymously, or that its author’s name has been lost to history, in the Kingdom of France thereabout the year 1160, with this date of dissemination being an approximation. For the classical technology which undergirds this representation of automata in a work of fiction from the Middle Ages, see Bur, “T5: Singing Birds,” pages 155—165, in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.” The above citations for primary sources are drawn from the only two secondary sources consulted by this thesis which provided references adjacent to descriptions of “The Emir of Babylon’s Singing Birds.” E.R. Truitt’s edition of *Floire et Blancheflor* is named in the eleventh footnote on page 192 in *Medieval Robots*, while the lines from that edition, which was edited by Leclanche, are given by Truitt in the forty-second footnote on page 201 in that same work. In a parenthetical, Penny Sullivan provides the lines in which “The Emir of Babylon’s Singing Birds” are described in *Floire et Blancheflor* on page 5 of her article “Medieval Automata,” while the edition containing those lines, which was edited by Pelan, is stated in the thirteenth footnote on the article’s eighteenth page.

**Kang Type 002, Instance 002 of 052, Cumulative Instance 006 of 409:
The Singing Birds of the Emir of Babylon in *Floire et Blancheflor*.**

technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 002, Instance 003 of 052, Cumulative Instance 007 of 409:
The Golden Stag in the *Alexanderlied*.⁷**

⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Flowers Braswell's "The Magic of Machinery: A Context for Chaucer's 'Franklin's Tale,'" page 104; and Sherwood's "Magic and Mechanics in Medieval Fiction," page 570. The edition of the *Alexanderlied* known to this thesis from consultations of the above works is not recorded by the thesis' working notes as such, and these notes rather record that this work was authored by a certain Lamprecht in the Middle Rhineland, ostensibly in the Holy Roman Empire or its environs, thereabout the year 1130, with this date of dissemination being an approximation. No information on Lamprecht the Priest's patronage, apart from that ostensibly and generally made available by the Church, is known to this thesis. Basic locational and dating information for the *Alexanderlied* is not present in either Sherwood or Flowers Braswell, and it has therefore been obtained from Arthur Frank Joseph Remy's entry for "Lamprecht" in the eighth volume of the 1910 edition of the *Catholic Encyclopedia*. A short entry on Lamprecht which briefly restates Remy's information is also present in the 1920 edition of *The Encyclopedia Americana*. Both such articles establish points of common knowledge. Returning to the secondary sources cited by this thesis, the dependence of Flowers Braswell on Sherwood is clear and is directly acknowledged in the former's work. Both sources have been presented to establish all instances where the automaton under consideration is named, as is the practice throughout this appendix. Note that Sherwood clearly states, on page 570, that this automaton was operated by "24 bellows with 12 strong men manning each;" although these men were "underneath" this automaton and invisible to viewers, this arrangement establishes the mechanical plausibility of the automaton. Further, while the impartation of human energy under this arrangement might be taken to show that the automaton under consideration is false, the thesis is not of the opinion that the activity of human operators indicates that a given automaton is fraudulent, provided that these operators are separated by at least one degree of mechanical action from the effects visible while the automaton is working. The 288 men required for the 12 paired sets of bellows were not within the body of the stag itself, directly providing sounds for the figures, but were rather operating machinery to produce these sounds. Thus, this automaton does not have a "false" design. For the classical technology which partially undergirds this representation of automata in a work of fiction from the Middle Ages, see Bur, "T5: Singing Birds," pages 155—165, in her work, "Mechanical Miracles: Automata in Ancient Greek Religion;" as with many other instances of fictitious and actual automata, the main technological differentiation between the real-life classical antecedent of this fictitious instance and this instance itself is the introduction of bellows to generate the pressurized pneumatic airstream which provides motive power to the automata per Lamprecht's characterization. The presented primary source originates with Merriam Sherwood's seventeenth footnote on page 570 of her article "Magic and Mechanics in Medieval Fiction," which appears above as it does in Sherwood's work. Mary Flowers Braswell cites Sherwood's description for "The Golden Stag of the *Alexanderlied*" but neither names an alternative primary source edition nor that cited by Sherwood, and the latter thus remains the only primary source known to this thesis for the automaton under consideration. Due to the venerableness of Kinzel's presentation of Lamprecht the Priest's *Alexanderlied*, a presentation published in 1884, a digital copy of the edition used by Sherwood is available on the Internet Archive. *Lamprechts Alexander; nach den drei Texten, mit dem Fragment des Alberic von Besançon und den lateinischen Quellen* was posted in 2007 under the call number "AGM-2137." The lines cited by Sherwood begin on page 334 of the uploaded digital facsimile for Kinzel's 1884 edition. Lamprecht names his source as Alberic von Besançon in the *Alexanderlied*, but Alberic's version is no longer fully extant; Kinzel included a recovered fragment in his work.

**Kang Type 002, Instance 003 of 052, Cumulative Instance 007 of 409:
The Golden Stag in the *Alexanderlied*.**

Nothing suggests that this fictitious instance of automata was false by the thesis' definition, and a specific application of bellows, a form of pneumatic technology, can be identified as good proof that this fictitious instance was not envisioned as a false automaton within the narrative of the work in which it is present. In the absence of information to the contrary, its figures are interpreted to have been of the "large" scale defined for evaluative purposes. Its power source, as mentioned, was pneumatic. It contained the figures of a stag (a male deer), generic birds of unknown or unspecified gender, a generic man, and a generic dog of unknown or unspecified gender. As described in the consulted sources, one or more of this instance's figures partook of the form termed "things of brass" by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a palace. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 002, Instance 004 of 052, Cumulative Instance 008 of 409:
The Birds of the Tree in the *Troyanerkrieg*.⁸**

⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Flowers Braswell's "The Magic of Machinery: A Context for Chaucer's 'Franklin's Tale,'" page 104; Sherwood's "Magic and Mechanics in Medieval Fiction," page 570; and Filson's *Engineering Gods*, page 190. No patronage information for the *Troyanerkrieg* is known to this thesis. Indeed, no information about its composition or author was included in the cited English-language secondary sources. Basic information on the geographic and chronological location of Konrad von Würzburg, author of the *Troyanerkrieg*, is provided by *The Harvard Biographical Dictionary of Music*, which was edited by Randel Don and published in 1996. A short entry for Konrad may be found on its four hundred and sixtieth page. Given this dictionary's topic, its emphasis on musical compositions, rather than literary compositions, is unsurprising. Like those of all reference works incidentally encountered in research for the thesis, the contents of this article are considered common knowledge. Returning to the automaton under consideration in this entry, note that the presence of bellows in its design, per Sherwood's assertion that the fountain-tree depicted in Schultz's volume is identical to that described by von Würzburg, must indicate that it is not a false automaton, as bellows again provide the degree of separation between operator and device which was established under entry II-003. An image showing this instance is present in Adwin Schultz's *Das höfische Leben zur Zeit der Minnesinger*, at volume I, page 97, where it is shown as Figure 31 in this antique book. The edition of Konrad von Würzburg's *Troyanerkrieg* known to this thesis from consultation of the above works was edited by Adalbert von Keller and published at Stuttgart, in the era of the German Confederation, in the year 1858. That date of publication is not an approximation. This edition was prepared under the auspices of the Library of the Literary Association in Stuttgart. For the classical technology which partially undergirds this representation of automata in a work of fiction from the Middle Ages, see Bur, "T5: Singing Birds," pages 155—165, in her work, "Mechanical Miracles: Automata in Ancient Greek Religion," as with many other instances of fictitious and actual automata, the main technological differentiation between the real-life classical antecedent of this fictitious instance and this instance itself is the introduction of bellows to generate the pressurized pneumatic airstream which provides motive power to the automata per Konrad's characterization. Keller's edition of the *Troyanerkrieg* is cited by Merriam Sherwood in the 18th footnote of "Magic and Mechanics in Medieval Fiction," which is on page 570. Flowers Braswell's "The Magic of Machinery" does not cite an edition of the *Troyanerkrieg*, instead citing Sherwood (note that Flowers Braswell misstates the title of Konrad von Würzburg's epic as the "*Troyanerprrieg*," not the "*Troyanerkrieg*," the "Trojan War"). Due to its venerableness, Keller's *Troyanerkrieg* has been available on the Internet Archive since 2015, where it was sourced from Google Books as a work in the public domain. The verse cited by Sherwood is visible on page 214 of the Internet Archive's copy, which is searchable by its title – this corresponds to page 210 in Keller's numbering. On the same page in Sherwood's work (570), she writes "Such a tree [as that containing automaton birds in the *Troyanerkrieg*] is represented in a miniature from Sanct-Blasien, with the caption: 'The tree of cast metal of which the Geste of Alexander speaks: when air is pumped from below, sweet and diverse voices issue from the mouths of the birds.'" This line ends with Sherwood's succeeding (19th) footnote referring to Adwin Schultz's book, which "reproduced" the Sanct-Blasien miniature. Since this visual primary source well illustrates the pre-Modern/Early Modern notion of a "fountain tree," which could or could not have an accompanying fountain, and specifically a fountain tree like that in the *Troyanerkrieg*, the text in which it features is listed as a primary source in this markup. Schultz's work is also available on the Internet Archive under call number AAE-4998.

**Kang Type 002, Instance 004 of 052, Cumulative Instance 008 of 409:
The Birds of the Tree in the *Troyanerkrieg*.**

Nothing suggests that this fictitious instance of automata was false by the thesis' definition, and a specific application of bellows, a form of pneumatic technology, can be identified as good proof that this fictitious instance was not envisioned as a false automaton within the narrative of the work in which it is present. In the absence of information to the contrary, its figures are interpreted to have been of the "small" scale defined for evaluative purposes. Its power source, as mentioned, was pneumatic. It contained figures of generic birds of unknown or unspecified gender. These figures did not partake of any forms established by the thesis, and on review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a fountain tree, an artificial construct intended to represent a tree and conventionally positioned near a fountain, either as a component of the hydraulic fountain installation or near the same. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 002, Instance 005 of 052, Cumulative Instance 009 of 409:
The Golden Tree in the *Roman d'Escanor*.⁹**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the “small” scale defined for evaluative purposes. Its power source was pneumatic. It contained the figure of a humanoid angel of unknown or unspecified gender and a generic bird of unknown or unspecified gender. As described in the consulted sources, one of this instance’s figures partook of the form termed “angel” by the thesis, as it represented a heavenly being. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a fountain tree, an artificial construct intended to represent a tree and conventionally positioned near a fountain, either as a component of the hydraulic fountain installation or near the same. With

⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Flowers Braswell’s “The Magic of Machinery: A Context for Chaucer’s ‘Franklin’s Tale,’” page 104; Sherwood’s “Magic and Mechanics in Medieval Fiction,” pages 569, 579---580; Ambrosetti’s *Cultural Roots of Technology*, pages 143, 144; and Filson’s *Engineering Gods*, page 190. No meaningful information on the provenance of *Escanor* in terms of its author, date of appearance, place of appearance, or patron is afforded by either Sherwood or Flowers Braswell. Since this missing information was necessary for form entries and could not be found in general reference works, the third secondary source cited above, Peter Noble’s book review of Richard Trachsler’s *Escanor* edition, was consulted. Unlike most presentations of secondary sources, Noble’s work is therefore presented not because it names and discusses a pre-modern or Early Modern automaton, but rather because it names and discusses a primary source which contains an instance of such an automaton. In reviewing Trachsler’s edition, Noble states that Trachsler “is able to confirm” *Escanor*’s date of appearance as ca. 1280, and that Eleanor of Castile, Queen Consort of England as Edward I of England’s (Edward Longshanks’) first wife, patronized *Escanor*’s author, Girart d’Amiens. For this thesis’ purposes, the patronage relationship identified in Noble’s review places authorship of *Escanor* in the Kingdom of England. The edition of Gerard of Amiens’ *Roman d'Escanor* known to this thesis from consultation of the above works was edited by H. Michelant and published at Stuttgart, in the era of the German Empire, in the year 1886. That date of publication is not an approximation. This edition was prepared under the auspices of the Library of the Literary Association in Stuttgart. For the classical technology which undergirds this representation of automata in a work of fiction from the Middle Ages, see Bur, “T5: Singing Birds,” pages 155—165, in her work “Mechanical Miracles: Automata in Ancient Greek Religion.” Michelant’s 1886 edition of the *Roman von Escanor* was used by Sherwood in 1947, as no other edition was then available, and the first primary source entry stated above is taken from Sherwood’s fourteenth footnote in “Magic and Mechanics in Medieval Fiction.” Peter Noble, whose book review of a newer *Escanor* edition is a third secondary source, called Michelant’s edition “almost unobtainable” in his cited 1993 review, but the intervening years have allowed improved access to Michelant’s Victorian-era tome. This *Roman von Escanor* is available on the Internet Archive and is accessible under the search parameter “Der Roman von Escanor.” When the first result is used, a copy from Harvard University uploaded to the Internet Archive in 2009 with the bracketed descriptor “[microform]” following its title, the fountain tree seems to be described from pages 420–421 onwards, with page 420 being the four hundred and fifty-fifth page in the digital copy. The second primary source is, of course, the newer edition of *Escanor* prepared before 1994 by Richard Trachsler and reviewed by Peter Noble.

**Kang Type 002, Instance 005 of 052, Cumulative Instance 009 of 409:
The Golden Tree in the Roman d'Escanor.**

respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 002, Instance 006 of 052, Cumulative Instance 010 of 409:
The Copper Children of Constantinople in *Le Pelerinage de Charlemagne*.¹⁰**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the “medium” scale defined for evaluative purposes. Its power source was aeolian, that is, wind-driven. It contained the figures of humanoid children of unknown or unspecified gender which were themselves musicians, and specifically trumpeters. Accordingly, as described in the consulted sources, this instance’s figures partook of the form termed “musician” by the thesis, as well as that termed “thing of brass;” the brazen color of copper, rather than the particular metal described in the source, is the foremost consideration in assigning the latter form. On

¹⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 12, 28, 29, 30 (while “angelic” on page 30, they are still of mundane origin), 48, 53, and 62; Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 568; Sullivan’s “Medieval Automata: The ‘Chambre de Beautés’ in Benoit’s *Roman de Troie*,” page 6; Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 64; Schlauch’s “The Palace of Hugon of Constantinople,” pages 500, 501, and 511; Ambrosetti’s *Cultural Roots of Technology*, pages 128 and 139; and Filson’s *Engineering Gods*, pages 160–161 (the figures of children are erroneously described as figures of “infants,” and wrongly presented as real devices on the preceding pages), 189 (the figures are correctly described as fictitious on that page). E.R. Truitt, in *Medieval Robots*, follows Burgess, not Aebischer, in dating *Le Pelerinage* to ca. 1150 per the first footnote for the former work’s first chapter. Placement of this romance’s origin in the Kingdom of France is inferred from the language used by its author, whose name is not known to this thesis. *Le Pelerinage*’s patron is also unknown, and this situation with respect to identities for historical writers of medieval romances and their patrons is not uncommon for sources attributable to the early and high Middle Ages in Western Europe. The edition of *Le Pelerinage [Voyage] de Charlemagne* known to this thesis from consultations of the above works is not recorded by the thesis’ working notes as such, and these notes rather record that this work was authored anonymously, or that its author’s name has been lost to history, in the Kingdom of France thereabout the year 1150, with this date of dissemination being an approximation. Aebischer and Burgess’ editions of *Le Pelerinage* are cited by E.R. Truitt in her first endnote for *Medieval Robots*’ first chapter, “Rare Devices: Geography and Technology,” on page 158. Writing before the appearance of Burgess’ 1988 edition in 1985, Penny Sullivan cites Aebischer’s 1965 edition in her fifteenth endnote, which is on page 18 of “Medieval Automata.” Neither author cited Koschwitz’s edition in their specified notes, but this 1923 rendering and its antecedents are believed to be the sources upon which both Aebischer and Burgess relied – the sole manuscript copy of *Le Pelerinage* was lost in 1879, according to the Heidelberg Academy of Sciences and Humanities’ *Dictionnaire Etymologique de l’Ancien Français*. Upon review, neither Kang nor Schlauch reference any of the three editions identified above. Of course, Margaret Schlauch wrote in a different time and was concerned with a different topic. Kang’s thirty-third endnote for “Between Magic and Mechanics: The Automaton in the Middle Ages and the Renaissance,” the third chapter in his *Sublime Dreams of Living Machines*, succeeds mention of the considered automata and references both Merriam Sherwood’s oft-cited catalogue of pre-Modern and Early Modern automata in “Magic and Mechanics in Medieval Fiction” and J. Douglas Bruce’s “Human Automata in Classical and Medieval Romance.” The latter was not read during research conducted for this thesis.

**Kang Type 002, Instance 006 of 052, Cumulative Instance 010 of 409:
The Copper Children of Constantinople in *Le Pelerinage de Charlemagne*.**

review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a palace. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 002, Instance 007 of 052, Cumulative Instance 011 of 409:
The Fountain-Tree at the Court of the Caliph of Babylon in *Aymeri de Narbonne*.¹¹**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the “small” scale defined for evaluative purposes. Its power source was aeolian, that is, wind-driven. It contained figures of generic birds of unknown or unspecified gender. These figures did not partake of any forms established by the thesis, and on review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a fountain tree, an artificial construct intended to represent a tree and conventionally positioned near a fountain, either as a component of the hydraulic fountain installation or near the same. With respect to the model proposed by this

¹¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 30---32, 126; Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 569; Sullivan’s “Medieval Automata: The ‘Chambre de Beautés’ in Benoit’s *Roman de Troie*,” page 6; Ambrosetti’s *Cultural Roots of Technology*, page 143; and Filson’s *Engineering Gods*, page 187. No patronage information for *Aymeri de Narbonne* is known to exist in the three presented secondary sources. Discussion of its automata is relatively brief in Truitt, Sherwood, and Sullivan, and since the presented combination of primary and secondary sources satisfied all points of inquiry on this source other than patronage, there is little else to note. As always, the presented secondary sources are not claimed to be exhaustive for publications in English or any other language. The edition of *Aymeri de Narbonne* known to this thesis from consultations of the above works is not recorded by the thesis’ working notes as such, and these notes rather record that this work was authored by Bertrand de Bar-sur-Aube in the Champagne region of the Kingdom of France thereabout the years 1205-1225, with this date of dissemination being an approximation. It is unclear in the cited sources, which contradict each other, whether the fictitious fountain-tree of this instance is situated in the city of Cairo or in the city of Baghdad. For the classical technology which undergirds this representation of automata in a work of fiction from the Middle Ages, see Bur, “T5: Singing Birds,” pages 155—165, in her work “Mechanical Miracles: Automata in Ancient Greek Religion.” In this instance, every author of a secondary source cited by this thesis consulted Demaison’s edition of *Aymeri de Narbonne*, and it therefore represents the single primary source here presented. Truitt indicates use of Demaison’s edition in *Medieval Robots*’ ninety-fourth footnote on page 165, and the lines which describe the considered automaton-bearing fountain tree are given in the ninety-eighth footnote on that same page. Sherwood names Demaison’s edition in “Magic and Mechanics in Medieval Fiction” at the twelfth footnote on page 569, while Sullivan does likewise in her sixteenth endnote on page 16 of “Medieval Automata.” Since Demaison’s edition was published in the nineteenth century, its two volumes are readily available on the Internet Archive and may be retrieved in multiple copies using the search parameter “Aymeri de Narbonne.” The association of *Aymeri de Narbonne*’s probable author, Bertrand de Bar-sur-Aube, with the Champagne region in France is discussed in Demaison’s edition, and while Bertrand’s written style, according to Demaison, does not show linguistic similarity with the French dialects of that region, the likelihood that *Aymeri de Narbonne* was written in the environs of Champagne is sufficient to record this region as the “Municipality of Origin” for purposes of this thesis.

**Kang Type 002, Instance 007 of 052, Cumulative Instance 011 of 409:
The Fountain-Tree at the Court of the Caliph of Babylon in *Aymeri de Narbonne*.**

thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

Kang Type 002, Instance 008 of 052, Cumulative Instance 012 of 409:
The Automata at Garthonolabes' Gardens in *The Travels of Sir John*
***Mandeville*.¹²**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the “small” scale defined for evaluative purposes. Its power source is unknown. It contained figures of generic birds of unknown or unspecified gender. These figures did not partake of any forms established by the thesis, and on review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a garden. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally

¹² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 38. While Truitt does mention other editions of *Mandeville* in *Medieval Robots*’ endnotes, the latter book’s characterization of the automata at Gathonolabes’ gardens is exclusively excerpted from Seymour’s presentation per Truitt’s one hundred and twenty-ninth endnote on page 167. Accordingly, only the Seymour edition is provided as a primary source, as it was the one used by Truitt to document the automata under consideration. Since *Mandeville* is a major primary source from the pre-Modern and Early Modern world, as evidenced by its continuing circulation late into the Renaissance and the literary milieu of the heresiarch Menocchio in Carlo Ginzburg’s *The Cheese and the Worms*, readers are encouraged to consider Seymour and any alternative editions of *Mandeville* which possess scholarly merit. The edition of *The Travels of Sir John Mandeville* known to this thesis from consultation of the above work is not recorded by the thesis’ working notes as such, and these notes rather record that this work was authored anonymously, or that its author’s identity has been lost to history, in the Kingdom of France thereabout the years 1357 – 1371, with this range for possible dates of dissemination being an approximation. For the classical technology which undergirds this representation of automata in a work of fiction from the Middle Ages, see Bur, “T5: Singing Birds,” pages 155—165, in her work “Mechanical Miracles: Automata in Ancient Greek Religion.” Truitt establishes that *The Travels of John Mandeville* was written ca. 1357 on page 36 in *Medieval Robots* and proceeds to discuss the relationships between *Mandeville* and prior primary-source travelogues by Marco Polo and Odoric of Pordenone. Alone among the consulted authors, Truitt correctly identifies avian automata in a *Mandeville* episode derived from *The Book of Ser Marco Polo*, although *Medieval Robots* does not show that Polo’s anteceding work described automata in its version of the same scenes. On page 38, Truitt states that *Mandeville*’s Gathonolabes, who has built a pleasure garden analogous to that of Aladdin in Polo, created a “false paradise... decorated with automata in the forms of animals and birds...” Because the tracking system implemented by this thesis and presented in these markup documents requires specific descriptors, and “animals” is insufficient to meet this criterion, the “animals” have not been tracked as articles of this section’s controlled vocabulary scheme. While the inaccuracies of *Mandeville*, and indeed Polo, have long been noted and criticized by scholars, the former is considered by this thesis to be a novel and distinct contribution greater than the sum of its own sources and, since this is the case, it should not be dismissed as a mere corruption of other materials.

Kang Type 002, Instance 008 of 052, Cumulative Instance 012 of 409:
The Automata at Garthonolabes' Gardens in *The Travels of Sir John Mandeville*

including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 002, Instance 009 of 052, Cumulative Instance 013 of 409:
The Heronic Automata of the Amazon Camille's Tomb in *Le Roman d'Eneas*.¹³**

¹³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 54, 55, 62, 102---103; Penny Sullivan's "Medieval Automata: The 'Chambre de Beantes' in Benoit's *Roman de Troie*," page 4; Nadia Ambrosetti's *Cultural Roots of Technology*, pages 145 --- 146; and Lily V. Filson's *Engineering Gods*, page 188. Neither E.R. Truitt nor Penny Sullivan discussed the ascriptions of patronage or municipality from which *Eneas* emerged, making these points unknown for purposes of this thesis. Sullivan affords a slightly more detailed description of Camille's tomb than does Truitt, mentioning the unique design of Camille, or Camilla, the Amazon's "sarcophagus" and its supports. In describing this fictitious instance of pre-Modern automata, Truitt and Sullivan do not mention that it is clearly Heronic, or derived from the works of Heron of Alexandria, and specifically from Heron's archer. Minsoo Kang, on page 99 of *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, reproduces the schematic image of this archer published in *Heron's von Alexandria Druckwerke und Automatentheater*, ed. Wilhelm Schmidt (Lipsiae: Teubner, 1899), which is available on the Internet Archive under the searchable call number "b27800350;" the archer is shown on page 189 of Schmidt's edition. While Sullivan establishes that the triggering device for *Eneas*' archer is "suspended above the statue" (the figure of a male archer), this departure from Heron's design could be attributable to some garbling in the unknown chain of textual transmission from Heron's Roman Greece to the twelfth-century Kingdom of France, or simply to creative license by the *Eneas*-author, who, according to Sullivan, seems to have used the tension resultant from the physical state of suspension to underscore Camille's suspended animation in her tomb. The hanging carbuncle, triggering device from the archer, and Camille's sarcophagus are all in a state of precarious suspension, much like Camille herself. The edition of *Le Roman d'Eneas* known to this thesis from consultations of the above works is not recorded by the thesis' notes as such, and these notes rather record that this work was authored anonymously, or that its author's identity has been lost to history, in the Kingdom of France thereabout the year 1160, with this date of dissemination being an approximation. The first primary source listed above is taken from E.R. Truitt's seventy-sixth, seventy-seventh, and seventy-eighth endnotes on page 173 of *Medieval Robots*, with the seventy-seventh and seventy-eighth endnotes providing line numbers for the description of Camille's tomb and the automata it contains. Note that the 1975 Slatkine edition cited by Truitt is a reprint of Jean-Jacques Salverda de Grave's 1891 edition, which is why the bracketed date of publication for that nineteenth-century edition was included by Truitt in the seventy-sixth endnote. Penny Sullivan's ninth endnote on page 18 of "Medieval Automata" references this same work by Jean-Jacques Salverda de Grave, albeit in a different printing from the decade of the 1920s. Since Salverda de Grave's edition, like many primary source publications of interest to this thesis, appeared in print more than one hundred years ago, it is available on the Internet Archive under the searchable call number "ABZ-5332." Pages 276–287 of the Internet Archive's copy deliver "a description of the tomb" which accords with Truitt's seventy-seventh footnote, thus suggesting that pagination formats in the Slatkine reprint and the archived 1891 copy are identical. Lines 7705 – 7718 are similarly on page 287 in the Internet Archive copy, matching Truitt's seventy-eighth endnote.

**Kang Type 002, Instance 009 of 052, Cumulative Instance 013 of 409:
The Heronic Automata of the Amazon Camile's Tomb in *Le Roman d'Eneas*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales. Its power source was kinetic. It contained the figures of a dove of unknown or unspecified gender and an archer of presumably male gender. As described in the consulted sources, this instance’s figures partook of the form termed “thing(s) of brass” by the thesis, as at least one such figure had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a tomb. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 002, Instance 010 of 052, Cumulative Instance 014 of 409:
The Four Sentient Automata of the (Alabaster) Chamber of Beauties in *Le Roman de Troie*.¹⁴**

¹⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 55 --- 58, 61---62, 132, 133, 134; Merriam Sherwood's "Magic and Mechanics in Medieval Fiction," page 568; Penny Sullivan's "Medieval Automata: The 'Chambre de Beantes' in Benoit's *Roman de Troie*," pages 2---3, 8---11, 12, 14---16; Minsoo Kang's *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 64; Nadia Ambrosetti's *Cultural Roots of Technology*, pages 142, 143, 197, at footnote 239, and 226; and Lily V. Filson's *Engineering Gods*, pages 188 and 313 (Filson's account of this instance is errored and only mentions two of the four automata). Information regarding the patronage of *Le Roman de Troie* was not given by any of the presented secondary authors, although the involvement of Eleanor of Aquitaine in Benoît's authorial process is commonly acknowledged by such general reference works as the online edition of the current *Encyclopedia Britannica*. A discussion of the longstanding attribution of patronage to Eleanor of Aquitaine may be consulted in Tamara F. O'Callaghan's "Tempering Scandal: Eleanor of Aquitaine and Benoît de Sainte-More's *Roman de Troie*," an article in *Eleanor of Aquitaine: Lord and Lady*, eds. Bonnie Wheeler and John Carmi Parsons, which is abstracted on The University of Iowa Libraries' *Feminae: Medieval Women and Gender Index* under the searchable "Record Number" 4473, but which was not read in research for this thesis. E.R. Truitt provides 1165 as the approximate date of composition for *Le Roman de Troie* on page 55 of *Medieval Robots*. "Sainte-Maure, Proximate to Poitiers," is inferred as the "Municipality of Origin" for *Le Roman de Troie* in consideration of its author Benoît's locative byname and its closeness to the modern city of Poitiers, France per the *Encyclopedia Britannica*. The edition of *Le Roman de Troie* known to this thesis from consultations of the above works is not recorded by the thesis' notes as such, and these notes rather record that this work was authored by Benoît de Sainte-Maure, presumably at Sainte-Maure-de-Touraine, near Tours in the Kingdom of France, and thereabout the year 1165, with this date of dissemination being an approximation. The likely patron of this work was Queen Eleanor of Aquitaine. "The first primary source" in the above presentation is taken from E.R. Truitt's 80th endnote on page 174 of *Medieval Robots*, while the lines are provided by the 82nd, 83rd, 84th, 85th, and 86th endnotes from that same page and volume. The second and third primary sources ("2" and "3") are the 5th and 6th color plates from *Medieval Robots*, with the manuscript provenances for these images provided in the plates' captions. Merriam Sherwood, on page 568 of "Magic and Mechanics in Medieval Fiction," cites the same Constans edition used by Truitt as "The first primary source," although with slight differences in the applied notational style and line referenced with respect to the automata under consideration ("[vol.] II, vv. 14,657 ff." in Sherwood). Penny Sullivan cites the Constans edition in her 2nd endnote on page 17 of "Medieval Automata," but as Truitt notes in *Medieval Robots*' 80th endnote, Sullivan also included a full translation into modern English of the salient descriptive passage from *Le Roman de Troie* for "The Four Sentient Automata of the Alabaster Chamber" as her article's appendix on its 13th, 14th, 15th, and 16th pages. Minsoo Kang, in *Sublime Dreams of Living Machines*, cites pages 2–3 of Sullivan's "Medieval Automata" and pages 167–169 of "'Trei poëte, sages dotors, qui mout sorent di nigromance: Knowledge and Automata in Twelfth-century French Literature,'" a 2004 article by E.R. Truitt in *Configurations* which was not read in this thesis' research, for automata here entered as II-010 at the 34th endnote on his 321st page. Volume II of the presented Constans edition is available on the Internet Archive under call number "ALE-0166."

**Kang Type 002, Instance 010 of 052, Cumulative Instance 014 of 409:
The Four Sentient Automata of the (Alabaster) Chamber of Beauties in *Le Roman de Troie***

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a generic woman, a female acrobat, a male musician capable of playing twelve musical instruments, and a generic boy. As described in the consulted sources, this instance’s figures partook of the forms termed “thing(s) of brass” and “musician” by the thesis, as at least one had a brazen coloration, and at least one played or appeared to play music. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a sickroom. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

Kang Type 002, Instance 011 of 052, Cumulative Instance 015 of 409:
The Auxiliary Automata of the (Alabaster) Chamber of Beauties in *Le Roman de Troie*.¹⁵

¹⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 56, 57, 132, 133; Merriam Sherwood's "Magic and Mechanics in Medieval Fiction," page 568; Penny Sullivan's "Medieval Automata: The 'Chambre de Beantes' in Benoit's *Roman de Troie*," pages 3, 8, 9, 10, 12, 15; Minsoo Kang's *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 64; Nadia Ambrosetti's *Cultural Roots of Technology*, page 142; and Lily V. Filson's *Engineering Gods*, page 188 (Filson only makes note of the eagle automaton in her presentation). Information regarding the patronage of *Le Roman de Troie* was not given by any of the presented secondary authors, although the involvement of Eleanor of Aquitaine in Benoît's authorial process is commonly acknowledged by such general reference works as the online edition of the current *Encyclopedia Britannica*. A discussion of the longstanding attribution of patronage to Eleanor of Aquitaine may be consulted in Tamara F. O'Callaghan's "Tempering Scandal: Eleanor of Aquitaine and Benoît de Sainte-More's *Roman de Troie*," an article in *Eleanor of Aquitaine: Lord and Lady*, eds. Bonnie Wheeler and John Carmi Parsons, which is abstracted on The University of Iowa Libraries' *Feminae: Medieval Women and Gender Index* under the searchable "Record Number" 4473, but which was not read in research for this thesis. E.R. Truitt provides 1165 as the approximate date of composition for *Le Roman de Troie* on page 55 of *Medieval Robots*. "Sainte-Maure, Proximate to Poitiers," is inferred as the "Municipality of Origin" for *Le Roman de Troie* in consideration of its author Benoît's locative byname and its closeness to the modern city of Poitiers, France per the *Encyclopedia Britannica*. Note that on page three of "Medieval Automata," Sullivan states the satyr, the only automaton in the Alabaster Chamber to carry a weapon, is armed with "a small club;" the use of clubs and club-like weapons by belligerent automata in medieval romances is discussed in the "Secondary Source Notes" for entry II-018. The association of automata with bludgeoning weapons is identified as a trope in medieval literature under that entry, and as discussed, this association is also reflected in at least one early instance of actual automata. The edition of *Le Roman de Troie* known to this thesis from consultations of the above works is not recorded by the thesis' notes as such, and these notes rather record that this work was authored by Benoît de Sainte-Maure, presumably at Sainte-Maure-de-Touraine, near Tours in the Kingdom of France, and thereabout the year 1165, with this date of dissemination being an approximation. The likely patron of this work was Queen Eleanor of Aquitaine. "The first primary source" in the above presentation is taken from E.R. Truitt's 80th endnote on page 174 of *Medieval Robots*, while the lines are provided by the 85th endnote from that same page and volume. The second primary source ("2") is the 5th color plate from *Medieval Robots*, with the manuscript provenance for this image provided in the plate's caption. Merriam Sherwood, on page 568 of "Magic and Mechanics in Medieval Fiction," cites the same Constans edition used by Truitt as "The first primary source," although with slight differences in the applied notational style and line referenced with respect to the automata under consideration ("[vol.] II, vv. 14,657 ff." in Sherwood). Penny Sullivan cites the Constans edition in her 2nd endnote on page 17 of "Medieval Automata," but as Truitt notes in *Medieval Robots*' 80th endnote, Sullivan also included a full translation into modern English of the salient descriptive passage from *Le Roman de Troie* for "The Auxiliary Automata of the Alabaster Chamber" as her article's appendix on its 13th, 14th, 15th, and 16th pages. Minsoo Kang, in *Sublime Dreams of Living Machines*, cites pages 2–3 of Sullivan's "Medieval Automata" and pages 167–169 of "'Trei poëte, sages dotors, qui mout sorent di nigromance: Knowledge and Automata in Twelfth-century French Literature,'" a 2004 article by E.R. Truitt in *Configurations* which was not read in this thesis' research, for automata here entered as II-011 at the 34th endnote on his 321st page. Volume II of the presented Constans edition is available on the Internet Archive under call number "ALE-0166."

**Kang Type 002, Instance 011 of 052, Cumulative Instance 015 of 409:
The Auxiliary Automata of the (Alabaster) Chamber of Beauties in *Le Roman de Troie*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the “medium” scale defined for evaluative purposes. Its power source was unknown to this thesis. It contained the figures of an eagle of unknown or unspecified gender and a satyr. As described in the consulted sources, this instance’s figures partook of the form termed “monster” by the thesis, as satyrs were inhuman, fantastical creatures. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a sickroom. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 002, Instance 012 of 052, Cumulative Instance 016 of 409:
The Copper Knights in *Lancelot do Lac*.¹⁶**

¹⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 59, 60, 62; Clifford A. Pickover's *Artificial Intelligence: An Illustrated History*, pages VIII, 15; Nadia Ambrosetti's *Cultural Roots of Technology*, pages 140, 141, 189; and Lily V. Filson's *Engineering Gods*, pages 188---189. Pickover cites Truitt's *Medieval Robots* on page 201 of *Artificial Intelligence: An Illustrated History* as one of his two sources for the "Copper Knights of *Lancelot do Lac*" in the section "Notes and References" and subsection "Sources," his other source being Jessica Riskin's *The Restless Clock*, a work which was not read during research for this thesis. *Artificial Intelligence: An Illustrated History*'s fourteenth page, like most even-numbered pages in that work, is a larger, full-page version of The fourth primary source, Truitt's ninth color plate in *Medieval Robots*, and unlike Truitt's gloss color plate, which is by no means a poor copy or unwelcome inclusion in the paperback edition of *Medieval Robots*, Pickover's publisher, Sterling Press, appears to have adjusted this miniature's colors for *Artificial Intelligence: An illustrated History*, as they appear noticeably brighter and with better contrast than in *Medieval Robots*. Pickover's pages are printed on thicker, heavier-format paper, and in some senses his publication is a so-called coffee table book, so this is perhaps unsurprising. With the improved color and contrast, the metallic, rather than organic, coloration of the "Copper Knights of *Lancelot do Lac*" is more evident than in Truitt's ninth plate. As in this entry (II-012), Pickover considers both the metal knights which marauded outside the walls of the castle Doloreuse Garde and those which stood at the doors inside this castle to be different instances of the same constructs, not two different examples of automata. No information on the patronage of *Lancelot do Lac* is provided by either Truitt or Pickover, and Pickover follows Truitt's dating of this work to "ca. 1220" on page 15 of *Artificial Intelligence: An Illustrated History*. Truitt's provision of this date is in the introductory remarks for the romance on page 59 of *Medieval Robots*. Location of *Lancelot do Lac*'s earliest provenance to the Kingdom of France in this entry is based upon the use of Old French by its author per Truitt's same remarks on page 59. The edition of *Lancelot do Lac* known to this thesis from consultations of the above works is recorded by the thesis' working notes as that edited by Elspeth Kennedy and published at the city of Oxford, United Kingdom, in the year 1980. That date of publication is not an approximation. Kennedy's edition of *Lancelot do Lac* is cited by E.R. Truitt in the ninety-seventh endnote of *Medieval Robots*, which is on page 175. In the one hundred and second endnote on that same page, Truitt speculates that the miniature artists who painted Primary Sources 2-4 in the above recitation may have "replaced the automata with demons or wild men," but then discounts this conjecture by noting that automata which correspond to the form termed by this thesis "Things of Brazen Color" are elsewhere given visual depictions as metallic, naked men. Similarly, Truitt acknowledges that the "brown pigment" used to color the copper knights in The fourth primary source could be construed as a representation of race in the one hundredth endnote on page 175, but then writes that it could simply have been "used to signify a copper tone." This latter attribution of the artist's chromatic selection to the attempted representation of the elemental metal copper, and not the copper-colored flesh of any race, is here endorsed, although the material composition of the "copper men" is taken to be heterogenous, not homogenous. Primary Sources 2-4, all illuminated miniatures, are reproduced in *Medieval Robots* as the seventh, eighth, and ninth color plates.

**Kang Type 002, Instance 012 of 052, Cumulative Instance 016 of 409:
The Copper Knights in *Lancelot do Lac*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was demonic energy. It contained the figures of male knights and guards. As described in the consulted sources, this instance’s figures partook of the form termed “things of brass” and “gatekeeper” by the thesis, as at least one of its figures had a brazen coloration, and at least one of its figures monitored a physical threshold (per Truitt, a liminal space). On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is not applicable, as they were freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 002, Instance 013 of 052, Cumulative Instance 017 of 409:
The Copper Lady in *Lancelot do Lac*.¹⁷**

¹⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 59, 60; Clifford A. Pickover's *Artificial Intelligence: An Illustrated History*, page 15; Nadia Ambrosetti's *Cultural Roots of Technology*, page 189; and Lily V. Filson's *Engineering Gods*, pages 188---189. Because Truitt's ninth plate and Pickover's fourteenth page are one in the same as primary sources in the medium of illuminated miniatures, and the copper lady is not shown in the three miniatures which represent the copper knights in *Medieval Robots*, only Pickover's fifteenth page and page containing his recitation of sources are given as "The second secondary source." While he does mention "the mysterious copper knights of Arthurian legend" on page VIII, the first page of *Artificial Intelligence: An Illustrated History*'s introduction, no mention of the copper lady is made on that page. Truitt, on page 62 of *Medieval Robots*, similarly alludes only to "copper knights" as part of a broader discussion, so that page has been omitted above. No characterization of the interaction between Lancelot and "The Copper Lady of *Lancelot do Lac*" is offered by Truitt, or by Pickover, who follows Truitt, and none can therefore be advanced by this thesis. It is clear, however, that the copper lady, or "damsel," to use one of Truitt's descriptors, is she found "holding the keys to the enchantments [*anchantement*]" in her hand," and could so be construed as a key-master, or mistress, whereas some of the copper knights act in the named form of gatekeepers. Keyholders, turnkeys, and suchlike individuals do not distinctly constitute a named form in this thesis, as the copper lady is the sole instance of an automaton with that function. The edition of *Lancelot do Lac* known to this thesis from consultations of the above works is recorded by the thesis' working notes as that edited by Elspeth Kennedy and published at the city of Oxford, United Kingdom, in the year 1980. That date of publication is not an approximation. Elspeth Kennedy's edition of *Lancelot do Lac* is cited by E.R. Truitt in the 97th endnote of *Medieval Robots*, which is on page 175. As in entry II-012, "The first primary source" presents Truitt's endnote conventions, but it gives the 1st volume and 250th page from Kennedy's edition, rather than that edition and volume's 183rd page, to approximate the textual site of automaton entry II-013. This substitution was required because Truitt's 97th footnote, which cited the latter page, specifically referred to a copper knight, not to "The Copper Lady of *Lancelot do Lac*." Truitt's 98th footnote, which is also on the 175th page of *Medieval Robots*, furnishes the original Old French which Truitt personally translated and included on the 59th page in that book to underscore the demonic nature of all automata present at *Lancelot do Lac*'s Doloreuse Garde, including the copper lady. The translated lines describe an event after Lancelot's encounter with this automaton, and they are therefore believed to fall closer to the Kennedy edition's description of the same than to Lancelot's engagements with the copper knights, and specifically with the "gigantic marvelous [SIC] copper knight made by enchantment," the translation on Truitt's 59th page which corresponds to the 97th footnote on page 175. The copper lady must therefore appear between pages 183–250 in the Kennedy edition, which was not read in research for this thesis, with an appearance near the end of this range seeming likeliest. Note that the copper lady does not appear in the three miniatures included as Truitt's 7th, 8th, and 9th plates and discussed in entry II-012.

**Kang Type 002, Instance 013 of 052, Cumulative Instance 017 of 409:
The Copper Lady in *Lancelot do Lac*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was demonic energy. It contained the figure of a generic woman. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as this instance was freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 002, Instance 014 of 052, Cumulative Instance 018 of 409:
The Copper Bull in *Perceval le Gallois, ou le Conte du Graal*.¹⁸**

¹⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 60; and Lily V. Filson's *Engineering Gods*, page 189. This automaton, and the others which accompany it, are described in a single paragraph on page 60 of E.R. Truitt's *Medieval Robots* and in one sentence on page 65 of Minsoo Kang's *Sublime Dreams of Living Machines*. The brevity of Truitt's and Kang's treatments is not unjustified, as the episode containing these instances of automata only occupies two pages of *Perlesvaus*, the long *Perceval* continuation. While brazen guardsmen, the other automata of what Truitt calls the "cursed castle," kill 1,487 of the 1,500 humans who inhabited this place, with 13 Christian converts and Perceval himself the only survivors, Truitt does not state that the copper bull, which is also present in the castle and houses a demonic intelligence, menaced, attacked, or killed anyone. However, the bull's demon was the superintending force behind the actions of the "copper men that guard the door with hammers" in Truitt, as Kang establishes that the bull "guards its realm with a pair of copper warriors armed with iron mallets" and Truitt states that "the demon escapes from the bull with a noise like a thunderclap and the bull melts away" upon Perceval's effectuation of the conversions. The bull's demon is effectively as murderous as the guardsmen as the orchestrator of their violence, and this thesis has therefore determined to make an identification of the seventh current in this entry. Kang does not cite a primary source, but cites a secondary source not read in research for the thesis at the thirty-sixth endnote on page 321 of *Sublime Dreams of Living Machines*. The edition of *Perceval le Gallois, ou le Conte du Graal* known to this thesis from consultations of the above works is recorded by the thesis' working notes as that edited by Charles Potvin and published at the city of Geneva, Switzerland in the years 1866---1871, with the imprint referenced by the cited work(s) being a reprint of Potvin's original which was more contemporaneously released in the year 1977. That date of republication is not an approximation. All six volumes of "The first primary source," which is taken from E.R. Truitt's one hundred and third endnote on page 175 of *Medieval Robots*, are accessible on the Internet Archive and returned by the search parameter "Perceval le Gallois ou le Conte du Graal publié d'après les manuscrits originaux par Ch. Potvin." The first result is the first volume as of this writing (as uploaded by "Folkscanomy: A Library of Books"), and navigating to the two hundred and second numbered page, which is the two hundred and eighteenth page in the digital facsimile of that volume, produces the written record of a minor tale involving the knight Perceval and demonic automata; words such as "l'art de nigromence," and "merveille" on that page confirm this is indeed the site of an episode involving Perceval, a certain "cursed castle" (or "copper castle" in Kang), and a certain "copper bull" which is summarized in brief by Truitt on page 60 of *Medieval Robots* and by Minsoo Kang on page 65 of *Sublime Dreams of Living Machines*. Rather than calling Primary Source 01 a "prose continuation," Kang calls it "Perlesvaus;" and rather than specifying a "copper bull," as does Truitt, Kang mentions "an oracular image filled with an evil spirit." Potvin's first volume is taken by this thesis to contain the *Perlesvaus*, which is itself a prose continuation of *Perceval*, and the automata described by Truitt and Kang on their respective pages are thus taken to be one and the same. Review of the Potvin edition in the copy accessed on the Internet Archive per Truitt's citation yielded some information on the provenance of this primary text in terms of patronage relations, geographic location, and the date of its composition. Potvin's first volume does not appear to include any front matter, but it does include an editorial commentary as back matter on numbered pages 353–358, pages 368–374 of the Internet Archive's digital facsimile. Much of this commentary is concerned with Potvin and company's remarks on the rareness of the continuation, which was not identified in antecedent/contemporaneous compendiums of Arthuriana, grammatical and syntactical irregularities in the primary text, and the inadequacies of their own edition, which they go so far as to hope will eventually be supplanted by a superior work of scholarship. These points aside, the commentary contains valuable information on the source of the text which seemingly contradicts Truitt's and Kang's statements that the continuation originated in the

**Kang Type 002, Instance 014 of 052, Cumulative Instance 018 of 409:
The Copper Bull in *Perceval le Gallois, ou le Conte du Graal*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was demonic energy. It contained the figure of a bull. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a castle. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

“early thirteenth-century.” Potvin states on numbered page 355 that the published copy of the continuation was commissioned by Roger de Wavrin, Bishop of Tours, as a gift for Jean de Nesle, the first Lord of Bruges with that name and father of the second, to instill in this first Lord Jean the crusading zeal of the age. Bishop Roger and Lord Jean met in Palestine in 1187, and Potvin and company conclude that the continuation was written sometime between that year and 1170, when Jean assumed his lordship; Potvin says Bishop Roger died shortly after this meeting, in either 1189 or 1191. In fairness to Truitt and Kang, Potvin’s description of the manuscript used to prepare the printed edition of the continuation states, on numbered page 354, that “The [manuscript’s] writing is from the thirteenth century” (“L’écriture est du treizième siècle”). It must also be admitted, in fairness to Truitt and Kang, that Potvin’s narrative of the proselytizing bishop and the crusader-lord may be as romanticized as those of many works on the Middle Ages from the nineteenth century, including works of scholarship, although this thesis finds Potvin and company’s conclusions persuasive and, in any event, useful to fix a reasonably precise date range and ascription of patronage to the copy of the prose *Perceval* continuation *Perlesvaus* and the automata it contains.

**Kang Type 002, Instance 015 of 052, Cumulative Instance 019 of 409:
The Copper Guards in *Perceval le Gallois, ou le Conte du Graal*.¹⁹**

¹⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 60, 62; Minsoo Kang's *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 65; and Lily V. Filson's *Engineering Gods*, page 189. These automata, and the automaton which accompanies them, are described in a single paragraph on page 60 of E.R. Truitt's *Medieval Robots* and in one sentence on page 65 of Minsoo Kang's *Sublime Dreams of Living Machines*. The brevity of Truitt's and Kang's treatments is not unjustified, as the episode containing these automata only occupies two pages of *Perlesvaus*, the long *Perceval* continuation. These brazen guardsmen, automata in what Truitt calls the "cursed castle" and Kang the "copper castle," kill 1,487 of the 1,500 humans who inhabited this place, with 13 Christian converts and Perceval himself the only survivors. They are "copper men that guard the door with hammers" in Truitt, and Kang calls them "a pair of copper warriors armed with iron mallets." Kang does not cite a primary source for these automata, but cites a secondary source not read in research for the thesis at the thirty-sixth endnote on page 321 of *Sublime Dreams of Living Machines*. The two copper guards are apparently controlled by a copper bull which is the receptacle of a demonic intelligence (see entry II-014). In considering this automaton bull, a comparison could be made to brazen bulls, a type of semi-mythical torture device from classical antiquity. There is no evidence that entry II-014 is a brazen bull or was intended to evoke the same. Returning to the copper guards, a distinction exists between their power source and that of the bull; the copper guards were made by "nigromence" in the primary source, and they are not necessarily moved by demonic energy. The edition of *Perceval le Gallois, ou le Conte du Graal* known to this thesis from consultations of the above works is recorded by the thesis' working notes as that edited by Charles Potvin and published at the city of Geneva, Switzerland in the years 1866---1871, with the imprint referenced by the cited work(s) being a reprint of Potvin's original which was more contemporaneously released in the year 1977. That date of republication is not an approximation. Further, this instance is also documented in the *Perlesvaus* continuation, a distinct but related textual source which was included by Potvin in his aforementioned edition. All six volumes of "The first primary source," which is taken from E.R. Truitt's one hundred and third endnote on page 175 of *Medieval Robots*, are accessible on the Internet Archive and returned by the search parameter "Perceval le Gallois ou le Conte du Graal publié d'après les manuscrits originaux par Ch. Potvin." The first result is the first volume as of this writing (as uploaded by "Folkscanomy: A Library of Books"), and navigating to the two hundred and second numbered page, which is the two hundred and eighteenth page in the digital facsimile of that volume, produces the written record of a minor tale involving the knight Perceval and demonic automata; words such as "l'art de nigromence," and "merveille" on that page confirm this is indeed the site of an episode involving Perceval, a certain "cursed castle" (or "copper castle" in Kang), and "copper men" which is summarized in brief by Truitt on page 60 of *Medieval Robots* and by Minsoo Kang on page 65 of *Sublime Dreams of Living Machines*. Rather than calling Primary Source 01 a "prose continuation," Kang calls it "Perlesvaus." Potvin's first volume is taken by this thesis to contain the *Perlesvaus*, which is itself a prose continuation of *Perceval*, and the automata described by Truitt and Kang on their respective pages are thus taken to be one and the same. Review of the Potvin edition in the copy accessed on the Internet Archive per Truitt's citation yielded some information on the provenance of this primary text in terms of patronage relations, geographic location, and the date of its composition. Potvin's first volume does not appear to include any front matter, but it does include an editorial commentary as back matter on numbered pages 353--358, pages 368--374 of the Internet Archive's digital facsimile. Much of this commentary is concerned with Potvin and company's remarks on the rareness of the continuation, which was not identified in antecedent/contemporaneous compendiums of Arthuriana, grammatical and syntactical irregularities in the primary text, and the inadequacies of their own edition, which they go so far as to hope will eventually be supplanted by a superior work of scholarship. These points

**Kang Type 002, Instance 015 of 052, Cumulative Instance 019 of 409:
The Copper Guards in *Perceval le Gallois, ou le Conte du Graal*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of guards, which were presumably male but perhaps androgynous. As described in the consulted sources, this instance’s figures partook of the forms termed “thing of brass” and “gatekeeper” by the thesis, as at least one of these figures had a brazen coloration, and at least one of these figures monitored a physical threshold (per Truitt, a liminal space). On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a castle. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is

aside, the commentary contains valuable information on the source of the text which seemingly contradicts Truitt’s and Kang’s statements that the continuation originated in the “early thirteenth-century.” Potvin states on numbered page 355 that the published copy of the continuation was commissioned by Roger de Wavrin, Bishop of Tours, as a gift for Jean de Nesle, the first Lord of Bruges with that name and father of the second, to instill in this first Lord Jean the crusading zeal of the age. Bishop Roger and Lord Jean met in Palestine in 1187, and Potvin and company conclude that the continuation was written sometime between that year and 1170, when Jean assumed his lordship; Potvin says Bishop Roger died shortly after this meeting, in either 1189 or 1191. In fairness to Truitt and Kang, Potvin’s description of the manuscript used to prepare the printed edition of the continuation states, on numbered page 354, that “The [manuscript’s] writing is from the thirteenth century” (“L’écriture est du treizième siècle”). It must also be admitted, in fairness to Truitt and Kang, that Potvin’s narrative of the proselytizing bishop and the crusader-lord may be as romanticized as those of many works on the Middle Ages from the nineteenth century, including works of scholarship, although this thesis finds Potvin and company’s conclusions persuasive and, in any event, useful to fix a reasonably precise date range and ascription of patronage to the copy of the prose *Perceval* continuation *Perlesvaus* and the automata it contains.

Kang Type 002, Instance 015 of 052, Cumulative Instance 019 of 409:
The Copper Guards in *Perceval le Gallois, ou le Conte du Graal*.

enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 002, Instance 016 of 052, Cumulative Instance 020 of 409:
The Golden Boys in *Le Roman d'Alexandre*.²⁰**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of generic boys, who functioned as guards. As described in the consulted sources, this instance’s figures partook of the forms termed “things of brass” and “gatekeeper” by the thesis, as at

²⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 62; and Penny Sullivan’s “Medieval Automata: The ‘Chambre de Beantes’ in Benoit’s *Roman de Troie*,” pages 4–5. Sullivan states, on pages 4–5, that the automata under consideration in this entry are “placed at the far end of a drawbridge spanning the river Clarence,” and that they are present in the “third branch of the Roman d’Alexandre of Alexandre de Paris,” points of detail not provided by Truitt, although both Sullivan and Truitt agree that these automata in the *Roman d’Alexandre* defended a water crossing (a “bridge” on page 62 of Truitt and, as stated, a “drawbridge” in Sullivan) which is situated in a named forest (the “Bois des Puceles” on page 62 in Truitt and the “Bois as Puceles” on page 4 of Sullivan). There are subtle differences in the characterization of these automatons’ weaponry in Truitt and Sullivan, as the former states that they are “armed with hammers” in Primary Sources 2 and 3 on page 62 of *Medieval Robots* and the latter states that they “take hold of maces” on page 5 of *Medieval Automata*. This distinction is not very meaningful, as both hammers and maces are blunt melee weapons; Kang, in characterizing the similar automata of the *Perceval* continuation *Perlesvaus*, says that its automata, which were entered as “II-016,” wielded “iron mallets” on page 65 of *Sublime Dreams of Living Machines*. It would seem to this thesis that both the automata of entry II-015 and this entry bore war hammers, bludgeoning weapons in the same family as maces that were equally dangerous to armored and unarmored combatants; and the reason for the association between fictitious automata as armored combatants and hammers as their weapons of choice could very well be that the brazen jacquemarts of Europe, as real-world automata, were fashioned with hammers to sound the hours by striking the bells on the clocks to which they were attached, so that, when these jacquemarts were imagined to come down from their clocks as freestanding and mobile beings, they naturally carried and wielded the same hammers deployed in their horological design. The edition of *Le Roman d’Alexandre* known to this thesis from consultations of the above works is not recorded by the thesis’ working notes as such, and these notes rather record that this work was authored by Alexander of Paris, alias Alexander of Bernay, in the Kingdom of France thereabout the year 1180, with this date of dissemination being an approximation. The first primary source is taken from the one hundred and ninth endnote on page 176 of E.R. Truitt’s *Medieval Robots*, which provides the (Old) French lines presented in an English translation on page 62 of that book to deliver that primary source’s description of the automata under consideration. The approximated date of origin for this instance is provided by Truitt in the sentence which precedes this translation. The information for Primary Sources 2 and 3 is taken from the captions which accompany Truitt’s tenth and eleventh gloss color plates, as these plates reproduce the respective primary sources. Plate 11, the work of Jehan de Grise and his school, presents in better condition than Plate 10, which shows smudging on its diapering, although the depiction of the automata in Plate 10 is unaffected by this deficiency. As in entry II-015, the automata in Plate 11 appear to bear iron hammers, as these weapons were distinctly colored with black ink by de Grise and his school. The fourth and final primary source is an earlier edition of *Le Roman d’Alexandre* cited in the eleventh endnote on page 18 of Penny Sullivan’s article *Medieval Automata*. While the 1994 edition cited by Truitt is more recent, it postdates the 1985 date of publication for Sullivan’s article, and Sullivan’s use of the 1937 edition is thus explicable.

**Kang Type 002, Instance 016 of 052, Cumulative Instance 020 of 409:
The Golden Boys in *Le Roman d'Alexandre*.**

least one figure had a brazen coloration, and at least one figure monitored a physical threshold (per Truitt, a liminal space). On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a bridge. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 002, Instance 017 of 052, Cumulative Instance 021 of 409:
The Tent-Guardians in the *Perceval* Continuation.²¹**

²¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 62, 63; and Nadia Ambrosetti's *Cultural Roots of Technology*, page 141. Truitt, alone among the sources read in research for this thesis, presents these automata in five sentences on page 62 of *Medieval Robots*. In this description, they are said to be "two gold and silver figures," and the form "Thing of Brazen Color" has not been identified in this instance because it is unclear if both figures have golden and silver elements, rather than being uniformly gold, or if one of the two figures is wholly gold and the other wholly silver. Since these two automatons are a pair and presented as such in The first primary source, the form "Thing of Brazen Color" would not be applicable in either of these possible interpretations. The gender of the harpist is unspecified by Truitt, and while harpists are stereotypically female, the thesis has assumed that the harpist is male, much as it has similarly assumed that all pre-Modern and Early Modern automata with unstated genders and without definite identification as androgynous humanoids are male. In this case, that assumption is informed not only by the patriarchal norms of the Middle Ages, but also by the specific function of the harpist, which is to detect and ostracize women who have lost their virginity. While this function could be discharged by an automaton with a female figure, its use by Alardin, a male knight, and presentation in combination with another automaton that is almost certainly male, an armed guard, suggest its gender is male. While a clear establishment that one automaton in this entry was exclusively silver and the other exclusively gold would better establish a similar dichotomousness in gender, the reading of Truitt's passage which is endorsed by this thesis establishes that both automata are of mixed silver and gold components (note that these are the two heraldic metals), and there is therefore no reason to assume that the one appeared as a male and the other as a female. While the armed tent-guardian, who "holds a spear in his hand" per Truitt, is not definitively identified as a killer, the presence of that weapon in this automaton's case is sufficient to identify the seventh current of thought, as the guard would presumably use it to threaten or do violence to any social inferior, or "churl," who attempted to enter Alardin's tent. These automata appear in a Western European work of fiction, the cultural milieu of the fifth current; Alardin's metallic automata are "magical," the third current; and Alardin and his automata are from "a distant land," with this knight's name suggesting the Arab world (al-Ardin) and so indicating the second current. Barring any evidence to the contrary, there is some basis in this fictive representation of technology in the actual technology of the classical world, which was preserved and mediated by the Arab world, and the first current thus accompanies the second current, as is typical. The edition of *Perceval le Gallois, ou le Conte du Graal* known to this thesis from consultations of the above works is recorded by the thesis' working notes as that edited by Charles Potvin and published at the city of Geneva, Switzerland in the years 1866---1871, with the imprint referenced by the cited work(s) being a reprint of Potvin's original which was more contemporaneously released in the year 1977. That date of republication is not an approximation. Truitt again cites Potvin's edition of *Perceval* and its continuations for these automata in *Medieval Robots*' 110th endnote on page 176. As heretofore stated, Potvin's edition is available on the Internet Archive. Upon inspection, the 1st of Potvin's 6 volumes is *Perlesvaus*, as discussed in entries II-014 and II-015, and the remaining 5 volumes appear to collate and present Chrétien de Troyes' *Perceval, the Story of the Grail* with its 1st, 2nd, and 3rd continuations. The 4th continuation, "Gerbert's Interpolation," is included by Potvin as an appendix beginning on page 161 in the 6th and final volume. Line numbers are continuous from volumes 2-6, where the third continuation ends on page 155, with Chrétien's work and the 3 continuations indistinguishable in this sense. M. Potvin reproduces dedications to Countess Joan of Flanders from the 3rd continuation, known as "Manessier's Continuation," in the "Notes" on pages 157-158 of the 6th volume, which is confusing, as she is only associated with patronage for that 3rd continuation, not the collated corpus. Chrétien's portion of the romance likely predated Countess Joan's birth. Because Truitt's endnote specifies that the episode

**Kang Type 002, Instance 017 of 052, Cumulative Instance 021 of 409:
The Tent-Guardians in the *Perceval* Continuation.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of musicians, harpists, who functioned as guards. As described in the consulted sources, this instance’s figures partook of the forms termed “gatekeeper” and “musician” by the thesis, as at least one figure monitored a physical threshold (per Truitt, a liminal space), and at least one played a musical instrument. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a tent flap. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is

containing the automata under consideration occurs in the “Livre de Karados,” or “Book of Caradoc,” it can be placed in the 1st continuation, which dates from ca. 1175–1225 per J. Douglas Bruce’s 1st footnote on page 519 of “Human Automata in Classical Tradition and Medieval Romance” (published in the 10th volume and 4th issue of *Modern Philology*, which dates from April 1913), a work not read in full or otherwise considered in the research underlying this thesis.

**Kang Type 002, Instance 017 of 052, Cumulative Instance 021 of 409:
The Tent-Guardians in the *Perceval* Continuation.**

enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 002, Instance 018 of 052, Cumulative Instance 022 of 409:
The Guardians of the Emir of Babylon's Crypt in *Le Roman d'Alexandre*.²²**

²² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 62---63, 112; and Penny Sullivan's "Medieval Automata: The 'Chambre de Beantes' in Benoit's *Roman de Troie*," page 5. Here, in both Truitt and Sullivan's characterizations of the primary source matter, the automata are named as "children," a gender-neutral term, and the thesis has not taken the step of ascribing maleness to these automata for that reason, although the combatant nature of the "children" is strongly suggestive of masculinity. Of course, the gender-indeterminateness of "child" as word and concept has long since been discussed by Judith Butler. The use of "children" as a gender-neutral description for automata has elsewhere been encountered in the research for this thesis, and it has been preserved whenever the gender for a "child" automaton is not established comparatively by cross-referencing a source or sources which offer greater descriptive specificity than that in which the "child" automaton is first encountered. Leaving that point, there are slight differences in Truitt and Sullivan's translated descriptions of the automata: in Truitt, the children wield "iron pikes," while in Sullivan, they brandish "iron rods." There is a considerable difference between these two weapons, as the former is a polearm and the latter a short, simple club. The difference this would make in a reader's imagination would pertain mainly to the size of the entranceway to the Emir of Babylon's tomb, as the use of pikes would denote a very wide door. This would have to be the case because the two children fight each other across the entranceway, and their combat is the basis for the ascription of the seventh current of thought. Because Truitt and Sullivan agree that these automata also hold weighty shields, and pikes are weapons that must be hefted with both hands, the "iron rods" are considered the more probable of the two options. Further, this would accord with other fictitious representations of automata categorized under Kang's second type that hold blunted melee weapons, rather than sharp pikes, and with certain automata constructed at the chateau of Hesdin which will be discussed in an entry categorized under Kang's second type. Automata which bludgeon humans with blunt weapons, while at the same time having nearly impenetrable metal skin and strength of conceivably superhuman power, thus emerges as a chilling trope in medieval fiction, which was usually addressed to a courtly readership who either fought in tournaments and at war using sharpened weapons against fleshy foes or who were intimately familiar with these expressions of martial culture as observers. Interestingly, the automata of this entry pose a risk to humans not because they directly attack those who seek entrance to the tomb in that fashion, but rather because all who would go therein must pass between the blows which these automata direct at one another. They are in the form Things of Brazen Color and activated by magic, indicating the third current; they are associated with the "emir of Babylon" in Truitt and with the "amirant of Babylon" in Sullivan, indicating the second current; and absent any evidence to the contrary, they represent a conception of automata which can be traced to classical Greek technology, indicating the first current. Of course, they appear in a work of medieval Western European fiction, producing the fifth current, and as stated, their dangerousness indicates the seventh current. The edition of *Le Roman d'Alexandre* known to this thesis from consultations of the above works is not recorded by the thesis' working notes as such, and these notes rather record that this work was authored by Alexander of Paris, alias Alexander of Bernay, in the Kingdom of France thereabout the year 1180, with this date of dissemination being an approximation. The line numbers containing this instance of automata in The first primary source are taken from the one hundred and twelfth endnote on page 176 of Truitt's *Medieval Robots*, where the lines themselves are quoted in (Old) French. Sullivan provides line numbers as parentheticals on page 5 of "Medieval Automata," where the same passage quoted by Truitt in the stated endnote is given as a block quote. As previously indicated in entry II-016, The second primary source is taken from Sullivan's eleventh endnote on page 11 of 'Medieval Automata.' Searches for the editions of *Le Roman d'Alexandre* cited by Truitt and Sullivan on the Internet Archive have been unsuccessful, suggesting that even the older of these two editions, which dates from 1937, is too recent to have entered the public domain.

**Kang Type 002, Instance 018 of 052, Cumulative Instance 022 of 409:
The Guardians of the Emir of Babylon's Crypt in *Le Roman d'Alexandre*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis, but may have been kinetic. It contained the figures of generic children, which functioned as guards. As described in the consulted sources, this instance’s figures partook of the forms termed “gatekeeper” and “thing of brass” by the thesis, as at least one figure monitored a physical threshold (per Truitt, a liminal space), and at least one figure had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a tomb. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 002, Instance 019 of 052, Cumulative Instance 023 of 409:
The Musical Automata in *Lybistros and Rhodamne*.²³**

²³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Margaret Schlauch's "The Palace of Hugon of Constantinople," pages 505, 507, and 511. Information on *Lybistros and Rhodamne* is quite obscure in English-language publications. The very inexact "Date of Origin" presented above is taken from the entry "Byzantine Literature" in the 1907–1912 edition of the *Catholic Encyclopedia*, a general reference work and one of the few secondary sources to mention this romance by name. A brief synopsis and commentary on the romance was published on pages 11, 12 et seq. of "Romances of Chivalry on Greek Soil," the Romanes Lecture delivered by J.B. Bury in 1911. This lecture is available in *Oxford Lectures on Classical Subjects, 1909–1920*. It is tempting to explain the "magical" automata in *Lybistros and Rhodamne*, a work which should show the secular, non-magical and non-religious second current of thought for automata which is advanced by this thesis, by noting the Western European influence detected by Bury in their late-era Byzantine romance (see page 11 in Bury's lecture). In fairness to Bury, his argument was a rejection of excessive Western influence in Byzantine romances and an assertion that they reflect an autochthonous Greek romantic tradition contemporaneous with that of Western Europe. Bury's lecture is not necessarily germane to this thesis' subject, and it makes no mention of the specific instance of automata here entered as II-019, although it alludes to automata in other Byzantine romances which were not tracked by this thesis (see page 15). However, even as magic does exist in *Lybistros and Rhodamne*, examination of the evidence suggests that ascription of the automaton musicians here under consideration to such magic is debatable. The Greek lines presented by Schlauch on page 505 of "The Palace of Hugon de Constantinople" say something like the following, which was produced through the use of a digital Greek typewriter and digital translation utility: "The others were again set up by that craftsman to play the lyre... and another to play the ['reed,' this word is presumed to be idiomatic, as it did not translate well] out of desire, and so on; how each of the sounds of the reed you heard shouted from the voice of the wind, as if it were from a machine of that craftsman." No proficiency in Greek, ancient, medieval, or modern, is claimed in presenting this provisional translation, which has been rendered as artfully as possible. It is evident, on the assumption the translation is even mostly accurate, that the creator of the automata under consideration is a "craftsman," not a necromancer, alchemist, wizard, or sage, and that actuation of these automata could be accomplished without recourse to magic, that is, that these automata could really be built. The same is true of many other automata in medieval fiction, such as those in the "Hall of Statues" episode from *The Saga of Tristram and Ísönd*, here presented as entries II-001 and II-021–024, which were built by a magical creature, a giant, yet which are plausible enough to suggest the magical giant need not have used magic in their respective fabrications and assemblies, much less their operations. Merriam Sherwood is sensitive to this same point in her characterization of the chamber fountain tree built by the fairy Esclarmonde in the *Roman d'Esclanor*, which is here entered as II-005, for while this tree is similarly built by a magical creature, the device itself follows physical properties of actuation and of operation that suggest "the author of *Esclanor* had in mind an actual machine which he had seen or heard of" (see "Magic and Mechanics in Medieval Fiction," page 569). Thus, while the automata of *Lybistros and Rhodamne* are "magical" in the sense of being wondrous, theirs is the "magic" of Disneyworld, not the occult, and they are works of humankind. Minsoo Kang's typology strains to accommodate these considerations, and the third current is mainly applied in this entry to satisfy Kang's system. The edition of *Lybistros and Rhodamne* known to this thesis from consultation of the above work is that edited by W. Wagner and published at Berlin in the year 1881, during the era of the German Empire. That date of publication is not an approximation. The first primary source is taken from Margaret Schlauch's fifth footnote on page 505 of "The Palace of Hugon de Constantinople." Schlauch does not provide a page number in her reference. However, Wilhelm Wagner's edition of *Lybistros and Rhodamne* is happily available in a single copy on the Internet Archive under the searchable title "Trois poèmes grecs du Moyen-Age," where it has been available

**Kang Type 002, Instance 019 of 052, Cumulative Instance 023 of 409:
The Musical Automata in *Lybistros and Rhodamne*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was aeolian, that is, wind-driven. It contained the figures of two male musicians, a lyrist and a piper. As described in the consulted sources, this instance’s figures partook of the forms termed “gatekeeper,” “thing of brass,” and “musician” by the thesis, as at least one of these figures monitored a physical threshold (per Truitt, a liminal space), at least one had a brazen coloration, and at least one played a musical instrument. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a gate. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods.

since 2008, and these remarks will follow from consultation of the same. Lines 793–798 from this Byzantine romance are reprinted by Schlauch on the stated page from her cited article, and they appear on page 264 of Wagner’s edition, which is the 294th page in its digital facsimile as available on the Internet Archive. *Lybistros and Rhodamne* is the 3rd romance presented in Wagner’s volume, which was published posthumously and in furtherance of his memory by respectful colleagues. The “Préface” to the volume, which is in French, discusses *Lybistros and Rhodamne* on pages VIII and IX, which are respectively the 18th and 19th pages on the Internet Archive’s copy, and indicates this work was the most challenging of the three collected by Wagner to present satisfactorily; it could only be included with the others, the *Achilléide* and the *Relation de la vie d’Alexandre*, by the assistance of a Mr. C. Sathas, who was presumably Constantine Sathas, a native Greek speaker and eminent Byzantinist of the nineteenth century. As a further homage to Wagner, a long *vita* and list of his publications, both also in French, succeed the introduction. The romances themselves, however, were printed in modern Greek script, which explains why lines excerpted by Schlauch in “The Palace of Hugon de Constantinople” appear in the Greek language.

**Kang Type 002, Instance 020 of 052, Cumulative Instance 024 of 409:
The Mausoleum Automata in *Le Conte de Floire et Blancheflor*.²⁴**

²⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 98---99; Merriam Sherwood's "Magic and Mechanics in Medieval Fiction," page 568; Penny Sullivan's "Medieval Automata: The 'Chambre de Beantes' in Benoits's *Roman de Troie*," pages 5, 8, 19---20; Nadia Ambrosetti's *Cultural Roots of Technology*, page 139; and Lily V. Filson's *Engineering Gods*, pages 189---190. In this instance, readers are again confronted by automata which are said to function, and specifically to speak, according to Truitt's translation from Leclanche on page 99 of *Medieval Robots*, "by magic." However, Sullivan, with typical attentiveness to detail, states that "Four pipes incorporated into the tomb harness the wind-power which causes the figures to move as if embracing and speaking to one another," with the lines from Pelan's edition succeeding this sentence. Sherwood states these automata operate "when the wind blows" on page 568 of "Magic and Mechanics in Medieval Fiction," but Truitt indicates they are activated by "opening the door and entering the mausoleum" on page 99 of *Medieval Robots*; both descriptions could be true, as the power source could be wind-driven, or aeolian, but only triggered by a valve attached to the door, suggesting one would have to enter the mausoleum on a windy day to witness the display produced by the automaton Floire and Blancheflor. Interestingly, in Truitt's translation, the ascription of magic to these automata applies only to when they talk at length "of all their love and their childhood memories;" the specific sentences quoted from the pair of automata are stated separately in the succeeding lines. This suggests that the author is using "magic" as a literary device to elaborate upon plausible automata, not to present fantastical automata which are beyond the realm of mechanical possibility when not functioning in ways specifically identified as "magical." While no constructed automata or fictive representation of automata in the Middle Ages could realistically carry conversation to pass the Turing Test (see page 83 in Pickover's *Artificial Intelligence*) without recourse to designs involving human intervention, or to supernatural power in fiction, the sentences spoken by the automata and quoted in the primary source do not necessarily indicate the use of magic, even in a fictional setting where magic is an efficacious force. On pages 320--324 of Reid's English translation for Chapuis and Droz's *Automata: A Historical and Technological Study*, in the section "Talking Automata," these authors discussed several real automata of the 18th and 19th centuries which utilized manipulations of air through pipes and channels to reproduce some or all sounds of the Latin alphabet, with productions of vowel sounds using Kratzenstein pipes particularly well-attested. Since the primary source, a work of fiction, clearly establishes the actions of the automaton Floire and Blancheflor are based upon the movement of air through four pipes, one can imagine that two of these pipes could have been so constructed as to sound the simple sentences spoken by these automata, the first pipe for Floire's sentence and the other for that delivered by Blancheflor. The shortest versions of these sentences in the original French would be most plausible in this interpretation. Did the author of *Floire and Blancheflor* hear a humanoid automaton "speak" through methods explained by Chapuis and Droz before these methods were well-understood, and were the automata of this entry modeled on that "speaker?" There is no evidence to support this contention. The thesis does hold that in this case, as in many others, the automata of medieval fiction were only "magical" to the degree that the actual automata upon which they were based were perceived by some Western Europeans as works of magic, and/or to the degree that fictionalized elaborations and exaggerations of these actual automata outstripped the realm of the possible. The first primary source is taken from E.R. Truitt's 11th, 13th, and 14th endnotes on page 192 of *Medieval Robots*; The second primary source is taken from Merriam Sherwood's 9th and 10th footnotes of page 568 of "Magic and Mechanics in Medieval Fiction;" and The third primary source is taken from Penny Sullivan's 11th endnote on page 18 of "Medieval Automata." Since the earliest of these sources was published in 1938, none are available on the Internet Archive as of this writing, which is unsurprising. Truitt provides a translation of the description given for the automata under consideration in the Leclanche edition on page 99 of *Medieval Robots*, while Sullivan, on page 568 of

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The Mausoleum Automata in *Le Conte de Floire et Blanche-flor*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was aeolian, that is, wind-driven. It contained the figures of a generic man and a generic woman, both nobles within the fiction of their narrative. As described in the consulted sources, this instance’s figures did not partake of any forms defined by the thesis. On review, these automaton figures were assigned individual character names in their source material, which were “Floire” and “Blanche-flor.” The setting in which they appeared was a tomb. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

‘Magic and Mechanics in Medieval Fiction,’ only translates the sentences which are uttered by the speaking automata which represent Floire and Blanche-flor. These sentences are included in Truitt’s translation, and there are slight differences between the two renderings in English: in *Medieval Robots*, the automaton Floire says “Kiss me my beautiful, my love,” while the automaton Blanche-flor says “I love you more than any living thing;” in “Magic and Mechanics in Medieval Fiction,” the automaton Floire says “Kiss me, Fair One,” and the automaton Blanche-flor says “I love you more than aught else in the world.” These differences in translation may be attributable to distinct stylistic conventions in the different centuries in which Sherwood and Truitt’s works appeared, the different editions of the primary romance in use by these respective authors, which also follows from their distinct eras, or both such factors. Even considering variations in the translation, the meaning, especially of the automaton Blanche-flor’s line, is consistent. Sullivan, while presenting these automata, does not provide an English translation from the edition she consulted, although lines 584–7 are presented in the French from Pelan’s edition on page 5 of “Medieval Automata.”

**Kang Type 002, Instance 021 of 052, Cumulative Instance 025 of 409:
Tristan's Figures of Ysolt and Petitcru in *Le Roman de Tristan par Thomas*.²⁵**

²⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 100-101; and Nadia Ambrosetti's *Cultural Roots of Technology*, pages 139 and 140. E.R. Truitt, alone among the consulted authors, discusses this automaton with sufficient depth and detail to permit this entry, so remarks which compare the presentation in *Medieval Robots* to those of other scholars cannot be offered. Note that Queen Ysolt's dog, Petitcru, accompanies her figure in this grouping of automata: this pet, according to Truitt on page 101, "shakes its head and jingles its collar." A third automaton in this grouping is identifiable in the form of a Thing of Brazen Color, like the figure of Queen Ysolt herself, as Truitt writes that the Queen Ysolt "holds a scepter on which a golden bird beats its wings" at page 100. Just like the foremost automaton, Queen Ysolt, these two other automata are mechanically plausible, which is noted by Truitt, who states that both "are similar to those [automata] described by Liudprand and Robert of Clari," again on page 101. The omission of this entry from the works of other authors may or may not be deliberate, as the automaton Queen Ysolt could be considered offensive. Truitt, on pages 101-102, insinuates that the Queen Ysolt is a medieval sex robot with which Tristan, the hero of a canonical romance, is physically intimate. Unable to interact with the living Queen Ysolt, his lover, Tristan contents himself with an automaton constructed in her image, a hyper-realistic gynoid which becomes the literal object of his affections as Tristan satiates frustrated lust for his beloved Ysolt (Iseult). The Queen Ysolt is the only automaton deliberately conceived for this purpose which was encountered by the thesis, and interestingly, it differs substantially from what modern sensibilities might expect, perhaps underscoring Tristan's genuine, if naïve, expression of love in the romance: the Queen Ysolt bears a scepter, the regalia of the living Ysolt's royal office, but also holds "a ring inscribed with the last words Ysolt had spoken to Tristran [Tristan]" per Truitt on page 100; there is no indication that this automaton exists in a state of undress, a state which surely would have been disclosed in Truitt's account to support the understated contention that the Queen Ysolt is a sex robot; and the Queen Ysolt-display, while ensconced in The Hall of Statues, a "private vault" per Truitt on page 100 and also a "private diorama" on that page, is hardly in a bedchamber or its proper medieval equivalent, a solar, but rather in a gallery of three-dimensional figures that teems with representations of life as equivalently accomplished in the medium of automata as was the Queen Ysolt itself, yet which are not presented or implied by the romance to have comparably been sexual devices, at least so far as the thesis is aware in consideration of Truitt's summary. The ring is a fascinating touch, as a medieval reader might imagine it held by the Queen Ysolt with an arm posed aloft in an outstretched position, that Tristan could approach the figure and pledge his troth to Ysolt before the Queen Ysolt-automaton. In any event, this entry would doubtless represent a fruitful site for further scholarly inquiry by social scientists, theorists, and indeed, by feminists. The editions of the primary sources known to this thesis from consultations of the above works are as follows: the edition of *Le Roman de Tristan par Thomas* is not recorded by the thesis' working notes as such, and these notes rather record that this work was authored by Thomas of England in the Kingdom of England thereabout the year 1155, with this date of dissemination being an approximation; the edition of *Tristrans Saga Ok Isondar* was edited by Paul Schach and published at Lincoln, Nebraska, in the United States of America, in the year 1973, with this date not being an approximation; and the edition of *The Romance of Tristran and Ysolt by Thomas of Britain, Translated from the Old French and Old Norse* was prepared and translated by Roger Loomis and published at New York, New York, in the United States of America, in the year 1931, with this date of publication not being an approximation. The likely patron for *Le Roman de Tristan par Thomas* and its author, Thomas of England, was Queen Eleanor of Aquitaine. The above page numbers for The first primary source are provided by E.R. Truitt's 18th and 19th endnotes on page 192 of *Medieval Robots*. These endnotes cite 3 quotes pertinent to this automaton as it is described in Schach's edition: the automaton Ysolt is "so artistic in regard to face and form that no one who looked at it could think

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Tristan's Figures of Ysolt and Petitcru in *Le Roman de Tristan par Thomas*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was pneumatic. It contained the figures of a generic woman, a generic bird of unknown or unspecified gender, and a generic dog of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “thing of brass” by the thesis, as at least one of these figures had a brazen coloration. On review, some of these automaton figures were assigned individual character names in their source material, which were “Ysolt” and “Petitcru.” The setting in which they appeared was a tomb. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

otherwise than there was life in all its limbs;” it contains a cavity in its torso “filled with the sweetest gold-mingled herbs in the whole world,” which are pumped through the figure’s mouth, “as if all the most precious herbs were inside it... In regard to shape, beauty, and size this figure was so much like Queen Ysolt as though she herself were standing there, and lifelike as though it were actually alive.” While Truitt does not indicate a pumping process through the figure’s neck and out its mouth, only that “the scent of the herbs travels through tubes to her mouth, so that she exhales perfumed air,” this description is highly suggestive of a bellows. The automaton Ysolt in this passage is reminiscent of the Jaquet-Droz’s 18th century Musician and Draughtsman automata, as the first such automaton simulates aspiration and the second “blows” air from its mouth (see Chapuis and Droz, pages 279–283, 297–299). Here, as in many other cases of fictitious pre-Modern and Early Modern automata, the figure of Queen Ysolt functions so independently of magic that its chief actions in The first primary source were realized in automata constructed some centuries later, with admitted improvements in materials, fabrication, and design, but still without recourse to integrated circuits, electricity, or even steam power. Thus, the automaton figure of Ysolt need not be considered magical, for while it was built by a fantastical creature, a giant, in a work of fiction, its description shows it to have been envisioned by Brother Robert, that work’s author, as a mechanically plausible object. The third current of thought is nevertheless applied, as some medieval readers may not have realized or considered, despite the partial “sectional view” provided by Brother Robert, that the effects associated with this automaton could realistically have been achieved in a constructed model by an implementation of multiple bellows regulated without clockwork. In the mid-12th century, true clockwork would be anachronistic.

**Kang Type 002, Instance 022 of 052, Cumulative Instance 026 of 409:
Tristan's Figure of Brangvein in *Le Roman de Tristan par Thomas*.²⁶**

²⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 100. The inclusion of Brangvein, Iseult's serving-maid, in Tristan's Queen Ysolt-display is another interesting point of detail afforded by Truitt. Because the lovelorn hero is totally devoted to Iseult, and to the automaton Queen Ysolt in the absence of his living lover, there is no suggestion that he engages in an agalmatophilic *ménage à trois* with both the Queen Ysolt and with the automaton Brangvein, which was presumably also crafted in this work of fiction with the figure of an adult female. The automaton Brangvein's presence instead functions to heighten the verisimilitude of the Queen Ysolt, as Tristan (and perhaps the medieval audience) is shown to conceptualize a romanticized, idealized, and sexualized aristocratic female not solely in terms of her own person, but also that of her retinue or entourage, which is represented by Brangvein, Iseult's serving-maid, and by Petitcru, Iseult's pet dog, in the confined space of the vault's statuary gallery. No proper lady can be represented as an object of affections, seemingly at the level of an engram, without a trusty servant to denote her social rank and without a cutesy pet to denote her femininity. The typical appearance of small dogs on the tomb effigies of medieval noblewomen is relevant to this observation on the Queen Ysolt-display, entry II-021. Unlike the eagle on the Queen Ysolt's scepter and the Petitcru dog in that entry, however, the Brangvein is not part of the grouping immediately centered on the automaton queen, perhaps imaginarily standing near the Ysolt with the slight physical distance maintained by respectful retainers, and it is thus entered distinctly. If Truitt's interpretation is followed and the Queen Ysolt is taken as a sex robot, the presence of the Brangvein could alternatively and more perversely be explicable as another factor functioning in furtherance of Tristan's titillation, for much as the Queen Ysolt is construed as an automaton lover, the Brangvein could be given a sexual construal as an automaton voyeur made to watch Tristan's trysts with the Queen Ysolt as the presumptive or forced consequent of its servile obligations, barring any agentive desire to do so. Since it is probably inappropriate to assume that the hero Tristan is a pervert, even as his stymied love and lust lead him to commission The Hall of Statues, the first interpretation, that the Brangvein's presence is incidental and hinges upon signification of the Queen Ysolt's nobility, is likelier, as it necessarily demonstrates the very different notions of privacy which prevailed in the European Middle Ages. While Tristan creates a "private vault" with a "private diorama" per Truitt, which would probably seem *prima facie* suspicious to the medieval audience, he still does not gain the modern sense of intimate privacy at the site of his devotion to the Queen Ysolt automaton, which contains at least one incidental onlooker, the automaton Brangvein. Nothing further can be offered by this thesis on the Brangvein, as Truitt only establishes on page 100 that it represents the serving-maid Brangvein and is one of the "golden images" inside the vault, and this is taken to probably be the extent of the information on this automaton in The first primary source. The editions of the primary sources known to this thesis from consultations of the above works are as follows: the edition of *Le Roman de Tristan par Thomas* is not recorded by the thesis' working notes as such, and these notes rather record that this work was authored by Thomas of England in the Kingdom of England thereabout the year 1155, with this date of dissemination being an approximation; the edition of *Tristrams Saga Ok Isondar* was edited by Paul Schach and published at Lincoln, Nebraska, in the United States of America, in the year 1973, with this date not being an approximation; and the edition of *The Romance of Tristram and Ysolt by Thomas of Britain, Translated from the Old French and Old Norse* was prepared and translated by Roger Loomis and published at New York, New York, in the United States of America, in the year 1931, with this date of publication not being an approximation. The likely patron for *Le Roman de Tristan par Thomas* and its author, Thomas of England, was Queen Eleanor of Aquitaine. The first primary source and its page number are taken from the 16th endnote on page 192 of E.R. Truitt's *Medieval Robots*, as this endnote is closest to Truitt's mention of the automaton Brangvein on page 100. This endnote, however, provides the page number in Schach's edition of *The Saga of Tristram and Isönd* for entry II-

**Kang Type 002, Instance 022 of 052, Cumulative Instance 026 of 409:
Tristan's Figure of Brangvein in *Le Roman de Tristan par Thomas*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a serving-maid. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was assigned an individual character name in its source material, “Brangvein.” The setting in which it appeared was a tomb. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

024, “Tristan’s Lion,” although this automaton lion is the last of several automata mentioned by Truitt in the four sentences which precede the 16th endnote, and which together provide a general description of Tristan’s “private diorama” inside his “private vault,” and the guardians of its doorway, on page 100. In this case, it cannot be stated with absolute certainty that the figure of Brangvein is mentioned or described on Schach’s 122nd page, although that page is assumed to be concerned, in whole or part, with the vault, as it is cited by Truitt due to her quotation of its detailed presentation of the lion’s appearance. A copy of Schach’s edition was not read in research undertaken for this thesis, just as most, but not all, primary sources were not read directly in whole or in part after their respective identifications in secondary sources.

**Kang Type 002, Instance 023 of 052, Cumulative Instance 027 of 409:
Tristan's Figure of the Dwarf Informant in *Le Roman de Tristan par Thomas*.²⁷**

²⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 100. Unlike the automaton figure of the serving-maid Brangvein, the inclusion of the dwarf within Tristan's vault bespeaks little of medieval social constructions of noblewomen and, to the degree that it provides any insight into the period, instead shows its toleration and excusal of a certain depravity on the parts of lovesick heroes. There is no reason for the automaton dwarf's presence in the vault other than Tristan's enactment of a revenge fantasy or, more simply, pure spite. Truitt notes on page 100 that the dwarf represents a character in the romance, neither explicitly named nor gendered in *Medieval Robots*' summary, who "denounced the guilty pair [the adulterous lovers Tristan and Ysolt] to Ysolt's husband, [King] Mark." The dwarf is therefore the party responsible for the separation of Tristan from Ysolt, and it was precisely this separation which led Tristan to console himself with the Queen Ysolt, a hyper-realistic gynoid used as a sex robot in lieu of the living Ysolt, King Mark's wife and queen (see entry II-021). Within the secluded space of Tristan's guarded vault, the automaton dwarf is made to watch Tristan cavort with the Queen Ysolt-automaton, and not as the representation of a bystander, or a willful or coincidental voyeur, but rather a humiliated prisoner forced to witness the failure of his designs by confrontation with the physical union of Tristan and the Queen Ysolt-automaton. The dwarf is thus unambiguously darker in nature than the other automata of its setting, The Hall of Statues, and is an index of Tristan's cruelty, for its existence allows Tristan to gloat before an automaton with his condemner's appearance, even as he invalidates the consequence of the dwarf's condemnation through continuation of his affair by recourse to an automaton with his illicit lover Ysolt's appearance. Little else can be said about the dwarf automaton, except that its function, the gratification of spite, is like that of the initial "Stella" automaton in the *Star Trek* episode "I, Mudd" (1967), where an antagonistic but not villainous character is represented in the medium of automata and maintained by another, living character who derives pleasure from controlling it as an assertion of mastery. The editions of the primary sources known to this thesis from consultations of the above works are as follows: the edition of *Le Roman de Tristan par Thomas* is not recorded by the thesis' working notes as such, and these notes rather record that this work was authored by Thomas of England in the Kingdom of England thereabout the year 1155, with this date of dissemination being an approximation; the edition of *Tristrans Saga Ok Isondar* was edited by Paul Schach and published at Lincoln, Nebraska, in the United States of America, in the year 1973, with this date not being an approximation; and the edition of *The Romance of Tristram and Ysolt by Thomas of Britain, Translated from the Old French and Old Norse* was prepared and translated by Roger Loomis and published at New York, New York, in the United States of America, in the year 1931, with this date of publication not being an approximation. The likely patron for *Le Roman de Tristan par Thomas* and its author, Thomas of England, was Queen Eleanor of Aquitaine. The first primary source and its page number are taken from the 16th endnote on page 192 of E.R. Truitt's *Medieval Robots*, as this endnote is closest to Truitt's mention of the automaton dwarf, which is assumed to represent a male with dwarfism, on page 100. This endnote, however, provides the page number in Schach's edition of *The Saga of Tristram and Ísönd* for entry II-024, "Tristan's Lion," although this automaton lion is the last of several automata mentioned by Truitt in the four sentences which precede the 16th endnote, and which together provide a general description of Tristan's "private diorama" inside his "private vault," and the guardians of its doorway, on page 100. In this case, it cannot be stated with absolute certainty that the figure of the dwarf is mentioned or described on Schach's 122nd page, although that page is assumed to be concerned, in whole or part, with the vault, as it is cited by Truitt due to her quotation of its detailed presentation of the lion's appearance. A copy of Schach's edition was not read in research undertaken for this thesis, just as most, but not all, primary sources were not read directly in whole or in part after their respective identifications in secondary sources.

**Kang Type 002, Instance 023 of 052, Cumulative Instance 027 of 409:
Tristan's Figure of the Dwarf Informant in *Le Roman de Tristan par Thomas*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a dwarf of unknown gender. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a tomb. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 002, Instance 024 of 052, Cumulative Instance 028 of 409:
Tristan's Lion in *Le Roman de Tristan par Thomas*.²⁸**

²⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 100; and Nadia Ambrosetti's *Cultural Roots of Technology*, pages 139 and 140. While there is no indication that this automaton, which represents a dangerous animal, was emplaced by the giant under Tristan's direction to attack anyone who dared enter The Hall of Statues, its pairing with the club-wielding automaton representation of the giant himself, entry II-001, does suggest that it was intended to potentially harm intruders, thus warranting the identification of the seventh current of thought. Since Truitt's quotation of Schach's edition does not clearly establish whether the guardians of the vault's entrance stood inside or outside its threshold, "Doorway" has been used as the term for this instance's setting, rather than "Vault," in both this entry and II-001. For purposes of this thesis and these remarks, the lion and giant automata will be assumed to stand on the external side of the wall dividing the vault from the outside world, with one of these automata on each side of the vault's door and positioned to face outwards, towards potential trespassers. It should be noted that both the lion and giant, as automata placed to guard the demarcation between The Hall of Statues in Tristan's vault and the outside world, are placed at the division between the morally permissible and morally impermissible, with these ascriptions of moral value governed by the mores of the High Middle Ages and indeed, in the case of sex robots, by the prevailing moral values of the twenty-first century. Truitt's argument that automata are liminal objects found at the edge of the possible and the licit, whether in intellectual or moral senses, and in what might be called "one step beyond," "the twilight zone," or "the outer limits," applies in this case, as the lion and giant are literally found on either side of a portal, like many other automata in medieval fiction at doorways and at gates. However, the specific function of the giant and lion is as much to warn as it is to menace; even if one gains entry, which is unlikely, what lies beyond automaton gatekeepers usually tends to disturb, as in the case of The Hall of Statues, the concretization of an elaborate sexual fantasy, or more generally, as when one enters the presence of efficacious magic and/or demonic energy. To return to the lion itself, its only attributed movement, that it "lashed its tail" in Truitt's quotation of Schach, is quite simple and therefore mechanically plausible, suggesting that in this case, as with all the other automata associated with The Hall of Statues, the presence of magic or of magical beings in the romance need not necessitate that its automata are also magical, barring any evidence to suggest otherwise. As has been stated in other entries, even when automata in medieval romances are given descriptions which far exceed the realm of technical possibility and therefore extend into that of magic, these descriptions are often extensions of designs and actions seen in the real-world automata of the Middle Ages, not fantasies *ex nihilo*. This stands to reason, as all but the most brilliant imaginings have some basis in lived reality. The persistence of the association between blunt weapons and automata, as in the case of the giant automaton which accompanies the lion, is likely attributable to the construction of jacquemarts with hammers, or the reverse could perhaps be true, as documented European jacquemarts postdate the romances (although the earliest extant jacquemarts are by no means the earliest constructions of this species of automata). The editions of the primary sources known to this thesis from consultations of the above works are as follows: the edition of *Le Roman de Tristan par Thomas* is not recorded by the thesis' working notes as such, and these notes rather record that this work was authored by Thomas of England in the Kingdom of England thereabout the year 1155, with this date of dissemination being an approximation; the edition of *Tristrans Saga Ok Isondar* was edited by Paul Schach and published at Lincoln, Nebraska, in the United States of America, in the year 1973, with this date not being an approximation; and the edition of *The Romance of Tristram and Ysolt by Thomas of Britain, Translated from the Old French and Old Norse* was prepared and translated by Roger Loomis and published at New York, New York, in the United States of America, in the year 1931, with this date of publication not being an approximation. The likely patron for *Le Roman de Tristan par Thomas* and its author, Thomas of England, was Queen Eleanor of Aquitaine. The first primary source and its page number are taken

**Kang Type 002, Instance 024 of 052, Cumulative Instance 028 of 409:
Tristan's Lion in *Le Roman de Tristan par Thomas*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a lion. As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass” and “gatekeeper” by the thesis, as it had a brazen coloration and guarded a threshold. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a tomb. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

from the 16th endnote on page 192 of E.R. Truitt’s *Medieval Robots*, as entry II-024, “Tristan’s Lion,” is the last of several automata mentioned by Truitt in the four sentences which precede the 16th endnote, and which together provide a general description of Tristan’s “private diorama” inside his “private vault,” and the guardians of its doorway, on page 100. Truitt, in this description on page 100, quotes the Schach edition’s detailed presentation of the lion’s appearance, which establishes that the lion is in the form of a Thing of Brazen Color and that it “lashed its tail.” A copy of Schach’s edition was not read in research undertaken for this thesis, just as most, but not all, primary sources were not read directly in whole or in part after their respective identifications in secondary sources.

**Kang Type 002, Instance 025 of 052, Cumulative Instance 029 of 409:
The Ten Thousand Birds of Carthage in *Le Roman de Eneas*.²⁹**

²⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 126; Merriam Sherwood's "Magic and Mechanics in Medieval Fiction," page 570; Penny Sullivan's "Medieval Automata: The 'Chambre de Beantes' in Benoit's *Roman de Troie*," pages 4 and 7; and Lily V. Filson's *Engineering Gods*, page 190. Truitt, on page 126 of *Medieval Robots*, writes that the automata under consideration are on "a golden grapevine" in "the city of Carthage" and provides no further locational detail, although the description does state that "the grapevine is hollow" and activated by gusts of wind (an aeolian power source). Some nuance is added to this highly plausible design by Sherwood, who specifies in a line partially translated into English on page 570 of "Magic and Mechanics in Medieval Fiction" that "the vine is 'hollow and flames are underneath...'" This would seem to mean that the current created by hot air rising caused the mechanism to operate." Sullivan adds still more detail, specifying that the fabricated grapevine is situated within "[Queen] Dido's palace in Carthage" on page 4 of "Medieval Automata." The virtue of correlating different descriptions in secondary sources to arrive at a clear understanding of a fictitious instance of automata is demonstrated by the above exercise. Both Truitt and Sherwood agree that the number of birds on the grapevine numbered an astonishing ten thousand, and Truitt's translation, on page 126, of the lines given in the forty-third endnote reads "golden birds, large and small, and greatly wondrous;" Sullivan states on page 4 of "Medieval Automata" that the birds "move about and 'sing,' each one producing a different note according to its size, when the wind blows." There is nothing implausible about these points, so long as one accepts the number of birds given in *Eneas*' description, for any musician can confirm that air will resonate with different pitches within vessels, such as brass instruments, of different sizes. The thesis again asserts that, despite the association of magic with brazen automata, there is nothing magical or inexplicable about these birds, and any imputation of magic must rest either with the ignorance of the medieval reader or with confusion stemming from the simultaneous efficacy of magic and/or existence of magical creatures in this or other medieval romances. The edition of *Le Roman de Eneas* known to this thesis is not recorded by the thesis' working notes as such, and these notes rather record that this work was authored in the Kingdom of France thereabout the year 1160, with this date of dissemination being an approximation. For the classical technology which undergirds this representation of automata in a work of fiction from the Middle Ages, see Bur, "T5: Singing Birds," pages 155—165, in her work, "Mechanical Miracles: Automata in Ancient Greek Religion." The first primary source listed above is taken from E.R. Truitt's seventy-sixth endnote on page 173 of *Medieval Robots*, with the forty-third and forty-fourth endnotes on page 201 providing the page numbers for the description of the golden birds. Note that the 1975 Slatkine edition cited by Truitt is a reprint of Jean-Jacques Salverda de Grave's 1891 edition, which is why the bracketed date of publication for that nineteenth-century edition was included by Truitt in the seventy-sixth endnote. Penny Sullivan's ninth endnote on page 18 of "Medieval Automata" references this same work by Jean-Jacques Salverda de Grave, albeit in a different printing from the decade of the 1920s; Sullivan's tenth endnote provides the volume and page number containing this instance of automata in that alternate printing. Since Salverda de Grave's edition, like many primary source publications of interest to this thesis, first appeared in print more than one hundred years ago, it is available on the Internet Archive under the searchable call number "ABZ-5332." Page 390 of the Internet Archive's copy delivers the unnumbered lines which accord with Truitt's forty-third footnote, thus suggesting that pagination formats in the Slatkine reprint and the archived 1891 copy are identical. Sherwood cites the original 1891 printing of Salverda de Grave's edition, just as does Truitt per The first primary source above, but Sherwood only references page 389 in the second volume. This difference is trivial and reflects exclusive citation at the beginning of the interpolation containing the automata under consideration, rather than also at the specific point with the automata.

**Kang Type 002, Instance 025 of 052, Cumulative Instance 029 of 409:
The Ten Thousand Birds of Carthage in *Le Roman de Eneas*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was aeolian, that is, wind-driven. It contained the figures of generic birds of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “thing of brass” by the thesis, as they had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a grapevine sculpture. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 002, Instance 026 of 052, Cumulative Instance 030 of 409:
King Assentij's Fountain Tree in *Le Roman van Walewein*.³⁰**

³⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 126-127. The edition of *Le Roman van Walewein* known to this thesis is that edited by David F. Johnson and Geert H.M. Classens and published at Woodbridge, Suffolk, United Kingdom in the year 2000. That date of publication is not an approximation. For the classical technology which undergirds this representation of automata in a work of fiction from the Middle Ages, see Bur, "T5: Singing Birds," pages 155—165, in her work, "Mechanical Miracles: Automata in Ancient Greek Religion." This instance of pre-Modern automata defeats Kang's system, as it is a categorically non-magical device which is unambiguously presented as such in The first primary source, a work of medieval fiction, and which also did not originate with a divine being. It must be sorted under Kang's second type, as it was not created in its fictive source by an otherworldly intelligence and so cannot be placed under the first type, yet because there is no suggestion of magic in the detailed technical explanation provided for its operation in the romance, it contravenes the parameters of the second type. However, the second type remains the most appropriate selection for any description of this automaton-bearing device under Kang's system, if one assumes all pre-Modern and Early Modern automata can be understood using this system, as there is neither evidence that entry II-026 was ever actually built or envisioned as a real object (the third type), nor that it was a legendary construct which was uncritically treated as an object which once existed (the fourth type). Truitt, in her summary of this entry's presentation in *Walewein*, states on page 127 of *Medieval Robots* that it is powered in the romance by "sixteen men working eight bellows [two men per bellow] that force air up through the tree roots." This summary also establishes that the operators work in a subterranean pneumatic pumphouse beneath the tree. All of this is mechanically plausible, and one can imagine this device with a high degree of detail. As discussed in other entries for fictitious automata with designs involving the passage of air currents through metallic birds, this approach is reminiscent of musical instruments in the brass family, and the amounts of moving air currents produced by large bellows, each attended by a pair of strong men, could certainly provide the surplus energy needed to flap wings or introduce minor changes in the positions of the bird figures. As Sherwood noted on page 569 of "Magic and Mechanics in Medieval Fiction," the realism evident in this and many other examples of automata in medieval romances suggest that some real, actual automata must have inspired the authors of these respective works, although the loss of any such objects and technical descriptions for the same from the surviving material culture of the Western European cultural milieu in the High Middle Ages has meant that this conclusion must largely remain an inference. Of course, in the contemporaneous world of the Dār al-Islām, no constructed automata are likewise known to have survived the centuries and millennia between pre-Modernity and the present, but technical manuals which detail how automata may successfully be constructed were produced in that cultural milieu, seemingly at a rate of approximately one every 200 years, and these treatises are now known because they were carefully preserved. It is very tempting to assert that a Western European tradition of automata involving the extensive use of pneumatic power, derived from the corpus of Heron and his contemporaries which is called the "first current of thought" by this thesis, did exist in the High Middle Ages, as pneumatic automata activated by bellows are ubiquitous in the romance literature of this period. While such a contention must remain a guess, lest any scholar fall prey to the criticism that s/he cannot discern fact from fiction, there must be some basis for the repeated, explicit references to bellows in automata described by the historical romance genre, and for the ease with which fictive automata without technical explanations in the romances can be given hypothetical reconstructions using one or more imagined bellows. This observation is made possible by focusing on the fictitious automata themselves, not their broader cultural meanings. The first primary source is taken from E.R. Truitt's forty-fifth endnote on page 201 of *Medieval Robots*, which provides publication information for Johnson and Classens' edition and specifies that this instance's date of origin is supplied by pages 4–7

**Kang Type 002, Instance 026 of 052, Cumulative Instance 030 of 409:
King Assentijn's Fountain Tree in *Le Roman van Walewein*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition, given that it incorporated the use of bellows. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was pneumatic. It contained the figures of generic birds of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “thing of brass” by the thesis, as they had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a fountain tree. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

in that edition. Truitt notes that *Walewin*’s dating “is difficult to assess with any certainty” in this endnote and refers readers to an 1894 publication by W.P. Ker, “The Roman van Walewin (Gawain),” published in the fifth volume of a journal cited as “*Folk-Lore*,” for information on this romance’s appearance; because Ker’s article is neither available on the Internet Archive nor JSTOR, and was not read in the research conducted for this thesis, it has been omitted from the listing of secondary sources stated under this entry. The lines from The first primary source, on page 175 of Johnson and Classens’ edition, are taken from Truitt’s forty-sixth endnote on page 201 and correspond to the text “And when the little birds were moved by the wind they stood up straight and twitched as if they were alive; then each bird sings its song six and seven in chorus,” which is provided by Truitt on page 127 of *Medieval Robots*. The fountain tree containing these automata existed in a fictive “pleasance,” or enclosed garden, on the Indian subcontinent (giving rise to the second current of thought) per Truitt on page 126, and it is thus considered a “private” device designated as a “Chamber Fountain Tree” for purposes of this thesis, even if situated in an outdoor space.

**Kang Type 002, Instance 027 of 052, Cumulative Instance 031 of 409:
Melocandis' Golden Android in the *Cleomades*.³¹**

³¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Sharon Farmer's "Aristocratic Power and the 'Natural' Landscape: The Garden Park at Hesdin, ca. 1291---1302," page 679; H.S.V. Jones' "The *Cleomades*, the *Meliacin*, and the Arabian Tale of the 'Enchanted Horse,'" pages 221---243, at 225---226; Merriam Sherwood's "Magic and Mechanics in Medieval Fiction," page 568; and Nadia Ambrosetti's *Cultural Roots of Technology*, pages 141 (which is errored) and 144. Farmer, on the penultimate page of her article (679) writes only that "two of the magical automated statues were made of gold" in the *Cléomadès*, and correctly states that "the choice of materials for these wondrous devices [including automata in this romance, but also many other real and fictitious examples] underscored the crafted nature of the objects." Sherwood provides very brief descriptions for the three automata in the *Cléomadès*, noting that the automaton in this entry is "a golden man who blows his trumpet at the approach of an enemy" on page 568 of "Magic and Mechanics in Medieval Fiction." The ability to discern hostile intentions on the parts of human actors indicates the "golden man," who is an android, is a sentient being. Jones, on pages 225--226 of his publication, characterizes this entry as "a man of gold with a golden trumpet," and corroborates Sherwood's assertion that the "man of gold" can assess the intentions of people within its perception, as "the man of gold vigorously sounds his trumpet" immediately before Crompart, an antagonist, causes the disappearance of the hero Cléomadès by unexpectedly activating another of the romance's automata, a sable horse. Crompart does so once the unwitting protagonist has already mounted this steed, precipitating the romance's main narrative. Unlike many other cases of automata termed by this thesis "Things of Brazen Color," there is no reason to infer that this "golden man" is more magical than mechanical in nature, as it is accompanied by avian automata that are quite plausible as mechanical objects and by the sable horse, which has implausible and quite magical functions, yet which nevertheless is actuated by a mechanical operation. Like this horse, the "golden man" may be imagined as a mechanical construct, and more so than Lancelot's copper knights, which is fictitiously endowed with functionalities exceeding the realm of the possible, at least in the Middle Ages. As such, the "golden man" is a step closer to the androids of contemporary science fiction than to demonic "Things of Brazen Color" in Arthurian literature, such as the automata of the *Perlesvaus* or the example already provided. This is not to say that the *Cléomadès*' three instances of automata are not presented in magical terms, which is certainly the case, but only that the conception of magic coupled with brass, copper, gold, and suchlike metals as the basis for automata is seemingly being augmented or giving way to mechanical realism by the late thirteenth century. As will be discussed in the subsequent entries, the romance's avian automata, while "magical," have striking similarities to actual automata in the era under consideration and in subsequent centuries. The conception underlying the sable horse, which is not a "Thing of Brazen Color" at all, originates with an articulation of the second current from medieval Arab fiction that, as in its adaptation in medieval European fiction, imbues an automaton with functionalities that exceed the bounds of plausibility, but which is crucially distinguishable by its identification of the sable horse's creation with secular craftsmanship, not with supernatural magic. The edition of the *Cleomades* known to this thesis is not recorded by the thesis' working notes as such, and these notes rather record that this work was authored in the Kingdom of France during the Middle Ages by Adenet le Roi, that is, by Adenet, the "king" of jesters, with "jester" here taking its broadest meaning of "courtly entertainer." The first primary source is taken from the 8th footnote on page 568 of Merriam Sherwood's "Magic and Mechanics in Medieval Fiction." Andre van Hasselt's nineteenth-century edition of the *Cléomadès* is available on the Internet Archive, where its first and second volumes are accessible under the call number "AIC-6625." The verses cited by Sherwood are on page 52 in the first volume, which is also the 52nd page on the facsimile maintained by the Internet Archive, and the presence of a description for automata at this page is identifiable by the telltale uses of the terms "nigromancie," "merveilleuse," and a footnote explaining an allusion to the classical Roman poet

**Kang Type 002, Instance 027 of 052, Cumulative Instance 031 of 409:
Melocandis' Golden Android in the *Cleomades*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a male herald. As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass” and “musician” by the thesis, as it had a brazen coloration and played a musical instrument. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is non-applicable, as it was freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

Virgil (Publius Vergilius Maro), who was regarded as a powerful sorcerer by the literate intellectuals of the Middle Ages. Sharon Farmer, in the first of the secondary sources cited below, does not reference an edition of the *Cléomadès*, but instead refers readers to H.S.V. Jones’ third secondary source in the 131st footnote on page 679 of “Aristocratic Power and the ‘Natural’ Landscape.” H.S.V. Jones, who numbers his footnotes anew on distinct pages, cites van Hasselt’s edition in the first footnote on page 225. Pages 224 – 229 of Jones’ work contain a summary of the romance. Information respective to patronage has been noted using the introduction in the van Hasselt edition, while this instance’s date of origin is given in this section by following Jones’ postulates on page 239 of his article, rather than van Hasselt’s introduction, which roundaboutly dates the *Cléomadès* to the year 1285 on page XXII. It is interesting that Count Robert II of Artois and his daughter, Mahaut, were closely involved with Adenet le Roi’s authorship of this romance, as their estate at Hesdin was notable for real automata.

**Kang Type 002, Instance 028 of 052, Cumulative Instance 032 of 409:
Baldigant's Golden Fowls in the *Cleomades*.³²**

³² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Sharon Farmer's "Aristocratic Power and the 'Natural' Landscape: The Garden Park at Hesdin, ca. 1291---1302," page 679; H.S.V. Jones' "The *Cleomades*, the *Meliacin*, and the Arabian Tale of the 'Enchanted Horse,'" pages 221---243, at 225; Merriam Sherwood's "Magic and Mechanics in Medieval Fiction," page 568; and Nadia Ambrosetti's *Cultural Roots of Technology*, pages 144 and 145. There is an inconsistency in the descriptions provided for this entry when the cited publications by Merriam Sherwood and H.S.V. Jones are comparatively reviewed. The former, Sherwood, writes on page 568 of "Magic and Mechanics in Medieval Fiction" that the *Cléomadès* contains "a singing hen of gold with three chicks," which are taken by the thesis to be three golden chicks, while the latter, Jones, writes on page 225 of his work that "Melocandis brings a man of gold with a golden trumpet; Baldigant, a hen with six chickens, all of gold and able to walk and sing..." While the cause of this divergence is unknown, the thesis favors Sherwood's account of Baldigant's automata. The presentation of animaloid and specifically avian figures in a familial arrangement, with the simulation of parent and offspring, recalls al-Jazari's Clock of the Peacocks, which similarly features a peahen and peachicks, with the addition of a peacock sire. In the case of the Clock of the Peacocks, the moving automata are affixed to the face of the clock and not autonomously mobile, or "freestanding." However, avian automata that visibly ambulated under their own power did appear in later centuries; a specific example is afforded by a refined automaton toy in the figure of a peacock which dates from the middle nineteenth century (see Chapuis and Droz, *Automata*, p. 171). While automata with self-contained mechanisms did appear in the periods relevant to this thesis, as in the famed case of the sixteenth-century automaton figure of Saint Diego de Alcalá, this development followed from the perfection of miniaturized clockwork. Such technology, and its attendant processes of fabrication and design, postdates the appearance of the *Cléomadès*, which is what lends Baldigant's fowls their "magical" aura as moving, singing constructs unaffixed to the machinery and power source of a larger device. With that said, the automata of this entry appear perfectly plausible as articles of technology to the modern, if not the medieval reader, for apart from the matter of locomotive power, which could easily have been resolved by clockwork, the simulation of birdsong is one of the hallmarks of pre-Modern and Early Modern automata as a topic, has been popular through the ensuing centuries, and is traceable to the classical Heronic corpus. In this entry, then, can be seen the tendency of speculative fiction, and specifically science fiction, to predict the emergence of new technologies, here small, self-contained automata, before the particulars of these developments have been settled. It would certainly be astounding if the automata of this entry represented an example of actual technology, as this would require the history of science to be re-chronicled, but it is not so great a conceptual leap as may be supposed to move from designing automata attached to stationary objects to designing freestanding automata untethered from their bases. If this entry does represent such a reconceptualization, it could be construed to indicate the aspirational nature of fiction, and especially science fiction, which extrapolates technologies of the future from those of the present. The *Cléomadès* is not, of course, a work of science fiction, as the defining features of that genre were not established, at least as they exist today, until the twentieth century. The thesis would contend, though, that this romance's automata do reflect an element of the speculative literary tradition. The edition of the *Cleomades* known to this thesis is not recorded by the thesis' working notes as such, and these notes rather record that this work was authored in the Kingdom of France during the Middle Ages by Adenet le Roi, that is, by Adenet, the "king" of jesters, with "jester" here taking its broadest meaning of "courtly entertainer." The first primary source is taken from the 8th footnote on page 568 of Merriam Sherwood's "Magic and Mechanics in Medieval Fiction." Andre van Hasselt's nineteenth-century edition of the *Cléomadès* is available on the Internet Archive, where its first and second volumes are accessible under the call number "AIC-6625." The verses cited by Sherwood are on page 52 in the first volume, which is also the 52nd page on the facsimile maintained by the Internet Archive, and the

**Kang Type 002, Instance 028 of 052, Cumulative Instance 032 of 409:
Baldigant's Golden Fowls in the *Cleomades*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a hen and generic chicken chicks of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “thing of brass” by the thesis, as they had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is not applicable, as they were freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

presence of a description for automata at this page is identifiable by the telltale uses of the terms “nigromancie,” “merveilleuse,” and a footnote explaining an allusion to the classical Roman poet Virgil (Publius Vergilius Maro), who was regarded as a powerful sorcerer by the literate intellectuals of the Middle Ages. Sharon Farmer, in the first of the secondary sources cited below, does not reference an edition of the *Cléomadès*, but instead refers readers to H.S.V. Jones’ third secondary source in the 131st footnote on page 679 of “Aristocratic Power and the ‘Natural’ Landscape.” H.S.V. Jones, who numbers his footnotes anew on distinct pages, cites van Hasselt’s edition in the first footnote on page 225. Pages 224 – 229 of Jones’ work contain a summary of the romance. Information on this instance’s patronage has been given by using the introduction in the van Hasselt edition, while its date of origin is given by following Jones’ postulates on page 239 of his article, rather than van Hasselt’s introduction, which roundaboutly dates the *Cléomadès* to the year 1285 on page XXII. It is interesting that Count Robert II of Artois and his daughter, Mahaut, were closely involved with Adenet le Roi’s authorship of this romance, as their estate at Hesdin was notable for real automata.

**Kang Type 002, Instance 029 of 052, Cumulative Instance 033 of 409:
Crompart's Sable Horse in the *Cleomades*.³³**

³³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Sharon Farmer's "Aristocratic Power and the 'Natural' Landscape: The Garden Park at Hesdin, ca. 1291---1302," page 679; H.S.V. Jones' *The Cleomades*, the *Meliacin*, and the Arabian Tale of the 'Enchanted Horse,'" pages 221-243, at 225---226, 227, 229; Merriam Sherwood's "Magic and Mechanics in Medieval Fiction," page 568; and Nadia Ambrosetti's *Cultural Roots of Technology*, pages 141 (which is errored), 144, 145, and 153. The provenance of this fictive automaton is quite complex and reflects the eclecticism of its source. Jones, on pages 242-243 of his work, attributes the origin of Adenet le Roi's romance to Blanche of France, Infanta of Castile, who related the preexisting plot of a now-lost Spanish poem, according to Jones' conjecture, to Adenet, the so-called "King of Minstrels," upon her return from the Kingdom of Spain. This conjectured Spanish poem, a work of courtly literature comparable to Adenet's output, is argued by Jones to have in turn been based upon Arab tales which entered the Iberian Peninsula after its conquest by the Umayyads. While the conceit of an "enchanted horse" in the *Cléomadès*, its supposed Spanish predecessor, and in the underlying narrative adapted by that predecessor from the Arabian Nights would seem *prima facie* contrary to the thesis' interpretation of the second current of thought, which indicates that the conceptualization of automata which prevailed in the Arab world and in Asia was non-magical and based in secular craft and science, a careful examination of the Arab folklore surrounding "enchanted horses" as represented in Jones' work indicates that they were not magical constructs in the same sense as those in European literature; they are only "magical" in that their functionality is extended beyond the realm of the possible, and not in that their operation is based in supernatural sorcery, necromancy, Hermetical imprisonments of demonic intelligences, etc. While the three Arab textual antecedents which may have informed the lost poem known to Blanche of Castile, and thus the *Cléomadès*, are stated by Jones on pages 232-233, and are subsequently compared by him to evaluate their respective similarities to Adenet's romance, Jones at once calls the third of these, the version furnished to Antoine Galland by a Maronite Christian named Hanna in 1709, "a true folk-tale variant" and "an early version of which Bulak and Habicht [the other two] represent later stages" on pages 234-237, yet nevertheless concludes on pages 237 and 243 that Hanna's version is of least significance in reconstructing the lost Spanish poem relayed to Adenet by Blanche. In fairness to Jones, this opinion is based on his comparative analysis of similarities in the entire plot of *Cléomadès* to those of the Habicht and Bulak sources, not to specific presentations for "enchanted horses" in these works. If we take Jones' own characterization of the relationship between the Galland, Habicht and Bulak versions to be accurate, Jones' description of the "enchanted horse" in the first such source on page 236 is notable, as it establishes that, in what is arguably the original Arab tale, the horse simply has a "maker." This person was presumably a craftsman, as Jones could certainly have made recourse to the many synonyms for a practitioner of magical and/or diabolic arts (mage, conjurer, sorcerer, necromancer, wizard, enchanter, warlock) if any of these terms was appropriate for his summary. Interestingly, the horse in Hanna's version is still actuated by the same mechanism seen in the *Cléomadès* and in *The Canterbury Tales*, namely a pin which protrudes from the horse and which is turned by its user. However, Jones also states that the horse, in Hanna's version, was "to all appearances a horse of flesh and blood," which suggests that the horse may not have been a true automaton in the original Arab telling, but what would now be termed a cybernetic organism, or cyborg. Were this the case, the pin-driven mechanism which spontaneously produces levitation and aerial flight at extreme speed, all without harming the rider, would have been implanted into a living horse, not built into a machine with the figure of a horse. Since Jones does say that Hanna's horse is unambiguously "artificial," however, it could simply be the case that the horse is a spectacularly realistic automaton in Hanna's version. Absent Jones' authority, this point is unclear. The edition of the *Cleomades* known to this thesis is not recorded by the thesis' working notes as such, and these notes rather record that this work was authored in the Kingdom of France during the Middle Ages by

**Kang Type 002, Instance 029 of 052, Cumulative Instance 033 of 409:
Crompart's Sable Horse in the *Cleomades*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source is unknown to this thesis, but was actuated with a protruding pin. It contained the figure of a horse of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

Adenet le Roi, that is, by Adenet, the “king” of jesters, with “jester” here taking its broadest meaning of “courtly entertainer.” The first primary source is taken from the 8th footnote on page 568 of Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction.” Andre van Hasselt’s nineteenth-century edition of the *Cléomadès* is available on the Internet Archive, where its first and second volumes are accessible under the call number “AIC-6625.” The verses cited by Sherwood are on page 52 in the first volume, which is also the 52nd page on the facsimile maintained by the Internet Archive, and the presence of a description for automata at this page is identifiable by the telltale uses of the terms “nigromancie,” “merveilleuse,” and a footnote explaining an allusion to the classical Roman poet Virgil (Publius Vergilius Maro), who was regarded as a powerful sorcerer by the literate intellectuals of the Middle Ages. H.S.V. Jones, who numbers his footnotes anew on distinct pages, also cites van Hasselt’s edition in the first footnote on page 225. Pages 224 – 229 of Jones’ work contain a summary of the romance. Information regarding this instance’s patronage is given by following the introduction in the van Hasselt edition, while this instance’s date of origin is given following Jones’ postulates on page 239 of his article, rather than van Hasselt’s introduction, which roundaboutly dates the *Cléomadès* to the year 1285 on page XXII. It is interesting that Count Robert II of Artois and his daughter, Mahaut, were closely involved with Adenet le Roi’s authorship of this romance, as their estate at Hesdin was notable for real automata.

**Kang Type 002, Instance 030 of 052, Cumulative Instance 034 of 409:
The Horse of Brass in *The Canterbury Tales*.³⁴**

³⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Joyce Tally Lionarons' "Magic, Machines, and Deception: Technology in *The Canterbury Tales*," pages 377---378, 382, 383---384; Minsoo Kang's *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 67---68; and Nadia Ambrosetti's *Cultural Roots of Technology*, pages 153 and 220. This horse is clearly derived, although through a provenance chain unknown to this thesis, from Crompart's horse in the *Cléomadès*, or from some version of the latter's predecessors. Chaucer establishes the more magical nature of this entry, as consistent with the conjunction of the third and fifth currents of thought, by making it a "Thing of Brazen Color," whereas the horse of the *Cléomadès* was black (sable or jet) in coloration. A golden appearance signifies the use of magic in construction of the horse, unlike another horse in Jones' characterization of what may have been the Arab folktale which inspired subsequent appearances of the "artificial flying horse" in European literature. Kang, on page 68 of *Sublime Dreams of Living Machines*, confirms that Chaucer explicitly situates the horse of brass in the *Squire's Tale* within the traditional, mystical understanding in medieval European culture of how automata may be crafted, which namely entails an incantation or other invocation of supernatural power which contains the same in a material object, which is then transmogrified into a (usually metallic) lifeform beneath a night sky with astronomical and/or astrological conditions auspicious for that purpose; this concept, as discussed by Truitt, is Hermetic in origin. Certainly, Chaucer's horse of brass, a magical construct, has more "magical" capabilities by comparison with the traditional Arab-world version reported by the Maronite Christian Hanna to Galland per Jones, and as discussed in entry II-029. Unlike Hanna's horse, which appears to have had a single protruding pin, was not golden in color, and which was capable of midair flight at tremendous speed while transporting a rider, Chaucer's horse has three protruding pins, is a "Thing of Brazen Color," and besides retaining the flight capabilities of Hanna's horse, can also disappear. Jones' article only establishes that the pin on the original steed activated its sudden, almost superluminal speed, without stating that this same control mechanism is also used to stop the horse. A multi-position "go-stop" function on this pin would be required for the one-pin configuration unless the mount, much like a typical horse, could respond to verbal commands and intuit its situation, but designing the pin with a "go" function and not the corresponding "stop" function would beg the question as to why the pin is even necessary, except, of course, that its presence underscores the horse's artificiality. Chaucer resolves this problem by describing three pins for his horse of brass. The first, according to Lionarons' account on page 378 of "Magic, Machines, and Deception," extends from one of the horse's ears and activates near-instantaneous flight to the destination; the second, in an unspecified location on the horse, deactivates this flight, although the rider, before turning the second pin and "dropping out of warp," as the thesis envisages this scenario, must still direct the horse to land, suggesting at least the same degree of animal intelligence in the fictitious, brazen creature which is seen in actual horses; the third, in an unspecified location on the horse, causes it to disappear from sight independently of any flight sequence initiated by triggering the first pin. Since the horse would presumably seem to disappear while rapidly accelerating and flying at its considerable speed, the third pin would presumably achieve this same effect while the horse of brass was stationary or simply moving on the ground. More so than certain later developments in European folktales, such as seven-league boots, Chaucer's horse of brass, even if steeped in pre-Modern notions of magic, is undeniably operated as a work of technology (or to use Lionarons' phrase on page 378, it has a "distinctly mechanical nature"), and its farsighted anticipation of what seems to be a near-superluminal "warp" drive, a very fast subluminal drive, warrants recognition by modern scientists. The edition of *The Canterbury Tales* and *The Squire's Tale* known to this thesis is not recorded by the thesis' working notes as such, and these notes rather record that these works were authored by Geoffrey Chaucer in the Kingdom of England thereabout the year 1400, with that date of dissemination being an approximation. Primary Source 01 in the above section is taken from the 3rd

**Kang Type 002, Instance 030 of 052, Cumulative Instance 034 of 409:
The Horse of Brass in *The Canterbury Tales*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source is unknown to the thesis, but was actuated with a protruding pin. It contained the figure of a horse of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular

endnote on page 385 in Joyce Tally Lionarons’ “Magic, Machines, and Deception,” while the numbers which cite specific passages from *The Canterbury Tales*’ *Squire’s Tale* in *The Riverside Chaucer* edition appear on pages 377 and 378 in Lionarons’ article. Minsoo Kang, in *Sublime Dreams of Living Machines*, cites a different edition of the *Squire’s Tale* in *The Canterbury Tales*, and The second primary source is taken from Kang’s 48th endnote for his second chapter, “Between Magic and Mechanics: The Automaton in the Middle Ages and the Renaissance,” which is on page 321. The page numbers from the Robinson edition cited by Kang under The second primary source are taken from Kang’s 50th and 51st endnotes for his “Between Magic and Mechanics” chapter, which are also on page 321 at the end of Kang’s volume. This instance’s patronage information and point of origin are considered common knowledge, and information which establishes Geoffrey Chaucer’s patronage relationships with John of Gaunt and Richard II, as well as the interval in which *The Canterbury Tales* was composed by Chaucer (which concluded with that author’s death), can often be found in editors’ introductions to both old and new editions of *The Canterbury Tales*, whether as omnibuses with Chaucer’s other works or as standalone copies.

Kang Type 002, Instance 030 of 052, Cumulative Instance 034 of 409:
The Horse of Brass in *The Canterbury Tales*.

and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations;

**Kang Type 002, Instance 031 of 052, Cumulative Instance 035 of 409:
The Birds of the Tree in *Wolfdietrich*.³⁵**

³⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Merriam Sherwood's "Magic and Mechanics in Medieval Fiction," page 569; and Nadia Ambrosetti's *Cultural Roots of Technology*, page 143. The 1st current of thought is warranted for two reasons. Firstly, the protagonist of the source romance, while having a Germanic name, is portrayed as "Grecian" (see Weber, page 101) and is thus the mirror image of the protagonist in *Lybistros and Rhodamne*, a Byzantine romance containing automata, who has a Greek name but is portrayed as a Germanic hero. Secondly, the technology underlying the present fountain tree is Heronic, as is typical for fountain trees, and the tree is not a "false automaton" because the birds' songs are not wholly determined by a man-in-a-suit arrangement (concealed human operator). The 2nd current of thought is applicable in this case neither because this instance of fictitious automata is represented as originating with the Islamic cultures of western Asia or northern Africa, nor with the cultures of eastern Asia, but with an interesting depiction of Slavic pagans in Russia. The first four lines under "Adventure IV" in Weber's edition roughly establish, despite Weber's disparagement of von Eschenbach's skill as a "geographer" in the first footnote on page 101, that *Wolfdietrich* sailed from Jerusalem to Buda, modern Budapest, indicating transit through the Dardanelles, the Bosphorus, and then up the Danube from the Black Sea. One can infer that *Wolfdietrich* then travelled overland from the Kingdom of Hungary to the lands of Rus', which for unknown reasons may have been more practical than making an approach due north from the northern shores of the Black Sea. The lines establishing this itinerary, from page 101 of the Weber edition, are "And now the Grecian hero from the holy city hied: His ship with gentle gales sailed o'er the ocean-tide: Among the savage Paynims [Pagans] he came to Russian land; His ship he left at Budin, and leaped upon the strand." The thesis will leave aside, in considering this romance, the improbability of sailing upriver on the Danube with a medieval vessel. Here, we have the second, Asiatic current newly situated in Eastern Europe by a Western European romance. As in the *Roman van Walewein*, there is no recourse to magical explanations for operation of the fountain-tree automata encountered by *Wolfdietrich*, and "magical" events prior to the tree's presentation, while described as such in *Wolfdietrich*, can be demystified as deployments of a sedative and the rapid, controlled flooding of a large dry moat. As to the tree itself, *Wolfdietrich*'s description is unambiguously non-magical and surprisingly detailed: the final verse lines on page 103 in Weber's edition read "Through the stem and branches silver reeds [pipes] ascended, / Quaintly framed by master's hand, in the birds they ended: Bellows drove the wind through the reeds along; Nightingales and thrushes there sweetly tun'd their song." Bellows are again prominent in this tree. The edition of *Wolfdietrich* known to this thesis is that from the *Heldenbuch*, Volume I, edited by Friedrich Heinrich von der Hagen and published at Leipzig in the year 1855, during the era of the German Confederation. That date of publication is not an approximation. For the classical technology which undergirds this representation of automata in a work of fiction from the Middle Ages, see Bur, "T5: Singing Birds," pages 155—165, in her work, "Mechanical Miracles: Automata in Ancient Greek Religion." The first primary source is taken from Merriam Sherwood's 13th footnote on page 569 in "Magic and Mechanics in Medieval Fiction." Both volumes of the von der Hagen edition to which she refers are available on the Internet Archive under the searchable call number "AEQ-1745;" the first volume, which contains the 567–568th stanzas per Sherwood's footnote, is 682 pages in length (it is not numbered distinctly on the Internet Archive), with these two stanzas on the two-page spread given at the 364th page of the digital facsimile in correspondence with von der Hagen's 232nd and 233rd pages. The second primary source, an earlier English translation of the same primary source which is presented in its original Middle High German by von der Hagen, is also available on the Internet Archive, where it is available from the University of California Libraries' collections under the searchable call number "LAGE-1668731." The page numbering for the digital facsimile of The second primary source follows that of the original volume, so navigating to page 102 under a two-page view will produce the site of this entry's appearance in Weber's edited translation.

**Kang Type 002, Instance 031 of 052, Cumulative Instance 035 of 409:
The Birds of the Tree in *Wolfdietrich*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was pneumatic. It contained the figures of generic birds of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a fountain tree. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

Information regarding this instance’s patronage, place of origin, and time of origin is derived from The second primary source’s introduction, which was also written by Weber, where this information is stated on pages 21–22. That Hermann I was Wolfram von Eschenbach’s patron is common knowledge which Weber states on page 22, in the introduction, by providing Hermann’s title, although he does not bother to name him explicitly, while von Eschenbach’s involvement in compiling the original *Heldenbuch*, as indicated by the Weber introduction, is corroborated by the entry for “Heldenbuch, The” on pages 176–177 of Lewis Spence’s 1913 *A Dictionary of Medieval Romance and Romance Writers*, a general reference work. Spence differs from Weber by dating von Eschenbach’s involvement with the *Heldenbuch* to “the end of the twelfth century,” but this is not more than ten years prior to 1207, the approximate date selected by Weber to specify when von Eschenbach “flourished.” The attribution to von Eschenbach and his patron is not firm and does not rest in *Wolfdietrich*’s extant manuscripts, to the thesis’ knowledge, but represents Victorian and *Belle Époque* medievalists’ tendency to associate literary works with recognizable figures.

**Kang Type 002, Instance 032 of 052, Cumulative Instance 036 of 409:
Adrastus of Argos' Golden Eagle in *Le Roman de Thebes*.³⁶**

³⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Penny Sullivan's "Medieval Automata: The 'Chambre de Beantes' in Benoit's *Roman de Troie*," pages 3---4. While the power source for this automaton is given as "Aeolian," or driven by the wind, the device is also photosensitive, or as Sullivan states on page 4 of "Medieval Automata," it "responds to sunlight and wind." Since the development of photodetectors postdates the source romance by many centuries, recourse is made to "magic." It would seem, although this is not established in the source text, that the device may have functioned rather like an alarm clock, for if Sullivan's semantics are accurate, and flames only issued from this construct when it sensed both sunlight *and* wind, it would presumably have been activated by the first breezes after dawn on any given day. If this were the case, however, it would ideally be supplied with a shutoff switch, as it would otherwise continue belching bursts of flame. Producing this effect throughout the day might admittedly have been more impressive. For purposes of conformity with all other entries, the photosensitive element of this automaton's activator, whether independent or in a light-wind conjoint, has been disregarded, as this is the only pre-Modern/Early Modern automaton with photonic responsiveness. The 1st current of thought applies here because Adrastus, the automaton's user and owner, was King of Argos, the 3rd current because this automaton is clearly a "magical" object in the form of what the thesis has termed a "Thing of Brazen Color," and the 5th current because King Adrastus' golden eagle appears in a medieval, western European romance. In considering the "magical" nature of this automaton, the conjecture is offered by this thesis that the eagle is a fantastical fictionalization of a fire-blower (aeolipiles), an article of pre-Modern and Early Modern technology discussed by Lynn White in her work *Medieval Technology and Social Change* and by W.L. Hildburgh in the 1951 article "Aeolipiles as Fire-Blowers" per Minsoo Kang's 71st endnote for the 2nd chapter in *Sublime Dreams of Living Machines*, which is on page 322 of that volume. A fire-blower, as described by Kang in the endnote, was "a hollow metal vessel that was filled with water and heated. A blowing device then sent steam and water out of it through a hole and onto a fire, making the flames flare up." Thus, historical flame-blowers did not shoot fire like flamethrowers, but rather stoked existing fires like bellows. White accounted for the legendary automaton ascribed to Saint Albertus Magnus, Doctor of the Church, by identifying that automaton with the fire-blowers discussed in *De Meteoris*, one of Albertus' treatises, but Kang is unconvinced by White's argument. Two extant examples of this technology which antedate 1651 may be viewed online: the 1st, from The British Museum, was worked into the shape of a black African's head and is searchable under the accessioning (museum) number "SLMisc.1112;" the 2nd, called an "Aeolipile in the Form of a Crouching Fat Man," was the 16th lot sold under the Winter Collection by Sotheby's in December 2015, but it retains a listing accessible on the Sotheby's online catalog as of this writing. The fictive eagle automaton could be construed as a fire-blower which truly blew fire, not steam. Inspiration for this flight of fancy may have been taken not only from the technology of fire-blowers, but also from that of Byzantine Greek Fire, which could be directed in a stream analogous to that released by a modern flamethrower. As in so many fictitious automata of the pre-Modern and Early Modern periods, then, this instance has a veneer of "magic," reducible to its mysterious method of actuation, which is undergirded by two plausible technologies, which are namely the combination of a fire-blower as a technological object and Greek Fire as a technological achievement. And indeed, is it so improbable that the author of a medieval romance would equip the wondrous tent of Adrastus, the classical Greek King of Argos, with a light and wind-sensing automaton which spewed Greek Fire? The edition of *Le Roman de Thebes* known to this thesis from consultation of the above work is that published by Guy Raynaud de Lage at Paris in the years 1966 and 1968, during the era of the French Fifth Republic. These dates of publication are not approximations. The above primary source is taken from the 8th endnote on page 18 of Penny Sullivan's "Medieval Automata." Another edition of *Le Roman de Thèbes* was cited in E.R. Truitt's *Medieval Robots*; for further information on that 1890 edition by Léopold Constans, see The first

**Kang Type 002, Instance 032 of 052, Cumulative Instance 036 of 409:
Adrastus of Argos' Golden Eagle in *Le Roman de Thebes*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was aeolian, that is, wind-driven. It contained the figure of an eagle of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a tent flap. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

primary source under entry I-001. Truitt does not note the automaton under consideration, which does not move with any motion described by the source romance, but the thesis’ operative conceptual definitions for “automata” suggest that it is an instance of the same, in accords with Sullivan’s inclusion of this device in her work, because it appears to react to external stimuli and emits something (a jet of fire, in this instance) from an orifice, suggesting intentionality and biological processes. The two lines which describe this automaton are provided by Sullivan on page 4 of “Medieval Automata” and are cited in an accompanying parenthetical in that article, with the parenthetical’s line numbers appended to Sullivan’s endnote in the first primary source given above.

**Kang Type 002, Instance 033 of 052, Cumulative Instance 037 of 409:
Odoric of Pordenone's Chinese Peacocks in *The Travels of Sir John Mandeville*.³⁷**

³⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Minsoo Kang's *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 67; and E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 37. The 1911 edition of the *Encyclopædia Britannica* and 1913 edition of the *Catholic Encyclopedia*, two general reference works, both contain entries for "Jehan de Mandeville" and "Jean de Mandeville," respectively. The former was of greater use in research conducted for this entry, as it presents theories advanced by a Dr. G.F. Warner to the effect that the "Johan de Bourgoyne" mentioned by the parliamentary records of the Kingdom of England in the years 1321 and 1322 was Magister Iohannes de Bourgogne ad Barbam, "Master John the Bearded of Bourgogne," who is credited by Otto Hartig's 1913 *Catholic Encyclopedia* entry as the sole, true author of *The Travels of Sir John Mandeville*; in the interpretation advanced by the *Catholic Encyclopedia*, which has long been the prevailing (although not undisputed) opinion of scholars, "John Mandeville" is a fictitious persona devised by Magister Iohannes, and the two individuals are one and the same. However, Dr. G.F. Warner, as referenced by the 1911 *Encyclopædia Britannica* entry, noted that one of the parliamentary documents which named "Johan de Bourgoyne," that dated August 20, 1321, also named a "Johan Mangevilayn;" this leads the 1911 entry, following Warner, to suggest either that Magister Iohannes used the name of an individual known to him, "Johan Mangevilayn," to create the fictitious "Sir John Mandeville," or that, in accordance with the text of *The Travels*, the real-life Mandeville, "Mangevilayn," did encounter Magister Iohannes, that they "were in Egypt together, met again at Liège, and shared in the compilation of the Travels," as was written by Edward Williams Byron Nicholson and Henry Yule, authors of the "Jehan de Mandeville" entry in the 1911 *Encyclopædia Britannica*. In the second of these two interpretations, which is admittedly less plausible, Magister Iohannes functioned as the patron for *The Travels of Sir John Mandeville*, for the text of that primary source establishes that he encouraged and assisted the titular Sir John ("Mangevilayn") to record his experiences. Their combined efforts under this interpretation could more accurately be characterized as those of colleagues in a plagiaristic enterprise, as *The Travels* is a hodgepodge of real travel itineraries accreted into an overarching fictionalization pervaded by the medieval penchant for exaggeration. Yet regardless of whether the connection between Magister Iohannes and "Johan Mangevilayn" was mere coincidence, whether Magister Iohannes did actually use "Mangevilayn" as the inspiration, in name or character, for "Sir John Mandeville," or whether the good magister and "Mangevilayn" did actually collaborate to produce *The Travels of Sir John Mandeville*, Magister Iohannes de Bourgogne ad Barbam must remain the patron of this work on grounds of textualism, as he is presented as such in that primary source. If these two men did create *The Travels*, as indicated by the text, the motive for their joint plagiarism must have been that ascribed to Magister Iohannes by Hartig's entry in the *Catholic Encyclopedia*, which was namely that "Having visited no foreign country except Egypt, he was [they were] compelled to make use of the descriptions of others..." Moving from these points on patronage, the dating of *The Travels* as stated above is drawn from page 67 in Minsoo Kang's *Sublime Dreams of Living Machines*, where the full range of possible years is provided; Truitt, on page 36 of *Medieval Robots*, writes that it was "written in Anglo-Norman French around 1357." Like the one other entry from *The Travels* sorted under Kang's second type, the peacocks in Primary Sources 1 and 2, the subject of this entry, are fictionalizations of real automata that will elsewhere be discussed under the sub-section for Kang's third type. The edition of *The Travels of Sir John Mandeville* known to this thesis from consultation of the above work appears in the first volume of *Mandeville's Travels: Texts and Translations*, which was edited by Malcolm Letts and published at London, in the United Kingdom, in the year 1953. That date of publication is not an approximation. The first primary source is taken from Minsoo Kang's 45th endnote for the 2nd chapter in *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, which is on page 321 in that volume. While The second primary source originates with E.R. Truitt's *Medieval*

**Kang Type 002, Instance 033 of 052, Cumulative Instance 037 of 409:
Odoric of Pordenone's Chinese Peacocks in *The Travels of Sir John Mandeville*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of peacocks. As described in the consulted sources, this instance’s figures partook of the form termed “things of brass” by the thesis, as they had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is not applicable, for in Mandeville’s telling, they are freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

Robots: Mechanism, Magic, Nature, and Art, it requires slightly more explanation, as this work features an unnumbered table of abbreviations in its front matter that provides bibliographic information for the edition of *The Travels of Sir John Mandeville* consulted by Truitt. Accordingly, the 120th endnote for *Medieval Robots*’ 1st chapter uses one of the declared abbreviations, “MT,” on page 167, which appears with a reference to the 157th page in M.C. Seymour’s publication. “The second primary source,” as rendered above, is a portmanteau of the edition provided by Truitt’s abbreviation and its cited page number.

**Kang Type 002, Instance 034 of 052, Cumulative Instance 038 of 409:
Don Antonio Moreno's Brazen Head in *Don Quixote*, Part II.³⁸**

³⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Minsoo Kang's *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 95; Chapuis & Droz's *Automata: A Historical and Technological Study*, page 321; and Elizabeth King's "Perpetual Devotion: A Sixteenth-Century Machine that Prays," in Jessica Riskin's edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, page 284, which draws a comparison between the false talking head in *Don Quixote*, Part II, the present instance, and Albertus Magnus' brazen android. The latter is misidentified by King, who follows a short 1696 catalog of ancient and pre-Modern automata by the Calvinist author John Edwards in which Albertus Magnus' android is misidentified as a "speaking head," and this becomes the basis of King's comparison. As discussed by Kang in *Sublime Dreams of Living Machines*, the sixth current of thought is appropriate in this case because the appearance of entry II-034, a false automaton, in the year 1615 is an accurate bellwether of declining belief in "magic," and specifically in the sort of magic believed by medieval people to allow sorcerous summons of supernatural spirits, such as devils, and the entrapment of these spirits in physical effigies to animate such figures, as outlined by Truitt in *Medieval Robots*. Thus, Don Antonio Moreno's false brazen head in the second part of *Don Quixote* does not signify the end of "magic" as a factor in the *weltanschauung* of seventeenth-century Europeans, since witch hunts would continue in the era of the English Civil War under Matthew Hopkins, "Witchfinder General," and even extend beyond Europe proper, as in the Salem Witch Trials, and neither does it signify the end of automata in fiction, but it does signify an end for the conjoint of two pre-Modern/Early Modern concepts identified as "forms" by this thesis, "Things of Brazen Color" as "Divinatory Intelligences," which produced the traditional "talking head" in intellectual and cultural history; or as Kang puts it, Don Antonio's false automaton signifies "the definitive end of the legends of the talking head as an object of theurgical magic." This is significant, as it shows that, by 1615, the idea of "magic" had become decoupled from the creation of objects that appeared to demonstrate some semblance of life, such as movement or speech, and this does stand to reason, as the ubiquity of real automata by that date in Europe necessitated this outcome. While the engineers of the fourteenth century might be called wizards under the fourth current of thought, the intervening centuries totally eroded that current's conflation of the possibilities offered by "magic" with those of science, engineering, and the physical world. Since one whole ontological category of a worldview which admits the efficacy of "magic," the "magical automaton," is shown to have passed from existence by 1615, the subject of this entry should be considered a mark of progress, and it was likely viewed as such by Cervantes' contemporary audience. Rather than a fearsome object of a kind with Arthurian copper knights, or especially the brass bull of the *Perlesvaus*, this false brazen head was instead "for his [Don Antonio's] amusement and to astonish ignorant people," and after Don Quixote hears the characteristic tropes which surrounded this and all brazen heads, being told that it was crafted "by a great enchanter" (in Kang's words), the Man of La Mancha's acceptance of the false automaton as an authentically "magical" object becomes the grist of satire. Due to the turning of this satire upon the apprehension, or misapprehension, of "magic," the third current is warranted, and since *Don Quixote* is a work of pre-Modern/Early Modern European fiction, the fifth current is warranted. As a final note, this entry does not comport with Kang's system, as it is a fictitious, pre-Modern/Early Modern automaton that is neither divine nor magical, although in fairness to Kang, he may not have envisioned the extension of his system into the technological and cultural milieu of the early and middle seventeenth century, which ended on December 31, 1650 for purposes of this thesis. The edition of *Don Quixote*, including Part II, known to this thesis from consultation of the above work is that translated in the nineteenth century by John Ormsby and reprinted at New York, in the United States of America, in the year 1981. That date of publication is not an approximation. The first primary source is taken from Minsoo Kang's 149th endnote for the second chapter, "Between Magic and Mechanics: The Automaton in the Middle Ages and the Renaissance," from his work *Sublime Dreams*

**Kang Type 002, Instance 034 of 052, Cumulative Instance 038 of 409:
Don Antonio Moreno's Brazen Head in *Don Quixote*, Part II.**

This fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was supplied by a concealed human. It contained the figure of a talking human head, a largely medieval conceptualization typically represented with the male gender. As described in the consulted sources, this instance’s figures partook of the forms termed “thing of brass” and “divinatory intelligence” by the thesis, as it had a brazen coloration and, in accordance with its conceptualization, was intended to prognosticate future events. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a darkened room. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own

of Living Machines: The Automaton in the European Imagination, which is on page 327 of that volume. Alfred Chapuis and Edmond Droz casually refer to the same automaton documented by this entry in an allusion on page 321 of their work *Automata: A Historical and Technological Study*, but they do not reference an edition of *Don Quixote* (Segunda Parte) in an accompanying note. Information presented above respecting the patronage and provenance of the second part of Miguel de Cervantes’ *Don Quixote* is common knowledge, but it can easily be corroborated by reading the title page of original seventeenth-century first editions preserved and displayed in institutions such as the Museum and Library of The Hispanic Society of America, which holds a 1615 copy in its reserve collection under call number “PQ6323. A3 1615.” While that specific document was not physically consulted for this thesis, the title page of that same first edition, which was printed by Juan de la Cuesta and merchandised by the bookseller Francisco de Robles, was digitally photographed as it existed in a private collection at the Prado Museum thereabout January 2017, and the resultant high-resolution image is readily accessible via the Internet. Count Pedro was called “The Great Count of Lemos,” an honorific style.

Kang Type 002, Instance 034 of 052, Cumulative Instance 038 of 409:
Don Antonio Moreno's Brazen Head in *Don Quixote, Part II*.

"progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 002, Instance 035 of 052, Cumulative Instance 039 of 409:
The Automata of the Engine-Houses in *The New Atlantis*.³⁹**

³⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Minsoo Kang's *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 140---141. Kang quotes the *New Atlantis* directly on page 141 of *Sublime Dreams*: Bacon's utopia, and specifically "Salomon's House," its center of higher learning, contains "engine-houses, where are prepared engines and instruments for all sorts of motions... motions of living creatures, by images of men, beasts, birds, fishes, and serpents." Kang identifies these "images," a term which is the direct descendent of "ymages," the name typically used in earlier fiction for magical automata, as the same sort of objects, automata, but unlike most "ymages" in medieval fiction, there is no suggestion that those of the "engine-houses" operate by divine or arcane magic. Indeed, Bacon's "engine-houses" are primordial sites of empirical experimentation, and this instance's setting is accordingly a "laboratory." Like entry II-034, then, the automata in this entry, which were developed in fictitious engine-house (engineering) labs imagined ca. 1627, cannot be reconciled with Kang's system – while fictitious, they do not originate with the magic of a deity per Kang's first type, or with that of a magus per Kang's second type. As was said in the notes for entry II-034, Kang's system appears to have been developed to describe the automata of fictitious works which do not postdate the Late Middle Ages, and as such, it seems difficult to fault Kang for the shortcomings of his four-type system. Kang discusses this instance of automata in the chapter which succeeds that for the Middle Ages and Renaissance, which might be taken as clear proof that entry II-035 is relevant to this thesis, but beyond Kang's typology, yet the date given for the appearance of this instance by Kang, 1627, still places it prior to the scope of the post-Early Modern discussion he mounts in his third chapter, which is nominally concerned with the years 1637–1748. For that reason, it is believed by this thesis to be both germane for its own argument, within its own definitional bounds, but also to fall under Kang's typological system by the organizational scheme of Kang's own book. As one last point, it should be noted that the "beasts" mentioned as automata by Bacon have not been tracked in this entry, as the term "beasts" is not specific enough to satisfy the parameters of exactitude established for the controlled vocabulary scheme implemented for the thesis' cataloging effort. The edition of *The New Atlantis* known to this thesis from consultation of the above work is that included in *Francis Bacon: A Critical Edition of the Major Works*, which was edited by Brian Vickers and published at Oxford, in the United Kingdom, in the year 1996. That date of publication is not an approximation. The first primary source, the Vickers edition of Sir Francis Bacon's works, including the *New Atlantis*, is taken from Minsoo Kang's 154th and 155th endnotes for the third chapter, "The Man-machine in the World-machine, 1637–1748," from *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, and these endnotes on page 337 of Kang's volume together provide the source information and relevant page numbers for this instance of automata. Bacon's *New Atlantis*, according to its entry in the online version of Lyman Tower Sargent's *Utopian Literature in English: An Annotated Bibliography From 1516 to the Present*, was published in 1627, which accords with Kang's reference to the work on page 141 of *Sublime Dreams*, and Sargent's compendium establishes that the *New Atlantis* was first published in the city of London. While Bacon had previously been patronized by Sir Francis Walsingham and Robert Devereux, 2nd Earl of Essex, per the entry "Francis Bacon" in the online edition of the *Stanford Encyclopedia of Philosophy*, a general reference work, the unfinished *New Atlantis* (Latin, *Nova Atlantis*) was presumably begun after Bacon left public life in 1621 under unfavorable circumstances described in the named encyclopedia. Since Bacon retained sufficient wealth after this exit to obviate the necessity of attaching himself to a credited patron before his death in 1626, and the *New Atlantis* was published posthumously, the question of this work's patronage is considered inapplicable, or less applicable than the case of traditional patronage relationships, which are comprised of living patrons and clients.

**Kang Type 002, Instance 035 of 052, Cumulative Instance 039 of 409:
The Automata of the Engine-Houses in *The New Atlantis*.**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a generic man, a generic bird of unknown or unspecified gender, a generic fish of unknown or unspecified gender, and a generic serpent of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a laboratory. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or “reclamation” of classical Greek and Roman civilizational achievements.

**Kang Type 002, Instance 036 of 052, Cumulative Instance 040 of 409:
The Pilot of the Third Calendar's Story in *The One Thousand and One Nights*.⁴⁰**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a male sailor, a ship’s pilot. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁴⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 102. The edition of *The One Thousand and One Nights*, also known as *The Arabian Nights*, known to this thesis from consultation of the above work is not recorded in the thesis’ working notes.

**Kang Type 002, Instance 037 of 052, Cumulative Instance 041 of 409:
The Indian Sage's Golden Android in *The One Thousand and One Nights*.⁴¹**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a herald. As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass” and “gatekeeper” by the thesis, as it had a brazen coloration and, in some sense, monitored a threshold. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a gate. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁴¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 102 and 103. The edition of *The One Thousand and One Nights*, also known as *The Arabian Nights*, known to this thesis from consultation of the above work is not recorded in the thesis’ working notes.

**Kang Type 002, Instance 038 of 052, Cumulative Instance 042 of 409:
The Automata of the Greek Sage's Clepsydra in *The One Thousand and One
Nights*.⁴²**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a peacock and peacock chicks of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “thing of brass” by the thesis, as they had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a chamber clock. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁴² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 103 and 104. The edition of *The One Thousand and One Nights*, also known as *The Arabian Nights*, known to this thesis from consultation of the above work is not recorded in the thesis’ working notes.

**Kang Type 002, Instance 039 of 052, Cumulative Instance 043 of 409:
The Persian Sage's Ebony Horse in *The One Thousand and One Nights*.⁴³**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a horse of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is non-applicable, as it was freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁴³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 103, 104, 153, and 220. The edition of *The One Thousand and One Nights*, also known as *The Arabian Nights*, known to this thesis from consultation of the above work is not recorded in the thesis’ working notes.

**Kang Type 002, Instance 040 of 052, Cumulative Instance 044 of 409:
The Footmen at the Castle of Dunostre in *Huon de Bordeaux*.⁴⁴**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of generic men. As described in the consulted sources, this instance’s figures partook of the form termed “thing of brass” and “gatekeeper” by the thesis, as they had brazened colorations and, in some sense, monitored a threshold. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a castle. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁴⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 140. The edition of *Huon de Bordeaux* known to this thesis from consultation of the above work is not recorded in the thesis’ working notes.

**Kang Type 002, Instance 041 of 052, Cumulative Instance 045 of 409:
The Musicians of *Le Roman de Thebes*.⁴⁵**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a musician of unknown or unspecified gender, a trumpeter, and another musician of unknown or unspecified gender, a flautist. As described in the consulted sources, this instance’s figures partook of the form termed “musician” by the thesis, as they played musical instruments. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is not applicable, as they were freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁴⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 142. The edition of *Le Roman de Thebes* known to this thesis from consultation of the above work is not recorded in the thesis’ working notes.

**Kang Type 002, Instance 042 of 052, Cumulative Instance 046 of 409:
Brokkr's Boar in the *Snorra-Edda*.⁴⁶**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a boar. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was assigned an individual character name in its source material, which (depending upon the edition) is either “Gullinbursti” or “Slidrugtanni.” The setting in which it appeared was a chariot. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁴⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 143. The edition of the *Snorra-Edda* known to this thesis from consultation of the above work is not recorded in the thesis’ working notes, but these working notes do record that the compiler and editor of the *Snorra-Edda* was Snorri Sturluson, a Northern European intellectual of the Middle Ages.

**Kang Type 002, Instance 043 of 052, Cumulative Instance 047 of 409:
The Eagle in *Ipomedon*.⁴⁷**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was aeolian, that is, wind-driven. It contained the figure of an eagle of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a flagpole. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁴⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 144 and 145. The edition of *Ipomedon* known to this thesis from consultation of the above work is not recorded in the thesis’ working notes, but these working notes do record that its medieval author was Hugh de Rotelande.

**Kang Type 002, Instance 044 of 052, Cumulative Instance 048 of 409:
The Ebony Horse in *Meliacin*, or *The Ebony Horse*.⁴⁸**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the large scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a horse. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁴⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 144, 145, 153; and H.S.V. Jones’ “The *Cleomades*, The *Meliacin*, and the Arabian Tale of the “Enchanted Horse,”” page 237. The edition of *Meliacin*, or *The Ebony Horse* known to this thesis from consultation of the above works is not recorded in the thesis’ working notes, but these working notes do record that its medieval author was Girart (Gerard) d’Amiens.

**Kang Type 002, Instance 045 of 052, Cumulative Instance 049 of 409:
The Golden Fowls in *Meliacin*, or *The Ebony Horse*.⁴⁹**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a hen and chicken chicks of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “thing of brass” by the thesis, as they had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is not applicable, as they were freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome.

⁴⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 144 and 145. The edition of *Meliacin*, or *The Ebony Horse* known to this thesis from consultation of the above work is not recorded in the thesis’ working notes, but these working notes do record that its medieval author was Girart (Gerard) d’Amiens.

**Kang Type 002, Instance 046 of 052, Cumulative Instance 050 of 409:
The Signpost in the Fragment of *Perceval* within *Perceval le Gallois*.⁵⁰**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a human hand. As described in the consulted sources, this instance’s figure did not partake of forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a signpost. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁵⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 150 and 226---227. The edition of *Perceval le Gallois* which contains the fragment of Chretien de Troyes’ *Perceval* known to this thesis from consultation of the above work is not recorded in the thesis’ working notes.

**Kang Type 002, Instance 047 of 052, Cumulative Instance 051 of 409:
The Warriors on the Bridge in *Inamoramento de Orlando*.⁵¹**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of warriors. As described in the consulted sources, this instance’s figures partook of the forms termed “thing of brass” and “gatekeeper” by the thesis, as they had brazened colorations and, in some sense, monitored a threshold. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a bridge. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁵¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 185, 186, and 188. The edition of *Inamoramento de Orlando* (*Orlando Innamorato*, *Orlando in Love*) known to this thesis is not recorded by the thesis’ working notes as such, and these notes rather record that this work was authored by Matteo Maria Boiardo at Reggio Emilia, in the Duchy of Modena and Reggio, in the year 1483. That date of publication is not an approximation. Boiardo’s patron in his authorial endeavor was Duke Ercole I d’Este.

**Kang Type 002, Instance 048 of 052, Cumulative Instance 052 of 409:
The Feasting King in *Inamoramento de Orlando*.⁵²**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a king. As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass” and “ruler” by the thesis, as it had a brazen coloration and depicted a member of the feudal nobility. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a palace. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁵² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 185. The edition of *Inamoramento de Orlando* (*Orlando Innamorato*, *Orlando in Love*) known to this thesis is not recorded by the thesis’ working notes as such, and these notes rather record that this work was authored by Matteo Maria Boiardo at Reggio Emilia, in the Duchy of Modena and Reggio, in the year 1483. That date of publication is not an approximation. Boiardo’s patron in his authorial endeavor was Duke Ercole I d’Este.

**Kang Type 002, Instance 049 of 052, Cumulative Instance 053 of 409:
The Archer in *Inamoramento de Orlando*.⁵³**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a presumptively-male archer. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a palace. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁵³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 185, 187, and 188. The edition of *Inamoramento de Orlando* (*Orlando Innamorato*, *Orlando in Love*) known to this thesis is not recorded by the thesis’ working notes as such, and these notes rather record that this work was authored by Matteo Maria Boiardo at Reggio Emilia, in the Duchy of Modena and Reggio, in the year 1483. That date of publication is not an approximation. Boiardo’s patron in his authorial endeavor was Duke Ercole I d’Este.

**Kang Type 002, Instance 050 of 052, Cumulative Instance 054 of 409:
The Messenger in *Inamoramento de Orlando*.⁵⁴**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a presumptively-male messenger. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a palace. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁵⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 185. The edition of *Inamoramento de Orlando* (*Orlando Innamorato*, *Orlando in Love*) known to this thesis is not recorded by the thesis’ working notes as such, and these notes rather record that this work was authored by Matteo Maria Boiardo at Reggio Emilia, in the Duchy of Modena and Reggio, in the year 1483. That date of publication is not an approximation. Boiardo’s patron in his authorial endeavor was Duke Ercole I d’Este.

**Kang Type 002, Instance 051 of 052, Cumulative Instance 055 of 409:
The Wooden Horse in *Valentine and Orson*.⁵⁵**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a horse of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁵⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see H.S.V. Jones’ “The *Cleomades*, the *Meliacin*, and the Arabian Tale of the ‘Enchanted Horse,’” footnote 2, page 224. The edition of *The Prose Valentine and Orson* known to this thesis from consultation of the above work is not recorded by the thesis’ working notes as such, which rather record that it appeared after the year 1489. That date of publication is an approximation.

**Kang Type 002, Instance 052 of 052, Cumulative Instance 056 of 409:
The Original Horse Automaton in *The Thousand and One Nights* According to
Hanna the Maronite.⁵⁶**

Nothing suggests that this fictitious instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a horse of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁵⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see H.S.V. Jones’ “The *Cleomades*, the *Meliacin*, and the Arabian Tale of the ‘Enchanted Horse,’” page 236. The edition of *Histoire d’Ala-al-Din ou la Lampe Merveilleuse; Texte Arab Publie, avec Une Notice sur Quelques Manuscrits des Mille et Une Nuits*,” the work containing Hanna the Maronite’s tale which is known to this thesis from consultation of Jones’ article, is that edited by Hermann Zotenberg and published at Paris in the year 1888, during the era of the Third French Republic.

INSTANCES 03: KANG'S THIRD TYPE.

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**Kang Type 003, Instance 001 of 295, Cumulative Instance 057 of 409:
Ramelli's Fountain Birds.⁵⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of generic birds of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a fountain. According to the thesis’ working notes, this instance’s principal designer was Captain Agostino Ramelli, and its principal builder

⁵⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 25; and Jessica Riskin’s “Machines in the Garden,” page 39. Neither Bedini nor Riskin’s articles establish that the automaton birds on Ramelli’s fountain are golden and metallic, so no “Controlled Form Descriptor” can be assigned. Riskin discusses the relationship between classical sources and Ramelli’s output, specifically concluding that this instance of automata, the automaton-bearing public fountain, was “based closely on designs from Hero’s [Heron’s] *Pneumatica*.” As such, the first current of thought is warranted, since this instance is derived from a technological conception of the classical world, the fifth current of thought is warranted, given that Ramelli worked within the culture of Early Modern Europe, and the sixth current of thought is warranted, for Ramelli’s reapplication of Heronic technology can be construed as an index of progress signifying the reclamation of classical achievements, a major goal of the European Renaissance. Bedini agrees, writing that “Ramelli’s work was not a translation of Heron, but it borrowed heavily from the Alexandrine writings,” and noting that “...Ramelli did not neglect to include several examples of biological automata in the form of hydraulically operated singing birds.” Two instances of automata from *Le Diverse e Artificiose Macchine* with avian figures are known to the thesis, corresponding to the “several examples” named by Bedini, and this entry is the first of these two. The edition of Captain Agostino Ramelli’s *Le Diverse e Artificiose Macchine* known to this thesis is the original edition, which is available in facsimile online and which was published at Paris, in the Kingdom of France, in the year 1588. That date of publication is not an approximation. Captain Ramelli’s patron was King Henry III of France. For the classical technology which undergirds this instance, see Bur, “T5: Singing Birds,” pages 155—165, in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.” The first primary source is taken from footnote 5 in The first secondary source; The second primary source is taken from footnote 129 in The second secondary source (both footnotes are on the pages cited below). The Digital Collections of the Science History Institute contain an online facsimile of the original 1588 edition of Ramelli’s *Le Diverse e Artificiose Macchine* under call number “TJ144 .R364 1588,” which is viewable with accurate page reproductions on the Internet. The title folio of this 1588 printing clearly establishes that King Henry III patronized Ramelli, as the latter is styled “Engineer of the Most Christian King of France and of Poland.” Henry III reigned until 1589 and had briefly been King of Poland, as is common knowledge. Other information relevant to the provenance of this instance is also supplied by the bibliographic data provided by the title folio, such as this instance’s location of origin. The thesis is not aware that the public fountain specifically described by Ramelli was ever built, or alleged to have been built, so the points of tracked information related the builders of automata, and the dates at which automata appear, do not apply in the case of this instance.

**Kang Type 003, Instance 001 of 295, Cumulative Instance 057 of 409:
Ramelli's Fountain Birds.**

is not recorded by the thesis' working notes. Its location, as a published design, was the municipality of Paris, in the principality of the Kingdom of France. The principal patrons responsible for this instance's presence in the historical record are not recorded by the thesis' working notes. While no specific dating information is recorded for this instance in the thesis' working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 002 of 295, Cumulative Instance 058 of 409:
The Medicis' Birds in Montaigne.⁵⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source is not known to this thesis, but was likely hydraulic. It contained the figures of generic birds of unknown or unspecified gender and an owl of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did

⁵⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 26; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 82; Jessica Riskin’s “Machines in the Garden,” pages 33---34, 39; Chapuis & Droz’s *Automata: A Historical and Technological Study*, page 43; and Nadia Ambrosetti’s *Cultural Roots of Technology*, page 206. Bedini, writing in 1964, did not include a page number from the *Travel Voyage*, but his use of the 1581 publication date suggests he intended to cite an original edition of Montaigne’s work. Both Riskin and Kang unambiguously attribute this instance’s design to a reuse of Heronic technology in the context of the Renaissance. Kang notes “an owl automaton, which originated from a design of Hero [Heron]” in Montaigne’s description of the Villa d’Este, and also reproduces an image showing the “reconstruction” of Heron’s “design for an owl and other bird automata” which appeared as figure 17 on page 93 of Wilhelm Schmidt’s 1899 edition of *Heron von Alexandria Druckwerke und Automatentheater* at the same page in *Sublime Dreams of Living Machines* which contains the shorter excerpt of Montaigne, 82, per the above citation. As already noted, Schmidt’s edition of Heron’s *Pneumatica* is available on the Internet Archive under the searchable call number “b27800350.” Riskin’s 96th footnote, which cites the page from the 1983 Frame edition with this instance of automata, notes that “The owl-and-birds arrangement was taken from a much-imitated design by Hero [Heron] of Alexandria,” and it directs readers to another 19th-century edition of Heron’s *Pneumatica*, Bennett Woodcroft’s *The Pneumatics of Hero of Alexandria* (1851), which is not retrievable on the Internet Archive as of this writing. Thus, this entry has the technology of the 1st current, the setting of the 5th current, and represents reclamation of the classical, the 6th current. The edition of the *Journal de Voyage* known to this thesis is not recorded by the thesis’ working notes as such, and these notes rather record that this work was published by Lord Michel de Montaigne in the year 1581. That date of publication is not an approximation. For the specific classical technology which undergirds this instance, see Bur, “T5: Singing Birds,” pages 155—165, in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.” The first primary source is taken from the 8th footnote in The first secondary source, which is on the cited page; The second primary source is taken from the 104th endnote for chapter 2, “Between Magic and Mechanics: The Automaton in the Middle Ages and the Renaissance,” in The second secondary source, which is on page 325; The third primary source is taken from footnotes 91 and 96 in The third secondary source, which are respectively on pages 33 and 34, with the former providing bibliographic information and the latter providing the page number presented above. Unlike Secondary Sources 1–3, The fourth secondary source does not reference an edition of Montaigne’s *Travel Journal*, as Chapuis and Droz, two European specialists writing for a European audience, probably assumed that their readers would be familiar with Montaigne, and that direct citation of a Continental edition was therefore unnecessary. Secondary Sources 2 and 3 provide translated excerpts from the *Travel Journal* with slight textual variations. The excerpt in The third secondary source is longer and provides more context, so it is recommended, but this recommendation is not intended to slight Kang

**Kang Type 003, Instance 002 of 295, Cumulative Instance 058 of 409:
The Medicis' Birds in Montaigne.**

not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a grotto. According to the thesis' working notes, this instance's principal designers were Tommaso Chiruchi of Bologna and Claude Venard, and its principal builders were these same individuals. Its location was the municipality of Tivoli, in the principality of the Papal States. The principal patron responsible for this instance's presence in the historical record, according to the thesis' working notes, was Cardinal Ippolito II d'Este. While no specific dating information is recorded for this instance in the thesis' working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 003 of 295, Cumulative Instance 059 of 409:
The Soldiers at the Casino of the Florentine Grand Duke in Montaigne.⁵⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of presumptively-male soldiers. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a mill. According to the thesis’ working notes, this instance’s principal designer and principal builder are unrecorded. Its location was the municipality of Florence, in the principality of the Grand Duchy of Tuscany. The principal patron responsible for this instance’s presence in the historical record, according to the

⁵⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 26; and Jessica Riskin’s “Machines in the Garden,” page 33. As in the other instances where Bedini is cited with respect to Montaigne, it must be admitted that he neither quotes directly from Montaigne’s *Travel Journal* nor provides a page number in his citation of this source, unlike Riskin, who takes both actions. Information for this instance’s setting and motive power source is established by Riskin’s scholarly account of Montaigne’s reportage. There is disagreement between the two secondary authors as to the latter point, this instance’s motive power source, as Bedini writes that the soldiers were driven by both “water and air,” and Riskin that they were “hydraulically driven.” This discrepancy is considered minor. Because Bedini names “water” first, Riskin does not note pneumatic power, and the thesis’ tracking system only documents a single source of energy per entry, which is reasonable for articles of technology in the pre-Modern and Early Modern periods, the exclusive identification of “hydraulic” power is warranted. Patronage information for this entry is also established by Riskin on the page cited above. Bedini, however, is more specific with respect to the nature of the site containing the soldier-automata, indicating that it was not simply a “residence,” but a “casino.” This term, “casino,” is believed to denote a site of pleasurable activities, much as in modern English usage. No information on the designer(s), builder(s), or fate of the soldier-automata, and the other moving figures of the grotto in which these soldiers were ensconced, has been encountered in the research underlying this presentation. The edition of the *Journal de Voyage* known to this thesis is not recorded by the thesis’ working notes as such, and these notes rather record that this work was published by Lord Michel de Montaigne in the year 1581. That date of publication is not an approximation. The first primary source is taken from footnote 8 on page 26 of The first secondary source, and The second primary source is taken from footnotes 91 and 95 of The second secondary source, with the 91st footnote supplying bibliographic information and the 95th footnote supplying the referenced page number in Frame’s edition. It is notable at the Bedini, in The first secondary source, mentions only automaton “soldiers” in Montaigne’s account of the “casino of the Archduke of Florence,” whereas Riskin, in The second secondary source, refers to “another of the Grand Duke’s residences” and its automaton “soldiers of the guard.” Bedini appears to paraphrase Montaigne, whereas the phrase “soldiers of the guard” is included by Riskin in a longer quotation directly from Frame’s translation of Montaigne, which reads as follows: “[...] water mills and windmills, little church bells, soldiers of the guard, animals, hunts, and a thousand such things.” Because animals can hunt each other, and need not be stalked by a human hunter, the “soldiers of the guard” are the only discrete automata in Montaigne’s list; “animals” is not descriptive language sufficiently specific for purposes of this thesis.

**Kang Type 003, Instance 003 of 295, Cumulative Instance 059 of 409:
The Soldiers at the Casino of the Florentine Grand Duke in Montaigne.**

thesis' working notes, was the Grand Duke Francesco I de Medici. While no specific dating information is recorded for this instance in the thesis' working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 004 of 295, Cumulative Instance 060 of 409:
The First Dragon at Saint-Germain-en-Laye.⁶⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of the unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a dragon of unknown or unspecified gender, generic birds of unknown or unspecified gender, and nightingales of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “monster” and “thing of brass” by the thesis, as dragons are fantastical creatures, and at least one of the above figures had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a grotto. According to

⁶⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” pages 27---28; Jessica Riskin’s “Machines in the Garden,” page 35; and Chapuis & Droz’s *Automata: A Historical and Technological Study*, page 44. Secondary 4 is cited without its full title, bibliographic information, or page numbers in the tenth endnote for Secondary 3’s 2nd chapter as the source for its lengthy quotation of du Chesne’s account, Primary 3, which described the automata at Saint-Germain-en-Laye, and which was quoted at the same length in Houdard’s earlier work. The full title and bibliographic information for Secondary 4 are provided by footnote 97 in Secondary 2, although Riskin’s referral of readers to the 2nd volume of Houdard’s work has been omitted, as the thesis does not believe du Chesne’s description is given in that volume. Because it is difficult to exactly reconstruct the grottoes at Saint-Germain-en-Laye based solely on the surviving accounts, the thesis has instead structured its entries for the automata at this historical site, of which this entry is the first, by grouped clusters of automata. This entry was the first such grouping to be encountered in research, and the others follow in the order in which each was first noted in the cited readings. The practice of entering numerous automata in a single location by groupings will be the practice consistently applied by the thesis, both due to the structure of the form developed for these entries and convenience, including readers’ convenience. This group’s passage begins with ‘On the way out...’ from du Chesne in *Automata*. Note that the scale of the dragon automaton is unclear, but since it was larger than the bird automata, the selection of the “Various” descriptor is appropriate. The engraving of this instance by Abraham Bosse which is known to this thesis is titled “Recueil. Modeles de Grottoes et de Fontaines. Dessins Laves,” and is or was filed at the Bibliotheque Nationale de France’s “Estampes et Photographie” collection under the combined call numbers “Reserve HD-100(A)-Pet Fol; Archives Nationales O1 1598.” This engraving was published at Paris, in the Kingdom of France, in the year 1625. That date of publication is not an approximation. Primary 1 is taken from footnote 97 in Secondary 2; the set of engravings comprising this primary source is in both the Bibliotheque Nationale de France and the Archives Nationales. Riskin, author of Secondary 2, does not note that the engravings are in “File 204” in the Archives Nationales, but Bedini, author of Secondary 1, also refers to the engravings kept at that institution, although not to those in the Bibliotheque Nationale, in the 10th footnote from Secondary 1. Of course, the engravings at the Archives Nationales may have been moved to another physical storage location in the years since 1964. The bibliographic information for Primaries 2 and 3 is also drawn from Riskin’s 97th footnote in Secondary 1, although the page numbers referenced for the automata documented by this entry are both taken from the 101st footnote on page 35 of Secondary 2. Primary 3 is quoted on pages 44–46 in Secondary 3 as it was likewise quoted in Secondary 4, and Secondary 4 is taken from the 10th endnote for “Automata Chapter II,” which is on page 398 in Secondary 3.

**Kang Type 003, Instance 004 of 295, Cumulative Instance 060 of 409:
The First Dragon at Saint-Germain-en-Laye.**

the thesis' working notes, this instance's principal designer was Tommaso Francini, and its principal builder was that same person. Its location was the municipality of Saint-Germain-en-Laye, in the principality of the Kingdom of France. The principal patron responsible for this instance's presence in the historical record, according to the thesis' working notes, was King Henry IV of France. While no specific dating information is recorded for this instance in the thesis' working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 005 of 295, Cumulative Instance 061 of 409:
The Organist at Saint-Germain-en-Laye.⁶¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of the unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a male musician, an organist. As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass,” “god,” and “musician” by the thesis, as it had a brazen coloration, represented a divine being, and played a musical instrument. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a grotto. According to the thesis’ working notes, this instance’s principal designer was Salomon de Caus, and its principal builder was Tommaso Francini. Its location was the municipality of Saint-Germain-en-Laye, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was King Henry IV of France. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁶¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology, pages 27---28; Jessica Riskin’s “Machines in the Garden,” page 35; and Chapuis & Droz’s *Automata: A Historical and Technological Study*, pages 40, 44, and 279. The engraving of this instance by Abraham Bosse which is known to this thesis is titled “Recueil. Modeles de Grottoes et de Fontaines. Dessins Laves,” and is or was filed at the Bibliotheque Nationale de France’s “Estampes et Photographie” collection under the combined call numbers “Reserve HD-100(A)-Pet Fol; Archives Nationales O1 1598.” This engraving was published at Paris, in the Kingdom of France, in the year 1625. That date of publication is not an approximation. The edition of *Les Raisons des Forces Mouvantes* known to this thesis is not recorded by the thesis’ working notes as such, and these notes rather record that this work was published by Salomon de Caus in the year 1615. Salomon de Caus’ patron was Frederick V, called “The Winter King,” and his wife, Elizabeth Stuart, called “The Winter Queen” (with the latter, Elizabeth, named as de Caus’ patron on page 74 of Scott Maisano’s “Infinite Gesture: Automata and the Emotions in Descartes and Shakespeare,” as cited by this thesis). That date of publication is not an approximation.

**Kang Type 003, Instance 006 of 295, Cumulative Instance 062 of 409:
The Neptune at Saint-Germain-en-Laye.⁶²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of the unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of an ancient Roman god, an ancient Roman goddess, a sea monster of unknown or unspecified gender, a seahorse of unknown or unspecified gender, a triton, and a presumptively-male farrier. As described in the consulted sources, this instance’s figures partook of the forms termed “god,” “monster,” and “thing of brass” by the thesis, as they represented divine beings, fantastical creatures, and had brazen coloration(s). On review, these automaton figures were assigned individual character names in their source material, which were “Neptune” and “Diana.” The setting in which they appeared was a grotto. According to the thesis’ working notes, this instance’s principal designer was Tommaso Francini, and its principal builder was the same person. Its location was the municipality of Saint-Germain-en-Laye, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was King Henry IV of France. While no

⁶² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” pages 27---28; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 81, 119---120, 129; Jessica Riskin’s “Machines in the Garden,” page 34; Chapuis & Droz’s *Automata: A Historical and Technological Study*, pages 44---46; and Wolfram Koeppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 236. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. The engraving of this instance by Abraham Bosse which is known to this thesis is titled “Recueil. Modeles de Grottoes et de Fontaines. Dessins Laves,” and is or was filed at the Bibliotheque Nationale de France’s “Estampes et Photographie” collection under the combined call numbers “Reserve HD-100(A)-Pet Fol; Archives Nationales O1 1598.” This engraving was published at Paris, in the Kingdom of France, in the year 1625. That date of publication is not an approximation. The edition of Rene Descartes’ *Treatise on Man* known to this thesis is that published in *The World and Other Writings*, which was translated by Stephen Gaukroger and published at Cambridge, in the United Kingdom, in the year 1998, with that date of publication not being an approximation. Descartes’ illustrative appeal to this instance is also found in *Traite de l’Esprit de l’Homme*, which was first published by Louis de la Forge in the year 1664 and reprinted at Hildesheim, West Germany, in the year 1984, with neither of those dates being approximations. For a still later philosophical tract which repeats Descartes’ illustrative use of this instance, see also Pierre Sylvain Regis’ *Cours Entire de Philosophie*, which was first published in 1691 and republished as part of the Johnson Reprint series at New York, in the United States of America, in the year 1970, with neither of those dates being approximations. Additional primary sources for this instance which are not based in philosophical rhetoric include the first volume of John Evelyn’s *Diary and Correspondence* in William Bray’s edition, Books II and III of John Evelyn’s *Elysium Britannicum, or The Royal Gardens*, in John E. Ingram’s edition, and materials collected by Maurice Mirvault in *Les Chateaux Royaux de Saint-Germain-en-Laye, 1124---1789: Etude Historique d’Après des Documents Inedits Recueillis aux Archives Nationales et la Bibliotheque Nationale*.

**Kang Type 003, Instance 006 of 295, Cumulative Instance 062 of 409:
The Neptune at Saint-Germain-en-Laye**

specific dating information is recorded for this instance in the thesis' working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 007 of 295, Cumulative Instance 063 of 409:
The Hercules at Saint-Germain-en-Laye.⁶³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of the unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a male ancient Greek hero. As described in the consulted sources, this instance’s figure partook of the forms termed “hero” and “thing of brass” by the thesis, as it depicted a sympathetic person who did good deeds, being acclaimed as a “hero,” and had a brazen coloration. On review, this automaton figure was assigned an individual character names in its source material, “Hercules.” The setting in which it appeared was a grotto. According to the thesis’ working notes, this instance’s principal designer was Tommaso Francini, and its principal builder was that same person. Its location was the municipality of Saint-Germain-en-Laye, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was King Henry IV of France. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same

⁶³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” pages 27---28. The engraving of this instance by Abraham Bosse which is known to this thesis is titled “Recueil. Modeles de Grottoes et de Fontaines. Dessins Laves,” and is or was filed at the Bibliotheque Nationale de France’s “Estampes et Photographie” collection under the combined call numbers “Reserve HD-100(A)-Pet Fol; Archives Nationales O1 1598.” This engraving was published at Paris, in the Kingdom of France, in the year 1625. That date of publication is not an approximation.

**Kang Type 003, Instance 007 of 295, Cumulative Instance 063 of 409:
The Hercules at Saint-Germain-en-Laye.**

civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 008 of 295, Cumulative Instance 064 of 409:
The Perseus at Saint-Germain-en-Laye.⁶⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male ancient Greek hero, a dragon of unknown or unspecified gender, a princess, and a Greek god. As described in the consulted sources, this instance’s figures partook of the forms termed “hero,” “monster,” “ruler,” “god,” and “thing of brass” by the thesis, as it depicted a sympathetic person who did good deeds, and was acclaimed as a “hero,” a fantastical creature, a member of the feudal nobility, a divine being, and at least one figure with a brazen coloration. On review, these automaton figures were assigned individual character names in their source material, specifically “Perseus,” “Andromeda,” and “Bacchus,” who is also called “Dionysius.” The setting in which they appeared was a grotto. According to the thesis’ working notes, this instance’s principal designer was Tommaso Francini, and its principal builder was that same person. Its location was the municipality of Saint-Germain-en-Laye, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was King Henry IV of France. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western

⁶⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” pages 27---28; Mark Elling Rosheim’s *Leonardo’s Lost Robots*, page 71; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 81; Jessica Riskin’s *Machines in the Garden*, page 34; and Chapuis & Droz’s *Automata: A Historical and Technological Study*, page 46. No primary source information for this instance is recorded by the thesis’ working notes, but as evidenced by the prior citations, its historical existence and details are not disputed by the scholarly community.

**Kang Type 003, Instance 008 of 295, Cumulative Instance 064 of 409:
The Perseus at Saint-Germain-en-Laye.**

Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 009 of 295, Cumulative Instance 065 of 409:
The Human Figures in the Grotto of Orpheus at Saint-Germain-en-Laye.⁶⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of the unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male ancient Greek hero, an ancient Greek god, an ancient Greek goddess, and a generic woman. As described in the consulted sources, this instance’s figures partook of the forms termed “hero,” “thing of brass,” and “god” by the thesis, as it depicted a sympathetic person who did good deeds, and was acclaimed as a “hero,” at least one figure with a brazen coloration, and a divine being. On review, these automaton figures were assigned individual character names in their source material, which were “Orpheus” and “Bacchus,” who is also called Dionysius. The setting in which they appeared was a grotto. According to the thesis’ working notes, this instance’s principal designer was Tommaso Francini, and its principal builder was that same person. Its location was the municipality of Saint-Germain-en-Laye, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was King Henry IV of France. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious

⁶⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” pages 27---28; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 81; Jessica Riskin’s “Machines in the Garden,” pages 34 and 36; and Chapuis & Droz’s *Automata: A Historical and Technological Study*, pages 45 and 46. The engraving of this instance by Abraham Bosse which is known to this thesis is titled “Recueil. Modeles de Grottoes et de Fontaines. Dessins Laves,” and is or was filed at the Bibliotheque Nationale de France’s “Estampes et Photographie” collection under the combined call numbers “Reserve HD-100(A)-Pet Fol; Archives Nationales O1 1598.” This engraving was published at Paris, in the Kingdom of France, in the year 1625. That date of publication is not an approximation. For this instance’s primary source matter, also see Andre du Chesne’s *Les Antiquites et Recherches des Villes, Chasteaux, et Places Plus Remarquables de Toute la France*, which was published at Paris, in the Kingdom of France, in the year 1637. That date of publication is not believed to be an approximation.

**Kang Type 003, Instance 009 of 295, Cumulative Instance 065 of 409:
The Human Figures in the Grotto of Orpheus at Saint-Germain-en-Laye.**

subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 010 of 295, Cumulative Instance 066 of 409:
The Cock of the First Clock at Strasbourg Cathedral.⁶⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a cock. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a public clock. According to the thesis’ working notes, this instance’s principal designer and builder are unrecorded. Its location was the municipality of Strasbourg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are unrecorded by the thesis’ working notes. This instance came into existence as a design or object as of the year 1350 (or 1354, according to Derek J. De Solla Price), with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous

⁶⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 29, and figures 2 and 3; Derek J. de Solla Price’s “Automata and the Origins of Mechanism and Mechanistic Philosophy,” page 18; E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 149; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 80; Jessica Riskin’s “Machines in the Garden,” page 22; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 21; and Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 163---164. As an extant material-cultural object, this instance may itself be consulted as primary source matter, and according to the thesis’ working notes, it first appeared in Strasbourg, in the Holy Roman Empire, thereabout the year 1350. That date of assembly is an approximation.

**Kang Type 003, Instance 010 of 295, Cumulative Instance 066 of 409:
The Cock of the First Clock at Strasbourg Cathedral.**

celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 011 of 295, Cumulative Instance 067 of 409:
The Jacquemarts at Saint Mark's Clocktower, Venice.⁶⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source was kinetic. It contained the figures of male shepherds, the Magi of Christian tradition, and a male angel. As described in the consulted sources, this instance’s figures partook of the forms termed “bellringer,” “saint,” and “angel” by the thesis, as the shepherds are jacquemarts, the Magi are considered saints in some Christian denominations, and an angel in its traditional (and not Biblically literal) Christian representation is depicted by one of the figures. On review, these automaton figures were assigned individual character names in their source material, “Melchior,” “Caspar,” and “Balthazar.” The setting in which they appeared was a public clock. According to the thesis’ working notes, this instance’s principal designer was Zuan Carlo Rainieri, and its principal builder was that same person. Its location was the municipality of Venice, in the principality of the Republic of Venice. The principal patrons responsible for this instance’s presence in the historical record are unrecorded by the thesis’ working notes. This instance came into existence as a design or object as of the year 1499, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the

⁶⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 30; Mark Elling Rosheim’s *Leonardo's Lost Robots*, page 121; and Jessica Riskin’s “Machines in the Garden,” page 21. As an extant material-cultural object, this instance may itself be consulted as primary source matter, and according to the thesis’ working notes, it first appeared in Venice, in the Republic of Venice, in the year 1499, and it was principally designed and built by Zuan Carlo Rainieri (information on the identity of this instance’s designer and builder is not supplied by the cited sources, although his responsibility for this work is common knowledge). That date of assembly is not an approximation.

**Kang Type 003, Instance 011 of 295, Cumulative Instance 067 of 409:
The Jacquemarts at Saint Mark's Clocktower, Venice.**

restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 012 of 295, Cumulative Instance 068 of 409:
The Figures of Immser's Astronomical Chamber Clock.⁶⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a generic woman, the three allegorical stages of human life (which were represented with male figures), a human skeleton, and the planetary deities. As described in the consulted sources, this instance’s figures partook of the forms termed “saint,” “death,” “god,” and “thing of brass” by the thesis, as the male allegorical figures may have represented a saint, the skeleton represented death, the planetary deities are classical gods, and certain figures, such as the generic woman, have a brazen coloration. On review, these automaton figures were assigned individual character names in their source material, being “Death” and the names of the planetary deities. The setting in which they appeared was a chamber clock. According to the thesis’ working notes, this instance’s principal designer was Philipp Immser, and its principal builder was that same person, along with Gerhard Emmoser. Its location was the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record, according to the thesis’ working notes, were the Prince-Elector Otto-Heinrich von der Pfalz and

⁶⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 30, and Figures 4a and 4b; Chapuis & Droz’s *Automata: A Historical and Technological Study*, pages 70, 73---74; Maarten Van Dyck’s *Under Time’s Spell*, pages 75---76; and materials related to *Making Marvels: Science and Splendor at the Courts of Europe*, a recent showing of technical artifacts at the Metropolitan Museum of Art in New York City. Specifically, see Wolfram Koeppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, pages 216---220, and especially pages 217, 219, and notes 15 and 16 on page 220 for the clock’s automata. Koeppe writes on page 216 that three other sixteenth-century astronomical clocks of this same type are extant, and in the note in proof of this assertion on page 220, he states that one has been preserved at the Bibliotheque Sainte-Genevieve (which is in Paris, France), one at the Astronomisch-Physikalisches Kabinett (in Kassel, Germany), and one at the Mathematisch-Physikalischer Salon (in Dresden, Germany). It is possible that one or all these three comparable clocks contain automata, although Koeppe does state on page 220 that “the Imser clock incorporates the most direct mechanical realization of the Ptolemaic geocentric models,” suggesting that it is the best example of its kind, and that the others may not have automata for that reason. While the thesis has been disposed to corroborate indications of automata other than those which are the focus of writings consulted in the course of its research, in this case, effort was not expended in locating and reviewing these three other astronomical clocks; and indeed, due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. As an extant material-cultural object, this instance may itself be consulted as primary source matter, and according to the thesis’ working notes, it first appeared in the year 1555 and was principally designed and built by Philipp Immser under the patronage of the Prince-Elector Otto-Heinrich. That date of assembly is an approximation, as the full range of dates for this instance’s construction is 1555---1561, with the date of completion unclear. As an aside, this instance had a hard, but ultimately justified building process, for per Koeppe, it is truly the finest example of its kind.

**Kang Type 003, Instance 012 of 295, Cumulative Instance 068 of 409:
The Figures of Immser's Astronomical Chamber Clock.**

the Holy Roman Emperor Ferdinand I. This instance came into existence as a design or object as of the years 1555---1561, with that date range not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 013 of 295, Cumulative Instance 069 of 409:
de Caus' Heronic Songbirds.⁶⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of generic birds of unknown or unspecified gender and an owl of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a hydraulic display. According to the thesis’ working notes, this instance’s principal designer was Salomon de Caus. Its location of publication was the municipality of Frankfurt, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was the Palatine Prince-Elector. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis

⁶⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” pages 25---26, and Figure 1; Jessica Riskin’s “Machines in the Garden,” page 39; and Chapuis & Droz’s *Automata: A Historical and Technological Study*, pages 40 and 193. For this instance’s primary source matter, see *Les Raisons des Forces Mouvantes avec Diverses Machines tant Utiles que Plaisantes*, which was written by Salomon de Caus while under the patronage of the Palatine Prince-Elector, Frederick V, called “The Winter King,” and his wife, Elizabeth Stuart, called “The Winter Queen” (with the latter, Elizabeth, named as de Caus’ patron on page 74 of Scott Maisano’s “Infinite Gesture: Automata and the Emotions in Descartes and Shakespeare,” as cited by this thesis), and which was published at Frankfurt, in the Holy Roman Empire, in the year 1615. That date of publication is not an approximation. For the specific classical technology which undergirds this instance, see Bur, “T5: Singing Birds,” pages 155—165, in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.”

**Kang Type 003, Instance 013 of 295, Cumulative Instance 069 of 409:
de Caus' Heronic Songbirds.**

has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations;

**Kang Type 003, Instance 014 of 295, Cumulative Instance 070 of 409:
da Vinci's First Walking Lion.⁷⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a lion. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character names in its source material. The setting in which it appeared is not applicable, as it was mobile and freestanding. According to the thesis’ working notes, this instance’s principal designer was Leonardo da Vinci, and its principal builder was that same person. Its location was the municipality of Lyon, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded by the thesis’ working notes. This instance came into existence as a design or object as of the year 1515, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁷⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 31; Mary Flowers Braswell’s “The Magic of Machinery: A Context for Chaucer’s ‘Franklin’s Tale,’” page 105; Derek J. De Solla Price’s “Automata and the Origins of Mechanism and Mechanistic Philosophy,” page 21; Michael E. Moran’s “The da Vinci Robot,” pages 986 and 989; Mark Elling Rosheim’s *Leonardo’s Lost Robots*, pages X, 12, 21, 22, 35, 41, 52, 157, 161, 162; Philip Butterworth’s “The Mechanycalle ‘Image off Seynt Iorge’ at Ss. Botolph’s, Billingsgate, 1474,” page 236; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 81, 93, and 101; Jessica Riskin’s “Machines in the Garden,” page 24; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 23; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 179 and 180, and in footnote 218; and Lily V. Filson’s *Engineering Gods*, pages 183 and 216 (provided that Rosheim’s conclusions are accepted). For this instance’s primary source matter, see *Idea del Tempio della Pittura*, which was written by Giovan Paolo Lomazzo and published at Milan, in the Duchy of Milan, in the year 1590. That date of publication is not an approximation. See also *Trattato dell’Arte*, which was written by this same Giovan Paolo Lomazzo and published at Milan, in the Duchy of Milan, in the year 1585. That date of publication is not believed to be an approximation. Following Rosheim’s conclusions, see Leonardo da Vinci’s *Codex Atlanticus* F. 296 V-A [812 R], F. 320 V-A [878 V], F. 320 R-A [878 R], F. 339 R-A [926 R], F. 347 R-B [956 R] and *Uffizi*, GDS NO. 4085 A.R., GDS NO. 446 E-R, 447 E-R, 447 E-V, for da Vinci’s possible conceptualizations of this instance.

**Kang Type 003, Instance 015 of 295, Cumulative Instance 071 of 409:
Bullman's Android and Gynoid.⁷¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a male musician, which played an unknown instrument, and a female musician, which played an unknown instrument. As described in the consulted sources, this instance’s figures partook of the form termed “musician” by the thesis, as they played musical instruments. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is not applicable, as they were freestanding and mobile. According to the thesis’ working notes, this instance’s principal designer was Hans Bullman of Nuremberg, and its principal builder was that

⁷¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 31; Jessica Riskin’s “Machines in the Garden,” page 24; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 193; Lily V. Filson’s *Engineering Gods*, page 181; and Wolfram Koeppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, pages 234 and 235. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. Interestingly, Koeppe refers to this instance in different terms than the other consulted authors, and uses a distinct primary source, a document relating to the sale of what is termed “a piece of artistry, namely a walking maiden,” as opposed to musical automata. It is certainly possible that the automata of this instance could have appeared to both walk and play musical instruments, as was the case with Torriano’s lady lutenist and lady drummer automatons. The other inconsistency with Koeppe’s primary source, which is attested in note 2 on page 235 of his exhibition guide, is that the sale document for the “walking maiden” originates with the wife of a Jakob Bulmann, who was acting as bookkeeper on behalf of her husband, the automaton’s builder, whereas other authors consulted by this thesis, such as Bedini, name this instance’s creator as a Hans Bullman, not Jakob Bulmann. However, all the authors agree that at least one humanoid automaton (a gynoid) was created by someone named “Bullman,” or a phonetic variation of this name, in the city of Nuremberg, and in or by the year 1535. Due to the rarity of automata as material objects, it is considered possible by the author of this thesis that Hans and Jakob Bullman may have been related, as brothers, cousins, etc., if there were truly two different individuals involved in the creation of the Bullman automata. Because this instance’s date, 1535, and point of origin, Nuremberg, agree in the sources, the thesis does not interpret the musical automata and the “walking maiden” as being distinct instances. If it should be helpful to other scholars who would attempt explanations of the Hans Bullman-Jakob Bulmann inconsistency, Jakob Bulmann’s occupation is given by Koeppe as “locksmith” on page 234. For this instance’s primary source matter, see *Historische Nachricht von dem Nurnbergischen Mathematicis und Kunstlern*, which was written by Johann Gabriel Doppelmayr at Nuremberg, in the Holy Roman Empire, in the year 1730. That date of publication is not believed to be an approximation. During preparation of the thesis, a facsimile of this eighteenth-century text was found to be available on the website of a European cultural institution. See also Koeppe’s primary source, Johann Neudorffer’s *Des Johan Neudorfer Schreib- und Rechenmeisters zu Nurnberg Nachrichten von Kunstlern und Werkleuten daselbst aus dem Jahr 1547* in the edition by Georg Wolfgang Karl Lochner, which was published at Vienna, in Austria-Hungary (The Austro-Hungarian Empire), by Wilhelm Braumuller in the year 1875.

**Kang Type 003, Instance 015 of 295, Cumulative Instance 071 of 409:
Bullman's Android and Gynoid.**

same person. Its location was the municipality of Nuremburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance's presence in the historical record are not recorded by the thesis' working notes. This instance came into existence as a design or object before the year 1535, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 016 of 295, Cumulative Instance 072 of 409:
The Soldiers at the Monastery of San Yuste.⁷²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of presumptively-male soldiers, horses of unknown or unspecified gender, presumptively male military drummers, and presumptively-male military trumpeters. As described in the consulted sources, this instance’s figures partook of the form termed “musician” by the thesis, as some played musical instruments. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is not applicable, as they were freestanding and mobile. According to the thesis’ working notes, this instance’s principal designer was Gianello Torriano of Cremona, and its principal builder was that same person. Its location was the municipality of San Yuste, in the principality of the Kingdom of Spain (Castile). The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was the Holy Roman Emperor Charles V. This instance came into existence as a design or object as of the years 1556---1558, with that date range potentially being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death,

⁷² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 32; Elizabeth King’s “Clockwork Prayer: A Sixteenth-Century Mechanical Monk,” page 7 (in the thesis’ printed copy); Jessica Riskin’s “Machines in the Garden,” page 26; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 193; and Lily V. Filson’s *Engineering Gods*, page 172. For this instance’s primary source matter, see *De Bello Belgico*, which was written by Famianus Strada, in the translation of Sir Robert Stapylton. In the case of this instance, the thesis’ working notes record no further information regarding its primary source.

**Kang Type 003, Instance 016 of 295, Cumulative Instance 072 of 409:
The Soldiers at the Monastery of San Yuste.**

who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 017 of 295, Cumulative Instance 073 of 409:
The Birds at the Monastery of San Yuste.⁷³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of generic birds of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is not applicable, as they were freestanding and mobile. According to the thesis’ working notes, this instance’s principal designer was Gianello Torriano of Cremona, and its principal builder was that same person. Its location was the municipality of San Yuste, in the principality of the Kingdom of Spain (Castile). The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was the Holy Roman Emperor Charles V. This instance came into existence as a design or object as of the years 1556---1558, with that date range potentially being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁷³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 32; Elizabeth King’s “Clockwork Prayer: A Sixteenth-Century Mechanical Monk,” page 7 (in the thesis’ printed copy); Jessica Riskin’s “Machines in the Garden,” page 26; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 193; and Lily V. Filson’s *Engineering Gods*, page 172. In the case of this instance, the thesis’ working notes record no information regarding its primary source, but it is presumed to be the same as that which supplies the prior instance, namely *De Bello Belgico*, which was written by Famianus Strada, in the translation of Sir Robert Stapylton.

**Kang Type 003, Instance 018 of 295, Cumulative Instance 074 of 409:
Torriano's First Lady Lute Player.⁷⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a female musician, a lutenist. As described in the consulted sources, this instance’s figure partook of the form termed “musician” by the thesis, as it played a musical instrument. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. According to the thesis’ working notes, this instance’s principal designer was Gianello Torriano of Cremona, and its principal builder was that same person. Its location is not recorded by the thesis’ working notes. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was King Philip II of Spain. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness

⁷⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 32, and Figures 5 and 6; Elizabeth King’s “Clockwork Prayer: A Sixteenth-Century Mechanical Monk,” pages 3, 8, 10---11 (in the thesis’ copy); Mark Elling Rosheim’s *Leonardo’s Lost Robots*, page 35; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 81; Jessica Riskin’s “Machines in the Garden,” page 26, footnote 58; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 193; Lily V. Filson’s *Engineering Gods*, pages 172, 199, and 213; and Wolfram Koeppe’s essay “Clocks and Automata: The Art of Technological Development” in his edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 202, Figure 96 on that same page, which shows a color photograph of this lady lute player, and page 256, where this instance is referenced in connection with “Torriano’s First Monk.” In note 7 on page 256, Koeppe also mentions “a similar figure in a private collection in Milan,” although his phrasing makes it unclear, at least to this reader, whether the Milan automaton is like this instance, like “Torriano’s First Monk,” or like both. As such, the Milan automaton was not entered as a separate instance of pre-Modern and Early Modern automata, and it only appears in this footnote and the footnote for “Torriano’s First Monk.” Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which that essay appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. See also King’s later article in Jessica Riskin’s edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, “Perpetual Devotion: A Sixteenth-Century Machine that Prays,” page 270, which indirectly references this instance, as well as other instances associated with and, for purposes of this thesis, attributed to Gianello Torriano; pages 272 and 274 of that work, which directly reference this instance; and endnote 16 on page 287, which mentions a “competing argument” for the origins of this instance (namely, that it was created by a South German guild, not the engineer to the King of Spain). As an extant material-cultural object, this instance may itself be consulted as primary source matter, and according to the thesis’ working notes, it was principally designed and built by Gianello (Juanelo) Torriano of Cremona under the patronage of King Philip II of Spain.

**Kang Type 003, Instance 018 of 295, Cumulative Instance 074 of 409:
Torriano's First Lady Lute Player.**

to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 019 of 295, Cumulative Instance 075 of 409:
de Honnecourt's Chantepleure.⁷⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic birds of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a basin. According to the thesis’ working notes, this instance’s principal designer was Villard de Honnecourt. Its location was the municipality of Honnecourt-sur-Escaut, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and

⁷⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 33; E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 118---119; Stephen N. Fliegel’s “The Cleveland Table Fountain and Gothic Automata,” page 14; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 586; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 155 and 156; and Lily V. Filson’s *Engineering Gods*, page 174. For this instance’s primary source matter, see *The Sketchbook of Villard de Honnecourt*, which was composed by Villard de Honnecourt, possibly in concert with a scribe or scribes, an artist or artists, and/or a company of craftsmen, at Honnecourt-sur-Ecsault, in the Kingdom of France, thereabout the year 1230. That date of composition is an approximation. The thesis consulted the edition of this work which was edited and translated by Theodore Bowie and published in the year 1959. That date of publication is not an approximation.

**Kang Type 003, Instance 019 of 295, Cumulative Instance 075 of 409:
de Honnecourt's Chantepleure.**

secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 020 of 295, Cumulative Instance 076 of 409:
The Fountain Tree at the Court of the Mangu Khan.⁷⁶**

This real-world instance of automata was “false” by the thesis’ definition, as it contained a concealed human agent. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was both based in human energy and pneumatic. It contained the figures of an angel of unknown or unspecified gender, a serpent of unknown or unspecified gender, and a lion of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “angel” by the thesis, as one figure represented a heavenly being. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a fountain tree. According to the thesis’ working notes, this instance’s principal designer was Guillaume Boucher, and its principal builder was that same person. Its location was the municipality of Karakorum, in the principality of the Mongol Empire. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was the Khagan Mongke Khan. This instance came into existence as a design or object as of the thirteenth century, and possibly the year 1245, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the

⁷⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” pages 33---34, and Figure 8, which is errored; Mary Flowers Braswell’s “The Magic of Machinery: A Context for Chaucer’s ‘Franklin’s Tale,’” page 103; E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 33---35, 37, 122; Joyce Tally Lionarons’ “Magic, Machines, and Deception: Technology in the *Canterbury Tales*,” page 378; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” pages 572---573, 591; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 64; Chapuis & Droz’s *Automata: A Historical and Technological Study*, page 77; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 133; and Lily V. Filson’s *Engineering Gods*, page 175. For this instance’s primary source matter, see *Voyage Remarquable de Guillaume de Rubriques, Envoie en Ambassade par le Roi Louis IX en Differentes Parties de l’Orient, 1253* in *Voyages Faites Principalement en Asie, Dans les XII, XIII, XIV, et XV Siecles*, which was edited by Pierre Bergeron and published at La Haye, in the Kingdom of France, in the year 1735. That date of publication is not an approximation.

**Kang Type 003, Instance 020 of 295, Cumulative Instance 076 of 409:
The Fountain Tree at the Court of the Mangu Khan.**

considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 021 of 295, Cumulative Instance 077 of 409:
Schlottheim's First Mechanized Galleon Nef at the British Museum, London.⁷⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of presumptively-male sailors, presumptively-male heralds, a male prince-elect, male musicians (trumpeters) and male musicians (drummers). As described in the consulted sources, this instance’s figures partook of the forms termed “musician,” “ruler,” and “bellringer” by the thesis, as some of the figures played musical instruments, another figure depicted a member of the feudal nobility, and the figures of this piece (or the piece itself) produced the ringing of a bell or bells. On review, these automaton figures were assigned individual character names in their source material, with the prince-elect being Prince-Elector Augustus von Sachsen. The setting in which they appeared is not applicable, as they (the ship) were freestanding and mobile. According to the thesis’ working notes, this instance’s principal designer was Hans Schlottheim of Augsburg, and its principal builder was that same person. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was the Prince-Elector Augustus von Sachsen. This instance came into existence as a design or object as of the year 1580, with that date possibly being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization,

⁷⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 34, which is errored, and Figure 9, which is errored. During the course of research, the thesis located the webpage maintained for this instance by the British Museum; according to the thesis’ working notes, the URL address for that page showed that the fragmentary galleon is listed under object identification number “51924” and part identification number “1,” although it is not necessarily believed that these were or are accessioning numbers, and the thesis does not warrant that the webpage for the galleon will be retrievable using this information. See also Jessica Riskin’s “Machines in the Garden,” page 25. As an extant material-cultural object, this instance may itself be consulted as primary source matter, and according to the thesis’ working notes, it was created by Hans Schlottheim of Augsburg, under the patronage of Prince-Elector Augustus von Sachsen, at Augsburg, in the Holy Roman Empire, in the year 1580. That date of assembly is an approximation.

**Kang Type 003, Instance 021 of 295, Cumulative Instance 077 of 409:
Schlottheim's First Mechanized Galleon Nef at the British Museum, London.**

and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 022 of 295, Cumulative Instance 078 of 409:
The Sultan's Organ Clock.⁷⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of generic birds of unknown or unspecified gender, a male musician (a trumpeter), a talking head, which was typically represented with male features, a queen, the planetary deities, and an angel of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “musician,” “ruler,” “god,” and “angel” by the thesis, as at least one figure played a musical instrument, at least one figure depicted a member of the feudal nobility, at least one figure depicted a divine being, and at least one figure depicted a heavenly being. On review, these automaton figures were assigned individual character names in their source material, “Queen Elizabeth I” and the names of the planetary deities. The setting in which they appeared was an organ. According to the thesis’ working notes, this instance’s principal designer was Randolph Bull, and its principal builder was Thomas Dallam. Its location was the municipality of London, and then Istanbul, in the principalities of the Kingdom of England and the Ottoman Empire. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Queen Elizabeth I of England. This instance came into existence as a design or object as of the year 1599, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of

⁷⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 35, and Figure 10; and Jessica Riskin’s “Machines in the Garden,” page 40. For this instance’s primary source matter, see John Mole’s edition of Thomas Dallam’s travel itinerary, but especially Mole’s diagrammatic rendering of the organ’s functions, which conveniently includes an image of the sultan for scale.

**Kang Type 003, Instance 022 of 295, Cumulative Instance 078 of 409:
The Sultan's Organ Clock.**

Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 023 of 295, Cumulative Instance 079 of 409:
The Automated Organ in Kircher.⁷⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of the unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a satyr and a nymph. As described in the consulted sources, this instance’s figures partook of the form termed “monster” by the thesis, as at least one figure depicted a fantastical creature. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was an organ. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location and the principal patron responsible for this instance’s presence in the historical record are also unrecorded by the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁷⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 35; and Jessica Riskin’s “Machines in the Garden,” page 40. For this instance’s primary source matter, see *Musurgia Universalis*, which was written by Father Athanasius Kircher and published at Rome, in the Papal States, in the year 1650. That date of publication is not an approximation.

**Kang Type 003, Instance 024 of 295, Cumulative Instance 080 of 409:
de Caus' Automated Grotto Scene.⁸⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of the unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of an ancient Roman goddess, a presumptively-male cyclops, a sea monster of unknown or unspecified gender, sheep of unknown or unspecified gender, and rams. As described in the consulted sources, this instance’s figures partook of the forms termed “god” and “monster” by the thesis, as at least one figure depicted a divine being and at least one figure depicted a fantastical creature. On review, these automaton figures were assigned individual character names in their source material, either “Galatea” or “Venus.” The setting in which they appeared was a grotto. According to the thesis’ working notes, this instance’s principal designer and builder are unrecorded, but may have been Solomon de Caus. Its location as a published design was the municipality of Frankfurt, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was the Palatine Prince-Elector. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of

⁸⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 36; Jessica Riskin’s “Machines in the Garden,” page 39; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 120, which displays this instance as an illustration; Chapuis & Droz’s *Automata: A Historical and Technological Study*, pages 41---42; and Lily V. Filson’s *Engineering Gods*, pages XII, 7, 64, and 83. For this instance’s primary source matter, see *Les Raisons des Forces Mouvantes avec Diverses Machines tant Utiles que Plaisantes*, which was written by Salomon de Caus, under the patronage of the Palatine Prince-Elector Frederick V, called “The Winter King,” and his wife, Elizabeth Stuart, called “The Winter Queen” (with the latter, Elizabeth, named as de Caus’ patron on page 74 of Scott Maisano’s “Infinite Gesture: Automata and the Emotions in Descartes and Shakespeare,” as cited by this thesis), and which was published at Frankfurt, in the Holy Roman Empire, in the year 1615. That date of publication is not an approximation.

**Kang Type 003, Instance 024 of 295, Cumulative Instance 080 of 409:
de Caus' Automated Grotto Scene.**

ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 025 of 295, Cumulative Instance 081 of 409:
The Knights and Quarter-Jack of Wells Cathedral.⁸¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source was kinetic. It contained the figures of male knights, horses of unknown or unspecified gender, and a generic man. As described in the consulted sources, this instance’s figures partook of the form termed “bellringer” by the thesis, as some of the knights and the generic man are jacquemarts. On review, one of these automaton figures was assigned an individual character name in its source material, “Jack Blandifers.” The setting in which they appeared was a public clock. According to the thesis’ working notes, this instance’s principal designer was Brother Peter Lightfoot, and its principal builder was that same person. Its location was the municipality of Wells, in the principality of the Kingdom of England. The principal patrons responsible for this instance’s presence in the historical record are not recorded by the thesis’ working notes. This instance came into existence as a design or object as of the year 1386, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered

⁸¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell’s “The Magic of Machinery: A Context for Chaucer’s ‘Franklin’s Tale,’” page 103; and Philip Butterworth’s “The Mechanycalle ‘Ymage off Seynt Iorge’ at St. Botolph’s, Billingsgate, 1474,” page 227. As an extant material-cultural object, this instance may itself be consulted as primary source matter, and according to the thesis’ working notes, its design and realization are traditionally ascribed to Brother Peter Lightfoot, who is credited with similarly emplacing clockwork timekeeping installations at sites near Wells, where this instance appeared, in the Kingdom of England, in the year 1386. That date of assembly is an approximation. As with all the extant pre-Modern or Early Modern automata identified by the thesis, the actual figures themselves may or may not have been replaced over the passage of time, as with all other components of engineered systems. This is especially likely, but not necessarily the case, whenever a given instance has been in continuous operation as a timekeeper for many hundreds of years. Typically, the thesis has found that figures are replaced every two to three hundred years in these circumstances, but when this is done, the original appearance, character, and/or form of the replaced figure is usually preserved in its replacement. Sometimes, as with the first cock of the Strasbourg cathedral clock, an original or predecessor figure is saved for posterity and displayed.

**Kang Type 003, Instance 025 of 295, Cumulative Instance 081 of 409:
The Knights and Quarter-Jack of Wells Cathedral.**

periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 026 of 295, Cumulative Instance 082 of 409:
The Throne of Solomon.⁸²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a lion of unknown or unspecified gender, a generic bird of unknown or unspecified gender, and a griffin of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “monster” by the thesis, as at least one of these figures depicted a fantastical creature. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a throne. According to the thesis’ working notes, this instance’s principal designer was Leo the Mathematician, and its principal builder was that same person. Its location was the municipality of Constantinople, in the principality of the Eastern Roman (Byzantine) Empire, Byzantium. The principal patrons responsible for this instance’s presence in the historical record, according to the thesis’ working notes, were the Court Eunuch Theoktistos and the Byzantine Emperor Theophilus. This instance came into existence as a design or object before the year 869, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between

⁸² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell’s “The Magic of Machinery: A Context for Chaucer’s ‘Franklin’s Tale,’” page 103; E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 22-24, 45, 135; Stephen N. Fliegel’s “The Cleveland Table Fountain and Gothic Automata,” page 12; Joyce Tally Lionarons’ “Magic, Machines, and Deception: Technology in the *Canterbury Tales*,” page 378; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” pages 571---572; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 55; Chapuis & Droz’s *Automata: A Historical and Technological Study*, page 223; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 7, 94 --- 96, 210; Lily V. Filson’s *Engineering Gods*, page 159---160; and Wolfram Koeppe’s essay “Clocks and Automata: The Art of Technological Development” in his edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, pages 200---201. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which that essay appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. For this instance’s primary source matter, see *Antapodosis*, which was written by Bishop Liutprand of Cremona thereabout the year 955, with that date of publication being an approximation. See also *De Ceremoniis*, which was written by the Emperor Constantine VII Porphyrogennetos at Constantinople, in the Byzantine Empire, thereabout the years 956---959, with those dates of composition being an approximation.

**Kang Type 003, Instance 026 of 295, Cumulative Instance 082 of 409:
The Throne of Solomon.**

automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 027 of 295, Cumulative Instance 083 of 409:
The Birds of the Tree at the Byzantine Court.⁸³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of generic birds of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a fountain tree. According to the thesis’ working notes, this instance’s principal designer was Leo the Mathematician, and its principal builder was that same person. Its location was the municipality of Constantinople, in the principality of the Eastern Roman (Byzantine) Empire, Byzantium. The principal patrons responsible for this instance’s presence in the historical record, according to the thesis’ working notes, were the Court Eunuch Theoktistos and the Byzantine Emperor Theophilus. This instance came into existence as a design or object before the year 869, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the

⁸³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 22, 23, 31; Stephen N. Fliegel’s “The Cleveland Table Fountain and Gothic Automata,” page 12; Penny Sullivan’s “Medieval Automata: The ‘Chambre de Beantes’ in Benoit’s *Roman de Troie*,” page 6 (note that Sullivan calls this instance an “organ;” while there was musical accompaniment to the ceremonial proceedings in the Byzantine throne room, the thesis does not construe this device as a musical instrument); Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 55; Chapuis & Droz’s *Automata: A Historical and Technological Study*, page 193; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 94---96, 133, 161; Lily V. Filson’s *Engineering Gods*, page 159; and Wolfram Koeppe’s essay “Clocks and Automata: The Art of Technological Development” in his edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, pages 200---201. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which that essay appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. For the classical technology which undergirds this instance, see Bur, “T5: Singing Birds,” pages 155---165, in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.” For this instance’s primary source matter, see *Antapodosis*, which was written by Bishop Liutprand of Cremona thereabout the year 955, with that date of publication being an approximation. See also *De Ceremoniis*, which was written by the Emperor Constantine VII Porphyrogenetos at Constantinople, in the Byzantine Empire, thereabout the years 956---959, with those dates of composition being an approximation.

**Kang Type 003, Instance 027 of 295, Cumulative Instance 083 of 409:
The Birds of the Tree at the Byzantine Court.**

automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 028 of 295, Cumulative Instance 084 of 409:
The Monkeys on the Dais at Hesdin.⁸⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of monkeys (apes) of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a park attraction. According to the thesis’ working notes, this instance’s principal designer is unrecorded, and its principal builder was Jacques de Boulogne. Its location was the municipality of Hesdin, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Count Robert II of Artois. This instance came into existence as a design or object after the year 1295, with that date being an approximation, and it was inoperative or destroyed before the year 1554, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁸⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell’s “The Magic of Machinery: A Context for Chaucer’s ‘Franklin’s Tale,’” page 103; Derek J. De Solla Price’s “Automata and the Origins of Mechanism and Mechanistic Philosophy,” page 21; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 62; Jessica Riskin’s “Machines in the Garden,” page 31; and Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 158 and 159. For this instance’s primary source matter, see *Les Ducs de Bourgogne*, which was written by Count Leon de Laborde at Paris, during the era of the Second French Republic, in the year 1849. That date of publication is not an approximation.

**Kang Type 003, Instance 029 of 295, Cumulative Instance 085 of 409:
The Lion at Hesdin.⁸⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a lion of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a park attraction. According to the thesis’ working notes, this instance’s principal designer is unrecorded, and its principal builder was Jacques de Boulogne. Its location was the municipality of Hesdin, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Count Robert II of Artois. This instance came into existence as a design or object after the year 1295, with that date being an approximation, and it was inoperative or destroyed before the year 1554, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁸⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell’s “The Magic of Machinery: A Context for Chaucer’s ‘Franklin’s Tale,’” page 103; and Nadia Ambrosetti’s *Cultural Roots of Technology*, page 158. For this instance’s primary source matter, see *Les Ducs de Bourgogne*, which was written by Count Leon de Laborde at Paris, during the era of the Second French Republic, in the year 1849. That date of publication is not an approximation.

**Kang Type 003, Instance 030 of 295, Cumulative Instance 086 of 409:
The Caged Birds of Hesdin.⁸⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of generic birds of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a park attraction. According to the thesis’ working notes, this instance’s principal designer is unrecorded, and its principal builder was Jacques de Boulogne. Its location was the municipality of Hesdin, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Count Robert II of Artois. This instance came into existence as a design or object after the year 1295, with that date being an approximation, and it was inoperative or destroyed before the year 1554, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁸⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell’s “The Magic of Machinery: A Context for Chaucer’s ‘Franklin’s Tale,’” page 103; E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 124, 138; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 590; and Nadia Ambrosetti’s *Cultural Roots of Technology*, page 158. For this instance’s primary source matter, see *Les Ducs de Bourgogne*, which was written by Count Leon de Laborde at Paris, during the era of the Second French Republic, in the year 1849. That date of publication is not an approximation.

**Kang Type 003, Instance 031 of 295, Cumulative Instance 087 of 409:
The Wooden Hermit (or Valet) of Hesdin.⁸⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition, except the suggestion that it was capable of producing speech; and that attribute of this instance was probably achieved by “false” means (e.g., by the use of a speaking-tube), as to suggest otherwise would drastically change the consensus view of the history of science and invention. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a presumptively-male hermit. As described in the consulted sources, this instance’s figure partook of the form termed “servant” by the thesis, but only in Filson’s account of its existence. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a park attraction. According to the thesis’ working notes, this instance’s principal designer was Valet-de-Chambre Colard le Voleur, and its principal builder was that same person. Its location was the municipality of Hesdin, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Duke Philip III “the Good” of Burgundy. This instance came into existence as a design or object after the year 1430, with that date being an approximation, and it was inoperative or destroyed before the year 1554, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁸⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell’s “The Magic of Machinery: A Context for Chaucer’s ‘Franklin’s Tale,’” page 104; E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 131, 133, 138, 140; Joyce Tally Lionarons’ “Magic, Machines, and Deception: Technology in the *Canterbury Tales*,” page 380; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 588; Jessica Riskin’s “Machines in the Garden,” page 32; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 17; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 159, 160; and Lily V. Filson’s *Engineering Gods*, pages 178---179. For this instance’s primary source matter, see *Inventaire-Sommaire des Archives Départementales Antérieures a 1790, Nord: Archive Civiles, Serie B, B. 1948 (1433)*, Volume 4, which was edited by Chretien Dehaisnes and published at Lille, during the era of the Third French Republic, in the year 1881. That date of publication is not an approximation. See also *Les Ducs de Bourgogne*, Volume II, Part I, which was written by Count Leon de Laborde at Paris, during the era of the Second French Republic, in the year 1849. That date of publication is not an approximation.

**Kang Type 003, Instance 032 of 295, Cumulative Instance 088 of 409:
The Golden Angel of Richard II's Coronation.⁸⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of the unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of an angel of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “angel” by the thesis, as it depicted a heavenly being. On review, this automaton figure was not assigned an individual character names in its source material. The setting in which it appeared was a castle stage set. This instance’s principal designer and builder are unrecorded in the thesis’ working notes. Its location was the principality of the Kingdom of England. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was (the administration of) King Richard II of England. This instance came into existence as a design or object as of the year 1377, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁸⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell’s “The Magic of Machinery: A Context for Chaucer’s ‘Franklin’s Tale,’” page 105; E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 136, 138; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 62; and Lily V. Filson’s *Engineering Gods*, page 177. For this instance’s primary source matter, see Thomas Walsingham’s *Quondam Monachi S. Albini Historia Anglicana*, which was published at London, in the United Kingdom, in the year 1863. That date of publication is not an approximation.

**Kang Type 003, Instance 033 of 295, Cumulative Instance 089 of 409:
de Honnecourt's Angel.⁸⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of an angel of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “angel” by the thesis, as it depicted a heavenly being. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is unknown to this thesis. According to the thesis’ working notes, this instance’s principal designer was Villard de Honnecourt. Its location was the municipality of Honnecourt-sur-Escout, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are unrecorded by the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient

⁸⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Derek J. De Solla Price’s “Automata and the Origins of Mechanism and Mechanistic Philosophy,” page 18; E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 119---121, 140, 143; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 581; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 61 (note that Kang erroneously calls this instance a “sundial”); Jessica Riskin’s “Machines in the Garden,” page 25; Derek J. De Solla Price’s “On the Origin of Clockwork, Perpetual Motion Machines, and the Compass” (see “Mechanized Astronomical Models” in the “Medieval Europe” section, pages 34---35 and 40 in the thesis’ copy); Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 155, 156, 157; and Lily V. Filson’s *Engineering Gods*, page 174. For this instance’s primary source matter, see *The Sketchbook of Villard de Honnecourt*, which is cataloged in manuscript as Bibliotheque National de France, MS FR. 19093, and which was composed by Villard de Honnecourt, possibly in concert with a scribe or scribes, an artist or artists, and/or with a company of craftsmen, at Honnecourt-sur-Escout, in the Kingdom of France, thereabout the year 1230. That date of composition is an approximation. The thesis consulted the edition of this work which was edited and translated by Theodore Bowie and published in the year 1959. That date of publication is not an approximation.

**Kang Type 003, Instance 033 of 295, Cumulative Instance 089 of 409:
de Honnecourt's Angel.**

Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 034 of 295, Cumulative Instance 090 of 409:
de Honnecourt's Eagle.⁹⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of an eagle of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a lectern. According to the thesis’ working notes, this instance’s principal designer was Villard de Honnecourt. Its location was the municipality of Honnecourt-sur-Escault, in the principality the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are unrecorded by the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the

⁹⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Derek J. De Solla Price’s “Automata and the Origins of Mechanism and Mechanistic Philosophy,” page 18; E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 119---120, 140; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” pages 586, 591; Mark Elling Rosheim’s *Leonardo’s Lost Robots*, page 6; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 61; Jessica Riskin’s “Machines in the Garden,” pages 25---26; Derek J. De Solla Price’s “On the Origin of Clockwork, Perpetual Motion Machines, and the Compass” (see “Mechanized Astronomical Models” in the “Medieval Europe” section, pages 34---35 in the thesis’ copy); Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 15; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 155, 156, 157; and Lily V. Filson’s *Engineering Gods*, page 174. For this instance’s primary source matter, see *The Sketchbook of Villard de Honnecourt*, which is cataloged in manuscript as *Bibliothèque National de France*, MS FR. 19093, and which was composed by Villard de Honnecourt, possibly in concert with a scribe or scribes, an artist or artists, and/or with a company of craftsmen, at Honnecourt-sur-Escault, in the Kingdom of France, thereabout the year 1230. That date of composition is an approximation. The thesis consulted the edition of this work which was edited and translated by Theodore Bowie and published in the year 1959. That date of publication is not an approximation.

**Kang Type 003, Instance 034 of 295, Cumulative Instance 090 of 409:
de Honnecourt's Eagle.**

technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 035 of 295, Cumulative Instance 091 of 409:
An Automaton of Early Medieval India.⁹¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a generic woman. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a garden. This instance’s principal designer and builder are unrecorded by the thesis’ working notes. Its location is unrecorded by thesis’ working notes at the levels of its municipality and principality, but it presumably existed in subcontinental India. The principal patrons responsible for this instance’s presence in the historical record are unrecorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁹¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 18, 160; and Lily V. Filson’s *Engineering Gods*, page 193, footnote 284, which is an errored citation of Truitt’s work. For this instance’s primary source matter, see *Yasastilakacampu*, as translated by Sivadatta and Parab, and *Srngaramanjarikatha*, as translated by Munshi. Truitt presents these automata as having been real and actual, and they are accordingly sorted under Kang’s third type, yet the foregoing primary sources cited by Truitt are works of fiction, which is contrary to the principles of Kang’s organizational scheme. Here, more so than in the cases of the medieval romances presented in the thesis’ exposition of automata categorized under Kang’s second type, the reader is required to accept that the representation of objects in fictitious works accurately reflects the historical fact of these objects’ material existence. In deference to Truitt’s authority on the thesis’ subject, this instance has duly been included under Kang’s third type.

**Kang Type 003, Instance 036 of 295, Cumulative Instance 092 of 409:
The Fountain-Tree at the Court of al-Mamun.⁹²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of generic birds of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a fountain tree. This instance’s principal designer and builder are unrecorded by the thesis’ working notes. Its location was the municipality of Baghdad, in the principality of the ‘Abbasid Caliphate. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was the Caliph al-Mamun. This instance came into existence as a design or object as of the year 827, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁹² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 20; Sharon Farmer’s “Aristocratic Power and the ‘Natural’ Landscape: The Garden Park at Hesdin, ca. 1291---1302,” page 679; and Lily V. Filson’s *Engineering Gods*, page 159. For the classical technology which undergirds this instance, see Bur, “T5: Singing Birds,” pages 155—165, in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.” No primary source information for this instance is recorded by the thesis’ working notes, but as evidenced by the prior citations, its historical existence and details are not disputed by the scholarly community.

**Kang Type 003, Instance 037 of 295, Cumulative Instance 093 of 409:
The Fountain-Tree at the Court of al-Muqtadir.⁹³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of generic birds. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a fountain-tree. This instance’s principal designer and builder are unrecorded by the thesis’ working notes. Its location was the municipality of Samarra, in the principality of the ‘Abbasid Caliphate. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was the Caliph al-Muqtadir. This instance came into existence as a design or object before the year 917, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁹³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 20, 31-32, 45; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 95, 123---124, at footnote 139, 133; and Lily V. Filson’s *Engineering Gods*, pages 159 and 187. For the classical technology which undergirds this instance, see Bur, “T5: Singing Birds,” pages 155—165, in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.” For this instance’s primary source matter, see the writings of the Byzantine Emperor Romanos Lekapenos from Lakape, in the Byzantine Empire, which antedate the year 917 (no specific title for these compositions is recorded in the thesis’ working notes). That date of composition is an approximation. See also *Muntazam*, Volume VI, which was written by Ibn al-Jawzi; for this second primary source, the thesis’ working notes record no further information, but it is either a pre-Modern or Early Modern text or a history of those periods which is sufficiently removed in chronological time from the present as to reasonably be classed as primary source matter.

**Kang Type 003, Instance 038 of 295, Cumulative Instance 094 of 409:
The Clepsydra Gifted to Charlemagne by Harun al-Rashid.⁹⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of male knights and horses of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “thing of brass” and “bellringer” by the thesis, as at least one had a brazen coloration, and at least one, or the action of this device in its entirety, produced the sound of a ringing bell. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a clepsydra (Greek, “water-thief”), a hydraulic clock. This instance’s principal designer and builder are unrecorded by the thesis’ working notes. Its original location was the principality of the ‘Abbasid Caliphate. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was the Caliph Harun al-Rashid. This instance came into existence as a design or object as of the year 807, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the

⁹⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 20, 21, 161, 162, 141, 143, 144; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 582; Derek J. De Solla Price’s “On the Origin of Clockwork, Perpetual Motion Machines, and the Compass” (see the “Mechanized Astronomical Models” section, pages 22 and 39 in the thesis’ copy); Chapuis & Droz’s *Automata: A Historical and Technological Study*, page 36; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 126--127; Lily V. Filson’s *Engineering Gods*, pages 159 and 163; and Wolfram Koeppé’s essay “Clocks and Automata: The Art of Technological Development” in his edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 200. Due to limitations of time, money, and energy, only information from the subsection of Koeppé’s edited exhibition guide in which that essay appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. For this instance’s primary source matter, see *Annales Regni Francorum*, which was edited by F. Kurze and published at Hanover, in Prussia, in the year 1895. That date of publication is not an approximation.

**Kang Type 003, Instance 038 of 295, Cumulative Instance 094 of 409:
The Clepsydra Gifted to Charlemagne by Harun al-Rashid.**

considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 039 of 295, Cumulative Instance 095 of 409:
The Peacocks of the Mongol Court at Beijing.⁹⁵**

This real-world instance of automata may have been “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was pneumatic. It contained the figures of peacocks of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “things of brass” by the thesis, as at least one had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a palace. This instance’s principal designer and builder are unrecorded by the thesis’ working notes. Its location was the municipality of Beijing (alternatively named Cambalu or Peking), in the principality of Yuan China. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Khan Yesun Temur. This instance came into existence as a design or object before the year 1330, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁹⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 35---36, 37; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 586; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 66; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 134; and Lily V. Filson’s *Engineering Gods*, page 176. For this instance’s primary source matter, see *Itinerarium de Mirabilibus Orientalium Tartarorum*, which was written by Friar Odoric of Pordenone and composed at Padua in the year 1330. That date of composition is not an approximation.

**Kang Type 003, Instance 040 of 295, Cumulative Instance 096 of 409:
The “Musical Statues” at the Boukoleon Gate.⁹⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the large scale defined for evaluative purposes. Its power source was aeolian, that is, wind-driven. It contained the figures of male musicians (trumpeters). As described in the consulted sources, this instance’s figures partook of the forms termed “thing of brass,” “gatekeeper,” and “musician” by the thesis, as at least one had a brazen coloration, at least one was positioned near a threshold of some kind, and at least one played a musical instrument. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a gate. This instance’s principal designer and builder are unrecorded by the thesis’ working notes. Its location was the municipality of Constantinople, in the principality of the Eastern Roman (Byzantine) Empire, Byzantium. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁹⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 63; and Margaret Schlauch’s “The Palace of Hugon of Constantinople,” pages 501, 502, 505, and 512. For this instance’s primary source matter, see *De Antiquitatibus Constantinopolitanis, Corpus Script. Hist. Byz.*, XXXVIII, which was written by the Kouropalates Georgius Codinus (“Kodinos” in Greek) at Constantinople, in the Byzantine Empire. For this primary source, the thesis’ working notes record no further information, but it is either a pre-Modern or Early Modern text or a history of those periods which is sufficiently removed in chronological time from the present as to reasonably be classed as primary source matter.

**Kang Type 003, Instance 041 of 295, Cumulative Instance 097 of 409:
al-Jazari's Female Cupbearer.⁹⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a female cupbearer. As described in the consulted sources, this instance’s figure partook of the form termed “servant” by the thesis, as it resembled and/or fulfilled the functions of a human servant. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a cabinet. According to the thesis’ working notes, this instance’s principal designer was Badīʿ-al-Zamān (“The Wonder of the Age”) Ibn al-Razzaz al-Jazari, and its principal builder was that same person. Its location was the municipality of Diyarbakir, in the principality of Diyar Bakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was King al-Salih Nasir al-Din Abi al-Fath Mahmud bin Muhammad bin qara Arslan bin Dawud ibn Sukman bin Artuq, an Artuqid king also called by the more abbreviated name Nasir al-Din. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁹⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 121---122, and Plate 27; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 13; and Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 114 and 121. This instance is also obliquely referenced on page 161 of *Engineering Gods* by Lily V. Filson. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab Fi Ma 'Rifat al-Hiyal al-Handasiyya)*, which was consulted by the thesis in the translated edition produced by Donald R. Hill, pages 125---126, 226, and 227. This primary source was written by Badīʿ-al-Zamān Ibn al-Razzaz al-Jazari at the city of Diyarbakir, Diyar Bakr, al-Jazira in the year 1206. That date of publication is not an approximation.

**Kang Type 003, Instance 042 of 295, Cumulative Instance 098 of 409:
The Monkeys on the Bridge at Hesdin.⁹⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the large scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of monkeys of unknown or unspecified gender (which are termed apes in certain sources, and which were variously fitted to look like satyrs or demons). As described in the consulted sources, this instance’s figures partook of the form termed “devil” by the thesis, as these figures depicted demons when attired with horns and so costumed. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a bridge. According to the thesis’ working notes, this instance’s principal designer was a certain Master Guissin, and its principal builders were that same person and Jacques de Boulogne. Its location was the municipality of Hesdin, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Count Robert II of Artois. This instance came into existence as a design or object after the year 1295, with that date being an approximation, and it was inoperative or destroyed before the year 1554, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical

⁹⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 123---124, 140; Sharon Farmer’s “Aristocratic Power and the ‘Natural’ Landscape: The Garden Park at Hesdin, ca. 1291---1302,” pages 645, 654, 679, 680; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” pages 589, 590; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 62; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 17; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 158; and Lily V. Filson’s *Engineering Gods*, page 178. For this instance’s primary source matter, see *Archives Departmentales du Pas-de-Calais, A 147 (1299)*, in *Documents et Extraits Divers Concernant l’Histoire de l’Art dans la Flandre, l’Artois, le Hainaut avant le XVeme Siecle*, Volume I, which was edited by Chretien C.A. Dehaisnes and published at Lille, in the era of the Third French Republic, in the year 1886. That date of publication is not believed to be an approximation. See also *Inventaire-Sommaire des Archives Departmentales Anterieures A 1790, Pas-des-Calais, Archive Civiles, Series A, A 237 (1308)*, Volume I, which was edited by Jules-Marie Richard and published at Arras, during the era of the Third French Republic, in the year 1878. That date of publication is not an approximation. Additionally, see *Un Petite-Niece de Saint Louis*, which was authored by J.M. Richard and published at Paris, in the era of the French Third Republic, in the year 1887. That date of publication is not an approximation. Lastly, the document accessioned as *Archives Nationales de France, KK 393* is another primary source connected to this instance.

**Kang Type 003, Instance 042 of 295, Cumulative Instance 098 of 409:
The Monkeys on the Bridge at Hesdin.**

civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 043 of 295, Cumulative Instance 099 of 409:
The Enthroned King at Hesdin.⁹⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a king. As described in the consulted sources, this instance’s figure partook of the form termed “ruler” by the thesis, as it depicted a member of the feudal nobility. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a throne. According to the thesis’ working notes, this instance’s principal builder was Jacques de Boulogne. Its location was the municipality of Hesdin, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Count Robert II of Artois. This instance came into existence as a design or object after the year 1295, with that date being an approximation, and it was inoperative or destroyed before the year 1554, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁹⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 124; Stephen N. Fliegel’s “The Cleveland Table Fountain and Gothic Automata,” page 16; and Nadia Ambrosetti’s *Cultural Roots of Technology*, page 159. For this instance’s primary source matter, see *Inventaire-Sommaire des Archives Départementales Antérieures A 1790, Pas-des-Calais, Archive Civiles, Series A, A 237 (1308)*, Volume I, which was edited by Jules-Marie Richard and published at Arras, during the era of the Third French Republic, in the year 1878. That date of publication is not an approximation. See also *Documents et Extraits Divers Concernant l’Histoire de l’Art dans la Flandre, l’Artois, le Hainaut avant le XVeme Siecle*, Volume I, which was edited by Chretien C.A. Dehaisnes and published at Lille, in the era of the Third French Republic, in the year 1886. That date of publication is not believed to be an approximation.

**Kang Type 003, Instance 044 of 295, Cumulative Instance 100 of 409:
The Fountain-Tree at Hesdin.¹⁰⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of generic birds of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a fountain tree. This instance’s principal designer and principal builder are not recorded by the thesis’ working notes. Its location was the municipality of Hesdin, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Duke Odo IV of Burgundy. This instance came into existence as a design or object as of the year 1344, with that date not being an approximation, and it was inoperative or destroyed before the year 1554, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered

¹⁰⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 125, 138; Sharon Farmer’s “Aristocratic Power and the ‘Natural’ Landscape: The Garden Park at Hesdin, ca. 1291---1302,” pages 645, 652, 654, 677, 679; Stephen N. Fliegel’s “The Cleveland Table Fountain and Gothic Automata,” page 16; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 590; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 17; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 158, 159; and Lily V. Filson’s *Engineering Gods*, page 178. For the classical technology which undergirds this instance, see Bur, “T5: Singing Birds,” pages 155—165, in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.” For this instance’s primary source matter, see *Archives National de France Montheil*, KK 393, Folio 98; the thesis’ working notes record no further information regarding this source. On page 200 of *Medieval Robots*, E.R. Truitt refers to J.M. Richard’s *Un Petite-Niece de Saint Louis* with respect to this instance, but the thesis’ working notes record that Truitt’s endnote citation on that page is in some way errored.

**Kang Type 003, Instance 044 of 295, Cumulative Instance 100 of 409:
The Fountain-Tree at Hesdin.**

periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 045 of 295, Cumulative Instance 101 of 409:
The Heronic Tree Gifted to Frederick II.¹⁰¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely pneumatic. It contained the figures of generic birds of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. This instance’s principal designer and builder are not recorded by the thesis’ working notes. Its location and principal patrons are also unrecorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁰¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 125---126; and Sharon Farmer’s “Aristocratic Power and the ‘Natural’ Landscape: The Garden Park at Hesdin, ca. 1291---1302,” pages 678 and 679. For the classical technology which undergirds this instance, see Bur, “T5: Singing Birds,” pages 155—165, in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.” No primary source information for this instance is recorded by the thesis’ working notes, but as evidenced by the prior citations, its historical existence and details are not disputed by the scholarly community.

**Kang Type 003, Instance 046 of 295, Cumulative Instance 102 of 409:
The Window-Minder at Hesdin.¹⁰²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis, but may have incorporated hydraulic and kinetic elements. It contained the figure of a generic humanoid of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a park attraction. According to the thesis’ working notes, this instance’s principal designer was Valet-de-Chambre Colard le Voleur, and its principal builder was that same person. Its location was the municipality of Hesdin, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Duke Philip III “The Good” of Burgundy. This instance came into existence as a design or object after the year 1430, with that date being an approximation, and it was inoperative or destroyed before the year 1554, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁰² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 132; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 588; Jessica Riskin’s “Machines in the Garden,” page 32; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 160; and Lily V. Filson’s *Engineering Gods*, page 179, at Footnote 213. For this instance’s primary source matter, see *Inventaire-Sommaire des Archives Departementales Anterieures A 1790, Nord: Archive Civiles, Serie B, B. 1948 (1433)*, Volume 4, which was edited by Chretien Dehaisnes and published at Lille, during the era of the Third French Republic, in the year 1881. That date of publication is not an approximation. See also *Les Ducs de Bourgogne*, Second Partie, Tome 1, which was edited by Count Leon de Laborde and published at Paris, during the era of the Second French Republic, in the year 1849. That date of publication is not an approximation.

**Kang Type 003, Instance 047 of 295, Cumulative Instance 103 of 409:
The Messenger at Hesdin.¹⁰³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition, except the issuance of a voice from its figure, which was most likely accomplished by the use of a speaking-tube. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic. It contained the figure of a presumptively-male herald (a bugler). As described in the consulted sources, this instance’s figure partook of the form termed “musician” by the thesis, as it played a musical instrument. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a park attraction. According to the thesis’ working notes, this instance’s principal designer was Valet-de-Chambre Colard le Voleur, and its principal builder was that same person. Its location was the municipality of Hesdin, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Duke Philip III “The Good” of Burgundy. This instance came into existence as a design or object after the year 1430, with that date being an approximation, and it was inoperative or destroyed before the year 1554, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁰³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 132; Joyce Tally Lionarons’ “Magic, Machines, and Deception: Technology in the *Canterbury Tales*,” page 380; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” pages 588---589; Jessica Riskin’s “Machines in the Garden,” page 32; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 159, 160; and Lily V. Filson’s *Engineering Gods*, pages 178---179. For this instance’s primary source matter, see *Inventaire-Sommaire des Archives Departmentales Anterieures A 1790, Nord: Archive Civiles, Serie B, B. 1948 (1433)*, Volume 4, which was edited by Chretien Dehaisnes and published at Lille, during the era of the Third French Republic, in the year 1881. That date of publication is not an approximation. See also *Les Ducs de Bourgogne, Second Partie, Tome 1*, which was edited by Count Leon de Laborde and published at Paris, during the era of the Second French Republic, in the year 1849. That date of publication is not an approximation.

**Kang Type 003, Instance 048 of 295, Cumulative Instance 104 of 409:
The Jesters at Hesdin.¹⁰⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the large scale defined for evaluative purposes. Its power source is unknown to this thesis, but was likely kinetic. It contained the figures of jesters of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a park attraction. According to the thesis’ working notes, this instance’s principal designer was Valet-de-Chambre Colard le Voleur, and its principal builder was that same person. Its location was the municipality of Hesdin, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Duke Philip III “The Good” of Burgundy. This instance came into existence as a design or object after the year 1430, with that date being an approximation, and it was inoperative or destroyed before the year 1554, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and

¹⁰⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 132; Mary Flowers Braswell’s “The Magic of Machinery: A Context for Chaucer’s ‘Franklin’s Tale,’” page 104; Joyce Tally Lionarons’ “Magic, Machines, and Deception: Technology in the *Canterbury Tales*,” page 380; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 589; Jessica Riskin’s “Machines in the Garden,” page 32; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 159, 160; and Lily V. Filson’s *Engineering Gods*, page 179, at Footnote 213. For this instance’s primary source matter, see *Inventaire-Sommaire des Archives Départementales Antérieures A 1790, Nord: Archive Civiles, Serie B, B. 1948 (1433)*, Volume 4, which was edited by Chretien Dehaisnes and published at Lille, during the era of the Third French Republic, in the year 1881. That date of publication is not an approximation. See also *Les Ducs de Bourgogne*, Second Partie, Tome 1, which was edited by Count Leon de Laborde and published at Paris, during the era of the Second French Republic, in the year 1849. That date of publication is not an approximation.

**Kang Type 003, Instance 048 of 295, Cumulative Instance 104 of 409:
The Jesters at Hesdin.**

especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 049 of 295, Cumulative Instance 105 of 409:
The Conversationalist at Hesdin¹⁰⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition, except the issuance of a voice from its figure, which suggests the use of a speaking-tube. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic (c.f. King’s *Clockwork Prayer*). It contained either the figure of a generic humanoid of unknown or unspecified gender per Truitt, or the figure of an owl of unknown or unspecified gender per Sherwood, Riskin, and Pickover. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a park attraction. According to the thesis’ working notes, this instance’s principal designer was Valet-de-Chambre Colard le Voleur, and its principal builder was that same person. Its location was the municipality of Hesdin, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Duke Philip III “The Good” of Burgundy. This instance came into existence as a design or object after the year 1430, with that date being an approximation, and it was inoperative or destroyed before the year 1554, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁰⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 132, 133; Joyce Tally Lionarons’ “Magic, Machines, and Deception: Technology in the *Canterbury Tales*,” page 380; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 589; Jessica Riskin’s “Machines in the Garden,” page 32; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 17; and Nadia Ambrosetti’s *Cultural Roots of Technology*, page 158 (but only when this instance is construed as an owl, a bird). For this instance’s primary source matter, see *Inventaire-Sommaire des Archives Départementales Antérieures A 1790, Nord: Archive Civiles, Serie B, B. 1948 (1433)*, Volume 4, which was edited by Chretien Dehaisnes and published at Lille, during the era of the Third French Republic, in the year 1881. That date of publication is not an approximation. See also *Les Ducs de Bourgogne*, Second Partie, Tome 1, which was edited by Count Leon de Laborde and published at Paris, during the era of the Second French Republic, in the year 1849. That date of publication is not an approximation.

**Kang Type 003, Instance 050 of 295, Cumulative Instance 106 of 409:
The Heraldic Stag at Paris.¹⁰⁶**

This real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was the energy of a concealed human. It contained the figure of a stag. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character names in its source material. The setting in which it appeared is not applicable, as this instance’s figure was mobile and freestanding. This instance’s principal designer and builder are not recorded by the thesis’ working notes. Its location was the municipality of Paris, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was King Charles VI of France, called both “The Beloved” and “The Mad.” This instance came into existence as a design or object as of the year 1389, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁰⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 136---137. For this instance’s primary source matter, see *Mouers, Usages et Costumes au Moyen Age et a l'Epoque de la Renaissance* [quoting the *Chronicle of Juvenal des Ursins*], which was written by Paul [P.L.] LaCroix [Jacob] and published at Paris, during the era of the Third French Republic, in the year 1871. That date of publication is not an approximation.

**Kang Type 003, Instance 051 of 295, Cumulative Instance 107 of 409:
The Birds at Philip the Good's "Feast of the Pheasant."¹⁰⁷**

Nothing suggests that this real-world instance of automata was "false" by the thesis' definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of generic birds (per one source, magpies) of unknown or unspecified gender. As described in the consulted sources, this instance's figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is unknown to this thesis. This instance's principal designer and principal builder are not recorded by the thesis' working notes. Its location was the municipality of Lille, in the principality of the Kingdom of France. The principal patron responsible for this instance's presence in the historical record, according to the thesis' working notes, was Duke Philip III "The Good" of Burgundy. This instance came into existence as a design or object as of either the years 1453 or 1454, with either of those dates not being approximations in the senses of conveying a date range or of being conjectural. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁰⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt's *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 137; Minsoo Kang's *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 80; Chapuis & Droz's *Automata: A Historical and Technological Study*, page 76; and Stephen N. Fliegel's "The Cleveland Table Fountain and Gothic Automata," page 15. For this instance's primary source matter, see *Chronique de Mathieu d'Escouchy*, Volume I, which was published at Paris during the era of the Second French Empire in the years 1863--1864. Those dates of publication are not an approximation. See also *Memoires d'Olivier de la Marche, Maitre d'Hotel et Capitaine des Gardes de Charles le Temeraire*, which was published at Paris, during the era of the Third French Republic, in the year 1884. That date of publication is not an approximation.

**Kang Type 003, Instance 052 of 295, Cumulative Instance 108 of 409:
The Boars' Head(s) of Hesdin.¹⁰⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of boars’ heads, which are considered “boars” by the thesis, as demi-animaloid automata was not tracked as such under the thesis’ scheme of controlled vocabulary. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a pavilion. According to the thesis’ working notes, this instance’s principal designer was a certain Master Guissin, and its principal builder was that same person. Its location was the municipality of Hesdin, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Count Robert II of Artois. This instance came into existence as a design or object as of the years 1296--1301, with that date being an approximation, and it was inoperative or destroyed before the year 1554, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁰⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 138, 140; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 590; Jessica Riskin’s “Machines in the Garden,” page 32; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 17; and Nadia Ambrosetti’s *Cultural Roots of Technology*, page 158. For this instance’s primary source matter, see *Inventaire-Sommaire des Archives Départementales Antérieures A 1790, Pas-des-Calais, Archive Civiles, Series A, A 147 (1296-1299)*, Volume I, which was edited by Jules-Marie Richard and published at Arras, during the era of the Third French Republic, in the year 1878. That date of publication is not an approximation. See also *Un Petite-Niece de Saint Louis*, which was authored by J.M. Richard and published at Paris, in the era of the French Third Republic, in the year 1887. That date of publication is not an approximation.

**Kang Type 003, Instance 053 of 295, Cumulative Instance 109 of 409:
The Clepsydra at the Gate of ‘Bab Jayrun.¹⁰⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the large scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of generic birds of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “bellringer” by the thesis, as these figures, or the totality of the device to which they were affixed, caused a bell to sound. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a gate (and the public clock attached thereto). According to the thesis’ working notes, this instance’s principal designer was Muhammad bin Ali bin Rustam al-Khurasani al-Sa’ati, and its principal builder was that same person, in addition to Fakhr al-Din Ridwan bin Muhammad, known as Ridwan, its restorer. Its location was the municipality of Damascus, in the principality of the Seljuk Empire. The principal patrons responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was the Emir Nur al-Din

¹⁰⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 144; Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 578; Derek J. De Solla Price’s “On the Origin of Clockwork, Perpetual Motion Machines, and the Compass” (see the “Mechanized Astronomical Models” section, pages 22 and 40 in the thesis’ copy); *The Book of Knowledge of Ingenious Mechanical Devices* in Hill’s edition, pages 11 and 271; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 105---106; and Lily V. Filson’s *Engineering Gods*, page 162 (Filson named Ridwan and his clock, which comprises this instance, but she does not mention this instance’s automata). For this instance’s primary source matter, see *The Itinerary of Benjamin of Tudela* (per the thesis’ working notes, this source is quoted in Flood). The thesis’ working notes record no further information about this primary source, other than that it was written by Benjamin of Tudela during the Middle Ages, but it is recalled that Benjamin was a Jew from the Iberian Peninsula who visited this instance during the travels he documented in his surviving work. See also *Treatise on the Making of Clepsydrae* (which was translated from Arabic into German by E. Wiedemann, see “Uhren im Bereich der Islamischen Kultur”), as written by Ridwan, a major pre-Modern Islamic author on the subject of engineering and constructing automata, thereabout the years 1200 or 1203 (per Hill), with those dates of composition being approximations. There is a particularly stark exemplification of the distinctness of the thesis’ second and third currents of thought when comparing Benjamin and Ridwan’s writings; Benjamin’s description of Ridwan’s clepsydra matches or exceeds Marco Polo’s tone in its amazement at this device, which is rather inaccurately presented in an account reminiscent of the medieval romances. Ridwan, its designer, instead wrote an engineering treatise which described the device and its construction, including no known suggestion of the efficacy of magic or the deployment of efficacious magic in the operation of the same. Thus, Benjamin is clearly influenced by the third current of thought, despite the cultural heterogeneity of the Iberian peninsula in the Middle Ages, and writes as would many other lay Western Europeans of his time, whereas Ridwan, as a receiver of the classical world’s automaton-building technology, and as an author influenced by the perspective of the Islamic world with regard to automaton-building, wherein automata are exclusively secular in subject matter and conceptualization due to religious strictures, communicates this instance’s details with a wholly different mindset and prose language.

**Kang Type 003, Instance 053 of 295, Cumulative Instance 109 of 409:
The Clepsydra at the Gate of ‘Bab Jayrun.**

ibn Zangi. This instance came into existence as a design or object as of the year 1150, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 054 of 295, Cumulative Instance 110 of 409:
al-Jazari's Castle Clock.¹¹⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a generic man, a falcon of unknown or unspecified gender, a male musician (a drummer), a male musician (a trumpeter), and a male musician (a cymbalist). As described in the consulted sources, this instance’s figures partook of the forms termed “bellringer,” “musician,” and “thing of brass,” by the thesis, as the figures of falcons caused a sound like the ringing of a bell, some of the male figures depicted people playing musical instruments, and the falcons had a brazen coloration, although in this case, the magical connotation of that form does not apply, and the falcons were part of the device’s larger design. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a public clock. According to the thesis’ working notes, this instance’s principal designer was Badīʿ-al-Zamān (“The Wonder of the Age”) Ibn al-Razzaz al-Jazari and its principal builder was that same person. Its location was the municipality of Diyarbakir, in the principality of Diyar Bakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was King Nasir al-Din, whose full name is given elsewhere in this section. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the

¹¹⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 144-145, and Plate 33; Chapuis & Droz’s *Automata: A Historical and Technological Study*, pages 36---37; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 13; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 111, 114, 115; and Donald R. Hills’s introduction to the Banu Musa’s *Book of Ingenious Devices*, page 21. This instance, along with the second of al-Jazari’s fifty devices (not all of which contain automata), is also obliquely referenced on page 161 of Lily V. Filson’s *Engineering Gods*. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab Fi Ma ‘Rifat al-Hiyal al-Handasiyya)*, Hill’s edition, pages 18, 19, 26, 27, 28, 29, 30, 32, 33, 34, 35, 207, 241, 242 --- 243, 244, 271, 276, 279, which was written by Badīʿ-al-Zamān Ibn al-Razzaz al-Jazari at Diyarbakir, in Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation.

**Kang Type 003, Instance 054 of 295, Cumulative Instance 110 of 409:
al-Jazari's Castle Clock.**

technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 055 of 295, Cumulative Instance 111 of 409:
The Automata of the Cathedral Clock at Norwich Cathedral.¹¹¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source was kinetic. It contained the figures of generic humanoids of unknown or unspecified gender representing the month’s days and male Christian monks. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a public clock. This instance’s principal designer and principal builder are not recorded by the thesis’ working notes. Its location was the municipality of Norwich, in the principality of the Kingdom of England. The principal patron responsible for this instance’s presence in the historical record is not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the years 1321---1325, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological

¹¹¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 147; and Wolfram Koepppe’s essay “Clocks and Automata: The Art of Technological Development” in his edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 197. Due to limitations of time, money, and energy, only information from the subsection of Koepppe’s edited exhibition guide in which that essay appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. For this instance’s primary source matter, see the sacrist’s rolls of Norwich Cathedral’s priory, Truitt’s cited source which, to the thesis’ recollection, she admits that she has not personally inspected. Regrettably, the thesis’ working notes record no further information regarding this instance.

**Kang Type 003, Instance 055 of 295, Cumulative Instance 111 of 409:
The Automata of the Cathedral Clock at Norwich Cathedral.**

achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 056 of 295, Cumulative Instance 112 of 409:
The Other Automata of the First Strasbourg Cathedral Clock.¹¹²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source was kinetic. It contained the figures of the Magi and an angel of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “saint” and “angel” by the thesis, as the Magi are saints in some Christian denominations, and the remaining automaton depicted a heavenly being. On review, these automaton figures were assigned individual character names in their source material, “Melchior,” “Caspar,” and “Balthazar.” The setting in which they appeared was a public clock. This instance’s principal designer and builder are not recorded by the thesis’ working notes. Its location was the municipality of Strasbourg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the years 1352---1354 per Truitt, with that date range being an approximation, and it was inoperative or destroyed as of the year 1571 per Truitt, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of

¹¹² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 149---150; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 80, 139; Jessica Riskin’s “Machines in the Garden,” page 22; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 21; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 164 (Ambrosetti calls the Virgin and Child figures “statutes,” suggesting that she interprets the layout of this instance to be comparable to that at Saint Mark’s Clocktower, Venice, which would mean that, in her interpretation, the Virgin and Child were not automata); and Wolfram Koeppe’s essay “Clocks and Automata: The Art of Technological Development” in his edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 199. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which that essay appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. Minsoo Kang states that this clock was referenced by Robert Boyle in the seventeenth century, and while that could be possible, Boyle would have known the second Strasbourg Cathedral Clock in his lifetime, not the first one. The thesis’ working notes do not record primary source matter for this instance, and readers are accordingly referred to the above secondary sources in the event that any information provided by the same was omitted in error during this document’s preparation.

**Kang Type 003, Instance 056 of 295, Cumulative Instance 112 of 409:
The Other Automata of the First Strasbourg Cathedral Clock.**

ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 057 of 295, Cumulative Instance 113 of 409:
The Automata of the Second Strasbourg Cathedral Clock.¹¹³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source was kinetic. It contained the figures of ancient Roman gods, figures depicting the four allegorical stages of human life, the human incarnation of the Christian God, a skeleton, and an angel. As described in the consulted sources, this instance’s figures partook of the forms termed “god,” “death,” and “angel,” by the thesis, as multiple figures depicted the divine beings of distinct religious traditions, one figure allegorically depicted death, and one figure depicted a heavenly being. On review, these automaton figures were assigned individual character names in their source material, “Jesus Christ” and “Death.” The setting in which they appeared was a public clock. According to the thesis’ working notes, this instance’s principal designers were Professor Conrad Dasypodius, Tobias Stimmer, and the brothers Isaac and Josias Habrecht, and its principal builder is not recorded by the thesis’ working notes. Its location was the municipality of Strasbourg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was the Ammeister Hans Hammerer. This instance came into existence as a design or object as of the years 1571---1574, with that date range not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the

¹¹³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 150---152, and Plate 36; Jessica Riskin’s “Machines in the Garden,” page 22; Lily V. Filson’s *Engineering Gods*, page 173; and Wolfram Koeppé’s essay “Clocks and Automata: The Art of Technological Development” in his edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 199, and Figure 93 on that same page, which appears to be a detail from a woodcut that is either equivalent or very similar to the one used as the frontispiece to the text of this thesis. Due to limitations of time, money, and energy, only information from the subsection of Koeppé’s edited exhibition guide in which that essay appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. For this instance’s primary source matter, see *Heron Mechanicus: Seu de Mechanicis Ejusdem Horologii Astronomici*, which was written by Professor Conrad Dasypodius under the patronage of Ammeister Abraham Heldt and published at Strasbourg, in the Holy Roman Empire, in the year 1580. That date of publication is not an approximation. The invocation of Heron’s name in the title of this work is indicative of the sixth current of thought, as it serves to couch Dasypodius’ restoration of the old cathedral clock within a broader scholarly project, the reclamation of the classical world’s intellectual heritage within the milieu of the late Renaissance. Of course, the operation of the second Strasbourg Cathedral clock is not actually Heronic in nature, as it used clockwork mechanisms to transfer kinetic energy, not pneumatic and/or hydraulic equipment.

**Kang Type 003, Instance 057 of 295, Cumulative Instance 113 of 409:
The Automata of the Second Strasbourg Cathedral Clock.**

same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 058 of 295, Cumulative Instance 114 of 409:
The Clepsydra Gifted to Roger II of Sicily.¹¹⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic woman. As described in the consulted sources, this instance’s figure partook of the form termed “bellringer” by the thesis, as its figure caused a sound like the ringing of a bell. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a clepsydra. This instance’s principal designer and builder are not recorded by the thesis’ working notes. Its location, at the levels of its municipality and principality, and the principal patrons responsible for this instance’s presence in the historical record, are also unrecorded in the thesis’ working notes. This instance came into existence as a design or object in the twelfth century per Farmer, the years 1101---1200, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹¹⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Sharon Farmer’s “Aristocratic Power and the ‘Natural’ Landscape: The Garden Park at Hesdin, ca. 1291---1302,” page 679; and Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 582. The thesis’ working notes do not record primary source matter for this instance, and readers are accordingly referred to the above secondary sources in the event that any information provided by the same was omitted in error during this document’s preparation.

**Kang Type 003, Instance 059 of 295, Cumulative Instance 115 of 409:
al-Jazari's Peacock Washbasin.¹¹⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a peacock of unknown or unspecified gender and a humanoid servant of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “servant” by the thesis, as at least one of the figures depicted a being performing a servile action, filling a servile role, or which was in some other sense recognizable as a servant. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a basin. According to the thesis’ working notes, this instance’s principal designer was Badi’-al-Zamān (“The Wonder of the Age”) Ibn al-Razzaz al-Jazari, and its principal builder was that same person. Its location was the municipality of Diyarbakir, in the principality of Diyar Bakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was King Nasir al-Din, whose full name is given elsewhere in this section. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹¹⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Stephen N. Fliegel’s “The Cleveland Table Fountain and Gothic Automata,” page 13; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, pages 12---13; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 114, 122. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab Fi Ma 'Rifat al-Hiyal al-Handasiyya)*, in Hill’s edition, pages 149 --- 152, 230, 231, and 262, which was written by Badi’-al-Zamān Ibn al-Razzaz al-Jazari at Diyarbakir, in Diyar Bakr, al-Jazira, in the year 1206. That date of publication is not an approximation.

**Kang Type 003, Instance 060 of 295, Cumulative Instance 116 of 409:
Torriano's First Monk.¹¹⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a male Christian monk. As described in the consulted sources, this instance’s figure partook of the form termed “saint” by the thesis, as it depicts a person who is considered a saint in certain Christian denominations. On review, this automaton figure was assigned an individual character name in its source material, “Saint Diego de Alcala.” The setting in which it appeared is not applicable, as it was freestanding and mobile. According to the thesis’ working notes, this instance’s principal designer was Gianello Torriano of Cremona,

¹¹⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Elizabeth King’s “Clockwork Prayer: A Sixteenth-Century Mechanical Monk,” pages 1, 3, 4, 12, 13, 14, 18; Mark Elling Rosheim’s *Leonardo’s Lost Robots*, pages 35, 36; Christopher Swift’s “Robot Saints,” pages 59, 74; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 45, 81; Jessica Riskin’s “Machines in the Garden,” pages 26---27; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 23; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 193, 194; Lily V. Filson’s *Engineering Gods*, pages 172, 212; and Wolfram Koeppe’s essay “Clocks and Automata: The Art of Technological Development” in his edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 202, and pages 256---257 in that same volume, with this instance shown in a color photograph on page 257. In note 7 on page 256, Koeppe also mentions “a similar figure in a private collection in Milan,” although his phrasing makes it unclear, at least to this reader, whether the Milan automaton is like this instance, like “Torriano’s First Lady Lute Player,” or like both. As such, the Milan automaton was not entered as a separate instance of pre-Modern and Early Modern automata, and it only appears in this footnote and the footnote for “Torriano’s First Lady Lute Player.” Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which that essay and the cataloging entry for this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. See also Jessica Riskin’s introduction, “The Sistine Gap,” for her edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, pages 14, 16, 23, 24; Scott Maisano’s “Infinite Gesture: Automata and the Emotions in Descartes and Shakespeare” in that same edited anthology, page 75; and Elizabeth King’s later article on this instance in that same edited anthology, “Perpetual Devotion: A Sixteenth-Century Machine that Prays,” pages 263 – 267, 274 – 275, 276, 277, 278, 282, 283, 284, and endnote 16 on page 287, which mentions a “competing argument” for the origins of this instance (namely, that it was created by a South German guild, not the engineer to the King of Spain). As an extant material-cultural object, this instance may itself be consulted as primary source matter, and according to the thesis’ working notes, its design and realization are ascribed to Gianello Torriano of Cremona, who is credited, following King, with assembling this instance under the patronage of King Philip II of Spain in the year 1562. That date of construction is an approximation. With apologies to Elizabeth King and W. David Todd, the foremost experts on this instance, its pervasiveness in works of scholarship on the thesis’ topic grows slightly tiresome, especially if treatments of its history as (admittedly) one of the best-preserved demonstrations of Early Modern automata are authored to the exclusion of treatments for the histories of the hundreds of other automata, extant and lost, which are identified in this appendix.

**Kang Type 003, Instance 060 of 295, Cumulative Instance 116 of 409:
Torriano's First Monk.**

and its principal builder was that same person. Its location is not recorded in the thesis' working notes. The principal patron responsible for this instance's presence in the historical record, according to the thesis' working notes, was King Philip II of Spain. This instance came into existence as a design or object after the year 1562, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 061 of 295, Cumulative Instance 117 of 409:
Torriano's Second Monk.¹¹⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a male Christian monk. As described in the consulted sources, this instance’s figure partook of the form termed “bellringer” by the thesis, as it produced a sound like a ringing bell. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. According to the thesis’ working notes, this instance’s principal designer was Gianello Torriano of Cremona, and its principal builder was that same person. Its location and principal patrons are not recorded in the thesis’ working notes. This instance came into existence as a design or object after the year 1550, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹¹⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Elizabeth King’s “Clockwork Prayer: A Sixteenth-Century Mechanical Monk,” page 10; and Wolfram Koeppé’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 256, where “another monk figure at the Deutsches Museum, Munich” is referenced – while the thesis cannot state with certainty that Koeppé is referencing one of the same monks (other than “Torriano’s First Monk”) named by King, or that the monk automaton in Munich is this same instance, it would seem to be a possibility, as with Torriano’s remaining monk(s) other than the “First Monk” presented in Koeppé’s exhibition guide. See also King’s later article in Jessica Riskin’s edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, “Perpetual Devotion: A Sixteenth-Century Machine that Prays,” page 270, which indirectly references this instance, as well as other instances associated with and, for purposes of this thesis, attributed to Gianello Torriano. As an extant material-cultural object, this instance may itself be consulted as primary source matter, and according to the thesis’ working notes, its design and realization are ascribed to Gianello Torriano of Cremona, who is credited, following King, with assembling this instance thereabout the mid-sixteenth century, corresponding to the year 1550. That date of construction is an approximation, and no further information regarding this instance has been located.

**Kang Type 003, Instance 062 of 295, Cumulative Instance 118 of 409:
Torriano's Third Monk.¹¹⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a male Christian monk. As described in the consulted sources, this instance’s figure partook of the forms termed “bellringer” and “saint” by the thesis, as it produced a sound like the ringing of a bell and represented a person who is considered a saint in certain Christian denominations. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was mobile and freestanding. According to the thesis’ working notes, this instance’s principal designer was Gianello Torriano of Cremona, and its principal builder was that same person. Its location and principal patrons are not recorded in the thesis’ working notes. This instance came into existence as a design or object after the year 1550, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has

¹¹⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Elizabeth King’s “Clockwork Prayer: A Sixteenth-Century Mechanical Monk,” page 10; and Wolfram Koeppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 256, where “another monk figure at the Deutsches Museum, Munich” is referenced – while the thesis cannot state with certainty that Koeppe is referencing one of the same monks (other than “Torriano’s First Monk”) named by King, or that the monk automaton in Munich is this same instance, it would seem to be a possibility, as with Torriano’s remaining monk(s) other than the “First Monk” presented in Koeppe’s exhibition guide. See also King’s later article in Jessica Riskin’s edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, “Perpetual Devotion: A Sixteenth-Century Machine that Prays,” page 270, which indirectly references this instance, as well as other instances associated with and, for purposes of this thesis, attributed to Gianello Torriano. As an extant material-cultural object, this instance may itself be consulted as primary source matter, and according to the thesis’ working notes, its design and realization are ascribed to Gianello Torriano of Cremona, who is credited, following King, with assembling this instance thereabout the mid-sixteenth century, corresponding to the year 1550. That date of construction is an approximation, and no further information regarding this instance has been located. This note repeats the information of the prior footnote, but “ibidem” has not been used because this instance is a discrete and physically distinct object.

**Kang Type 003, Instance 062 of 295, Cumulative Instance 118 of 409:
Torriano's Third Monk.**

found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 063 of 295, Cumulative Instance 119 of 409:
Torriano's Second Lady Lute Player.¹¹⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a female musician (a lutenist). As described in the consulted sources, this instance’s figure partook of the form termed “musician” by the thesis, as it played a musical instrument. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was mobile and freestanding. According to the thesis’ working notes, this instance’s principal designer was Gianello Torriano of Cremona, and its principal builder was that same person. Its location and principal patrons are not recorded in the thesis’ working notes. This instance came into existence as a design or object after the year 1550, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹¹⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Elizabeth King’s “Clockwork Prayer: A Sixteenth-Century Mechanical Monk,” page 10; and Wolfram Koeppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 256, where “a female figure in Paris” is referenced – while the thesis cannot state with certainty that Koeppe is referencing one of the same lady lute players (other than “Torriano’s First Lady Lute Player”) named by King, or that the lady lute player in Paris is this same instance, it would seem to be a possibility, as with Torriano’s lady lute players other than the “First Lady Lute Player” presented in Koeppe’s exhibition guide. See also King’s later article in Jessica Riskin’s edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, “Perpetual Devotion: A Sixteenth-Century Machine that Prays,” page 270, which indirectly references this instance, as well as other instances associated with and, for purposes of this thesis, attributed to Gianello Torriano. As an extant material-cultural object, this instance may itself be consulted as primary source matter, and according to the thesis’ working notes, its design and realization are ascribed to Gianello Torriano of Cremona, who is credited, following King, with assembling this instance thereabout the mid-sixteenth century, corresponding to the year 1550. That date of construction is an approximation, and no further information regarding this instance has been located. This note repeats the information of the prior footnote, but “ibidem” has not been used because this instance is a discrete and physically distinct object.

**Kang Type 003, Instance 064 of 295, Cumulative Instance 120 of 409:
Torriano's Third Lady Lute Player.¹²⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a female musician (a lutenist). As described in the consulted sources, this instance’s figure partook of the form termed “musician” by the thesis, as it played a musical instrument. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. According to the thesis’ working notes, this instance’s principal designer was Gianello Torriano of Cremona, and its principal builder was that same person. Its location and principal patrons are not recorded in the thesis’ working notes. This instance came into existence as a design or object after the year 1550, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹²⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Elizabeth King’s “Clockwork Prayer: A Sixteenth-Century Mechanical Monk,” page 10; and Wolfram Koeppé’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 256, where “a female figure in Paris” is referenced – while the thesis cannot state with certainty that Koeppé is referencing one of the same lady lute players (other than “Torriano’s First Lady Lute Player”) named by King, or that the lady lute player in Paris is this same instance, it would seem to be a possibility, as with Torriano’s lady lute players other than the “First Lady Lute Player” presented in Koeppé’s exhibition guide. See also King’s later article in Jessica Riskin’s edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, “Perpetual Devotion: A Sixteenth-Century Machine that Prays,” page 270, which indirectly references this instance, as well as other instances associated with and, for purposes of this thesis, attributed to Gianello Torriano. As an extant material-cultural object, this instance may itself be consulted as primary source matter, and according to the thesis’ working notes, its design and realization are ascribed to Gianello Torriano of Cremona, who is credited, following King, with assembling this instance thereabout the mid-sixteenth century, corresponding to the year 1550. That date of construction is an approximation, and no further information regarding this instance has been located. This note repeats the information of the prior footnote, but “ibidem” has not been used because this instance is a discrete and physically distinct object.

**Kang Type 003, Instance 065 of 295, Cumulative Instance 121 of 409:
Torriano's Fourth Lady Lute Player.¹²¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a female musician (a lutenist). As described in the consulted sources, this instance’s figure partook of the form termed “musician” by the thesis, as it played a musical instrument. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. According to the thesis’ working notes, this instance’s principal designer was Gianello Torriano of Cremona, and its principal builder was that same person. Its location and principal patrons are not recorded in the thesis’ working notes. This instance came into existence as a design or object after the year 1550, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹²¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Elizabeth King’s “Clockwork Prayer: A Sixteenth-Century Mechanical Monk,” page 10; and Wolfram Koeppel’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 256, where “a female figure in Paris” is referenced – while the thesis cannot state with certainty that Koeppel is referencing one of the same lady lute players (other than “Torriano’s First Lady Lute Player”) named by King, or that the lady lute player in Paris is this same instance, it would seem to be a possibility, as with Torriano’s lady lute players other than the “First Lady Lute Player” presented in Koeppel’s exhibition guide. See also King’s later article in Jessica Riskin’s edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, “Perpetual Devotion: A Sixteenth-Century Machine that Prays,” page 270, which indirectly references this instance, as well as other instances associated with and, for purposes of this thesis, attributed to Gianello Torriano. As an extant material-cultural object, this instance may itself be consulted as primary source matter, and according to the thesis’ working notes, its design and realization are ascribed to Gianello Torriano of Cremona, who is credited, following King, with assembling this instance thereabout the mid-sixteenth century, corresponding to the year 1550. That date of construction is an approximation, and no further information regarding this instance has been located. This note repeats the information of the prior footnote, but “ibidem” has not been used because this instance is a discrete and physically distinct object.

**Kang Type 003, Instance 066 of 295, Cumulative Instance 122 of 409:
Torriano's Lady Drummer.¹²²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a female musician (a drummer). As described in the consulted sources, this instance’s figure partook of the form termed “musician” by the thesis, as it played a musical instrument. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. According to the thesis’ working notes, this instance’s principal designer was Gianello Torriano of Cremona, and its principal builder was that same person. Its location and principal patrons are not recorded in the thesis’ working notes. This instance came into existence as a design or object before the year 1575, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or “reclamation” of classical Greek and Roman civilizational achievements.

¹²² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Elizabeth King’s “Clockwork Prayer: A Sixteenth-Century Mechanical Monk,” page 11; Jessica Riskin’s “Machines in the Garden,” page 26; Lily V. Filson’s *Engineering Gods*, page 172; and Wolfram Koeppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, pages 234 and 235. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. See also King’s later article in Jessica Riskin’s edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, “Perpetual Devotion: A Sixteenth-Century Machine that Prays,” page 272, and endnote 11 on page 287, which provides Professor Ambrosio de Morales’ original Spanish source text for this instance, complete with its original long “s” characters (as does Koeppe’s first note on page 235, but with modern characters). For this instance’s primary source matter, see Professor Ambrosio de Morales’ *Las Anteguedades de las Ciudades de Espana*, which was published under the patronage of King Philip II of Spain at Madrid, in the Kingdom of Spain, in the year 1575. That date of publication is not an approximation.

**Kang Type 003, Instance 067 of 295, Cumulative Instance 123 of 409:
The Gaza Clock.¹²³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a female Gorgoneion, an ancient Roman god, and an ancient Greek hero. As described in the consulted sources, this instance’s figures partook of the forms termed “bellringer,” “monster,” “god,” and “hero” by the thesis, as at least one figure, or the totality of the device’s design, produced a sound like the ringing of a bell, at least one figure depicted a fantastical creature, at least one figure depicted a divine being, and at least one figure depicted a sympathetic person known for doing good deeds. On review, these automaton figures were assigned individual character names in their source material, “Medusa,” “Sol,” and “Hercules.” The setting in which they appeared was a public clock. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Gaza, in the principality of the Eastern Roman (Byzantine) Empire, Byzantium. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious

¹²³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 578; Derek J. De Solla Price’s “On the Origin of Clockwork, Perpetual Motion Devices, and the Compass” (see the “Mechanized Astronomical Models” section, pages 21---22, in the thesis’ copy); and Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 89 --- 93, 111, 220, 225, and 231. In this case, the thesis’ working notes record that the author of this instance’s primary source matter is “Procopius,” but offer no other information. On recollection, the thesis believes that this “Procopius” was not the more famous late antique historian, but another historian of the same name, “Procopius of Gaza,” who was active in the Levant during the era of the Byzantine Empire. Wiedemann authored much scholarship on this instance in the nineteenth century, but to the author’s knowledge, it has not been translated out of German, and that body of work is thus inaccessible to this thesis.

**Kang Type 003, Instance 067 of 295, Cumulative Instance 123 of 409:
The Gaza Clock.**

subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome.

**Kang Type 003, Instance 068 of 295, Cumulative Instance 124 of 409:
The Bearded Organ Automaton at Orleans Cathedral.¹²⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was pneumatic. It contained the figure of a generic man, as “organ ape,” a name sometimes used for this type of automaton, is not nomenclature which establishes its figure. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was an organ. This instance’s principal designer and builder are not recorded by the thesis’ working notes. Its location was the municipality of Orleans, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object before the year 1494, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹²⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” pages 585---586. The thesis’ working notes record no primary source matter for this instance, and no authors other than Sherwood acknowledge its historical existence. However, the thesis, in deference to Sherwood’s authority, has nonetheless included this instance, which, like the organ automata at Strasbourg Cathedral, was called an “ape,” but was presumably not simian and instead, as with the Pretzel-man, a male humanoid figure.

**Kang Type 003, Instance 069 of 295, Cumulative Instance 125 of 409:
da Vinci's Knight.¹²⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a male knight. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a grotto. According to the thesis’ working notes, this instance’s principal designer was Leonardo da Vinci. Its location was the municipality of Milan, in the principality of the Duchy of Milan. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Duke Ludovico Sforza. This instance came into existence as a design or object as of the years 1495---1497, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of

¹²⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Michael E. Moran’s “The Da Vinci Robot,” pages 986, 989, 990; Mark Elling Rosheim’s *Leonardo's Lost Robots*, pages IX, X, 1, 20, 62, 69, 70, 71, 73, 95, 96, 101, 102, 103, 108, 110, 112, 123, 161, 162; Philip Butterworth’s “The Mechanycalle ‘Ymage off Seynt Iorge’ at St. Botolph’s, Billingsgate, 1474,” page 236; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 81; Jessica Riskin’s “Machines in the Garden,” page 24, footnote 47; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 23; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 180, 182; and Lily V. Filson’s *Engineering Gods*, page 183. For this instance’s primary source matter, see *Codex Atlanticus*, Folio 388 V-A [1077 Recto], Folio 366 V-B [1021 Verso], Folio 216 V-B [579 Recto], Folio 366 R-A [1021 Recto], Folio 330 R-A [903 Recto], Folio 330 R-B [904 Recto], and Folio 134 R-B [369 Recto], which were created by Leonardo da Vinci thereabout the year 1495, with that date of creation being an approximation. See also *Paris Manuscript H*, Folio 113 [30 Verso] Recto --- 112 [31 Recto] Verso; *Madrid Manuscript I*, Folio 90 Verso, *Manuscript I*, Folio 91 Recto, Folio 142 Recto; and *Codex Arundel* 263, Folio 42 Recto, all of which were also created by Leonardo da Vinci in his lifetime.

**Kang Type 003, Instance 069 of 295, Cumulative Instance 125 of 409:
da Vinci's Knight.**

whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 070 of 295, Cumulative Instance 126 of 409:
da Vinci's Jacquemart.¹²⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic man. As described in the consulted sources, this instance’s figure partook of the form termed “bellringer” by the thesis, as its figure or totality of design produced a sound like the ringing of a bell. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a fountain. According to the thesis’ working notes, this instance’s principal designer was Leonardo da Vinci. Its location at the levels of municipality and principality is not recorded in the thesis’ working notes. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Governor Charles II d’Amboise. This instance came into existence as a design or object as of the year 1510, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹²⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Michael E. Moran’s “The da Vinci Robot,” page 988; Mark Elling Rosheim’s *Leonardo's Lost Robots*, pages X, 64, 70, 115, 119, 120, 121, 122, 123, 124, 160, 161, 163, 165; Philip Butterworth’s “The Mechanycalle 'Image off Seynt Iorge' at Saint Botolph's, Billingsgate, 1474,” page 236; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 180, 182; and Lily V. Filson’s *Engineering Gods*, pages 184 and 185. For this instance’s primary source matter, see *Windsor*, RL 12716, 12688, Fragments RL 12480, 12718, RL 12282 V K/P 125 R, 12641, which were created by Leonardo da Vinci; *Codex Atlanticus*, Folio 20 V-B [65 Verso], 362 V-A [1011 Recto], 343 V-A [943 Recto], 343 R-A [941 Recto], 288 V-A [782 Verso], 373 V-B [1042 Recto], 288 R-A [782 Recto], 352 V-A [975 Verso], 352 V-A [975 Recto]; and *Paris Manuscript* L 23 Verso, 27 Recto, all of which were also created by Leonardo da Vinci.

**Kang Type 003, Instance 071 of 295, Cumulative Instance 127 of 409:
del Verocchio's Jacquemart.¹²⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic. It contained the figure of a putto, a male angel. As described in the consulted sources, this instance’s figure partook of the forms termed “bellringer” and “angel” by the thesis, as its figure or totality of design produced a sound like the ringing of a bell, and its figure depicted a heavenly being. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a public clock. According to the thesis’ working notes, this instance’s principal designer was Andrea del Verocchio, and its principal builder was that same person. Its location was the municipality of Florence, in the principality of the Republic of Florence. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1450, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹²⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mark Elling Rosheim’s *Leonardo’s Lost Robots*, pages 3, 122; and Nadia Ambrosetti’s *Cultural Roots of Technology*, page 163, at Footnote 193. For this instance’s primary source matter, see *Lives of Seventy of the Most Eminent Painters, Sculptors, and Architects* (as edited and annotated by E.H. and E.W. Blashfield, with A.A. Hopkins, in the year 1896), Volumes II and III, which was originally written by Giorgio Vasari under the patronage of the Grand Duke Cosimo I de Medici in the era of the Italian Renaissance; the thesis’ working notes do not record the publication date of Vasari’s first edition.

**Kang Type 003, Instance 072 of 295, Cumulative Instance 128 of 409:
da Vinci's Theatrical Bird.¹²⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a generic bird of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as this instance was portable. According to the thesis’ working notes, this instance’s principal designer was Leonardo da Vinci, and its principal builder was that same person. Its location was the municipality of Milan, in the principality of the Duchy of Milan. The principal patron responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Governor Charles II d’Amboise. This instance came into existence as a design or object as of the year 1508, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹²⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mark Elling Rosheim’s *Leonardo's Lost Robots*, pages 6, 120; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 23; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 179, at Footnote 218, and pages 180, 181; and Lily V. Filson’s *Engineering Gods*, page 184. For this instance’s primary source matter, see *Codex Atlanticus*, Folio 630 Verso [231 V-C], which was created by Leonardo da Vinci, as established in a prior footnote.

**Kang Type 003, Instance 073 of 295, Cumulative Instance 129 of 409:
The Second Lion with da Vinci's Design.¹²⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a lion, an animal typically represented with a male depiction in the eras under consideration. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as this instance was mobile and freestanding. According to the thesis’ working notes, this instance’s principal designer was Leonardo da Vinci. Its location at the levels of principality and municipality is not recorded by the thesis’ working notes. The principal patrons responsible for this instance’s presence in the historical record are also unrecorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1600, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹²⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mark Elling Rosheim’s *Leonardo's Lost Robots*, pages 21, 120; and Nadia Ambrosetti’s *Cultural Roots of Technology*, page 181. For this instance’s primary source matter, see *Descrizione delle Felicissime Nozze della Cristianissima Maesta' di Maria Medici Regina di Francia e di Navarra*, which was written by Michelangelo Buonarroti the Younger at Florence, in the Grand Duchy of Tuscany, in the year 1600. That date of publication is not an approximation.

**Kang Type 003, Instance 074 of 295, Cumulative Instance 130 of 409:
The Jousting Knight at Munich.¹³⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a male knight and a horse of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is not applicable, as they were freestanding and mobile. This instance’s principal designer, builder, and location are not recorded in the thesis’ working notes; while the author recalls that it has been collected and displayed at Munich, this does not necessarily mean that it originated in that municipality as an object. The principal patrons responsible for this instance’s presence in the historical record are also unrecorded by the thesis’ working notes. This instance came into existence as a design or object as of the year 1520, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹³⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mark Elling Rosheim’s *Leonardo’s Lost Robots*, page 71. As an extant material-cultural object, this instance may itself be consulted as primary source matter, but the thesis’ working notes record no further information regarding its provenance. On recollection, this is the only instance noted by the thesis which is and was truly a toy, an object intended for child’s play. The rareness with which this appellation, “toy,” can correctly be applied to pre-Modern or Early Modern automata is underscored by the point that the thesis is only prepared to acknowledge this lone instance using such a term; generally speaking, the automata of the studied periods can only be dismissively called “toys” in the same sense that one might equate a Shakespearean tragedy with a Harlequin romance novel. Even the most adamantly hostile to celebrations of the medieval and Renaissance eras must concede this qualitative difference when evaluating works of material culture, just as must be done for prose works under the stated analogy. Yet indeed, as Chapuis and Droz noted, even true toys may be spectacular material-cultural objects.

**Kang Type 003, Instance 075 of 295, Cumulative Instance 131 of 409:
Golpaja's Doorman.¹³¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a generic man. As described in the consulted sources, this instance’s figure partook of the form termed “gatekeeper” by the thesis, as it monitored a threshold of some kind. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a doorway. According to the thesis’ working notes, this instance’s principal designer was Benvenuto di Lorenzo della Golpaja. Its location and principal patrons are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1520, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

¹³¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mark Elling Rosheim’s *Leonardo’s Lost Robots*, pages 69 and 110. For this instance’s primary source matter, see the *Venice Codex*, which was written by Benvenuto di Lorenzo della Golpaja thereabout the year 1520. That date of composition is an approximation.

**Kang Type 003, Instance 076 of 295, Cumulative Instance 132 of 409:
The Automata at Sung's Astronomical Clocktower.¹³²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male town crier and a male musician (a drummer). As described in the consulted sources, this instance’s figures partook of the forms termed “bellringer” and “musician” by the thesis, as at least one figure or the totality of the design produced a sound like the ringing of a bell, and at least one figure played a musical instrument. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a public clock. According to the thesis’ working notes, this instance’s principal designer was Su Sung, and its principal builder was that same person. Its location and principal patrons are not recorded by the thesis’ working notes. This instance came into existence as a design or object as of either the year 1080 or 1090, with those dates being approximations, and it was inoperative or destroyed as of the year 1101 (per De Solla Price), with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a

¹³² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mark Elling Rosheim’s *Leonardo’s Lost Robots*, pages 118---119, 160; Derek J. De Solla Price’s “On the Origin of Clockwork, Perpetual Motion Devices, and the Compass” (under “The Chinese Tradition” section, pages 9---11; 38, and 39 in the thesis’ copy); and Donald R. Hill’s edition of al-Jazari’s *The Book of Knowledge of Ingenious Mechanical Devices*, pages 275 and 279. For this instance’s primary source matter, see *Hsin I Hsiang Fa Yao (Horological Engineering)*, which was written by Su Sung in the era corresponding to the European Middle Ages (the thesis’ author is not a Sinologist and does not find further information regarding this source in his working notes).

**Kang Type 003, Instance 076 of 295, Cumulative Instance 132 of 409:
The Automata at Sung's Astronomical Clocktower.**

civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 077 of 295, Cumulative Instance 133 of 409:
The Rood of Grace at Boxley Abbey.¹³³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a crucified man, Jesus Christ. As described in the consulted sources, this instance’s figure partook of the form termed “god” by the thesis, as it depicted a divine being. On review, this automaton figure was assigned an individual character name in its source material, “Jesus Christ.” The setting in which it appeared was an abbey. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Boxley, in the principality of the Kingdom of England. The principal patrons responsible for this instance’s presence in the historical record are not recorded by the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design

¹³³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Leanne Groeneveld’s “‘Lyke Unto A Living Thing’: The Boxley Rood of Grace and Medieval Performance,” pages 197, 199, 201, 202, 203, 204, 205, 206, 208, 209, 210, 211, 212, 213; Philip Butterworth’s introduction to *Medieval Theater Performance: Actors, Dancers, and Automata*, page 6; Christopher Swift’s “Robot Saints,” page 59; Jessica Riskin’s “Machines in the Garden,” pages 17, 27---28, 28---29; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 21; and Lily V. Filson’s *Engineering Gods*, pages 167 and 168. For this instance’s primary source matter, see “Letter CCCXX” in *Original Letters Illustrative of English History* (as edited by Henry Ellis), Volume III, which was written by Geoffrey Chambers and published in Ellis’ edition at London, in the United Kingdom, in the year 1846. That date of publication is not an approximation. See also “Letter CCLXXVIII” in *Original Letters Relative to the English Reformation* (as edited by Hastings Robinson), Volume II, which was written by John Finch and published in Robinson’s edition at Cambridge, in the United Kingdom, in the year 1847. That date of publication is not an approximation. Another of the many primary sources for this instance is *A Perambulation of Kent*, which was written by William Lambarde and published at London, in the Kingdom of England, in the year 1576. That date of publication is not an approximation. Yet another primary source for this instance is *A Chronicle of England During the Reigns of the Tudors* (as edited by William Douglas Hamilton), Volume I, which includes a primary document written by Charles Wriothesley, and which was published at London, in the United Kingdom, in the year 1875. That date of publication is not an approximation. Still another primary source, which may or may not be equivalent to the foregoing source, is the *London Chronicle During the Reigns of Henry the Seventh and Henry the Eighth*, which was edited by Clarence Hopper (the thesis’ working notes record no further information regarding this source due to formatting constraints). The other primary sources known to this thesis, which are similarly presented in brief due to formatting constraints in the working notes, are *Life and Reign of King Henry the Eighth*, (which includes primary source matter per Footnote 3 in Jessica Riskin’s “Machines in the Garden”), a work which was produced by Edward, Lord Herbert of Cherbury; and *Annales, or A General Chronicle of England, Begun by John Stowe* (dated 1631 and which, per Footnote 3 in Jessica Riskin’s “Machines in the Garden,” contains primary source matter), a work which was written by John Stowe and Edmund Howes, Stowe’s presumptive continuator.

**Kang Type 003, Instance 077 of 295, Cumulative Instance 133 of 409:
The Rood of Grace at Boxley Abbey.**

or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. This instance was inoperative or destroyed as of the year 1538, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 078 of 295, Cumulative Instance 134 of 409:
The Iorge at Saint Botolph's Church, Billingsgate.¹³⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a male knight, a dragon of unknown or unspecified gender, a king, a queen, and a princess. As described in the consulted sources, this instance’s figures partook of the forms termed “saint,” “monster,” “ruler,” and “hero” by the thesis, as at least one figure depicted a person recognized as a saint by one or more Christian denominations, at least one figure depicted a fantastical creature, at least one figure depicted a member of the feudal nobility, and at least one figure depicted a sympathetic person who did good deeds. On review, one of these automaton figures was assigned an individual character name in its source material, “Saint George of Lydda.” The setting in which they appeared was a castle stage set. According to the thesis’ working notes, this instance’s principal designers were William and John Parnell of Ipswich, and its principal builders were that same John Parnell of Ipswich and Wylliam Baker of Ipswich. Its location was the municipality of Billingsgate, in the principality of the Kingdom of England. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1474, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same

¹³⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Philip Butterworth’s introduction to *Medieval Theater Performance: Actors, Dancers, Automata, and their Audiences*, page 9; Philip Butterworth’s *The Mechanycalle 'Ymage off Seynt Iorge' at Saint Botolph's, Billingsgate, 1474*, pages 216, 217, 218, 219, 224, 225---227, 228---234, 235, 236, in *Medieval Theater Performance*; and Femke Kramer’s “Horsemanship in Rhetorician’s Farce,” pages 165---166, in *Medieval Theater Performance*. For this instance’s primary source matter, see *London Metropolitan Archives P69/BOT3/D/001/MS00059*, Folios 46 Verso --- 47 Recto, which was formerly known as *Guildhall Library Manuscript 00059*.

**Kang Type 003, Instance 078 of 295, Cumulative Instance 134 of 409:
The Iorge at Saint Botolph's Church, Billingsgate.**

civilizations; the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 079 of 295, Cumulative Instance 135 of 409:
The Preacher's Christ in Chapuis.¹³⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a crucified man, Jesus Christ. As described in the consulted sources, this instance’s figure partook of the form termed “god” by the thesis, as it depicted a divine being. On review, this automaton figure was assigned an individual character name in its source material, “Jesus Christ.” The setting in which it appeared was a lectern. According to the thesis’ working notes, this instance’s principal designer, builder, and location are unrecorded in the thesis’ working notes. The principal patrons responsible for this instance’s presence in the historical record are also unrecorded in thesis’ working notes. This instance came into existence as a design or object as of the year 1450, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹³⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Leanne Groeneveld’s “‘Lyke unto a Living Thing:’ The Boxley Rood of Grace and Medieval Performance,” pages 200---201, in *Medieval Theater Performance*. As an extant material-cultural object, this instance may itself be consulted as primary source matter; the thesis’ working notes record that it was extant as of 1928, when noted by Chapuis in his French-language predecessor work to Chapuis and Droz’s cited work in translation, *Automata*, but records no further information. If preserved in a setting managed by an organization which exists to preserve cultural heritage, it would hopefully remain extant as of this thesis’ publication in the twenty-first century.

**Kang Type 003, Instance 080 of 295, Cumulative Instance 136 of 409:
The Preacher's Christ in Andre.**¹³⁶

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a crucified man, Jesus Christ. As described in the consulted sources, this instance’s figure partook of the form termed “god” by the thesis, as it depicted a divine being. On review, this automaton figure was assigned an individual character name in its source material, “Jesus Christ.” The setting in which it appeared was a lectern. This instance’s principal designer and builder are not recorded by the thesis’ working notes. Its location was the Auvergne region, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded by the thesis’ working notes. This instance came into existence as a design or object as of the year 1100, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹³⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Leanne Groeneveld’s ‘Lyke Unto A Living Thing:’ The Boxley Rood of Grace and Medieval Performance,” page 201. For this instance’s primary source matter, see *Correspondence, Boxley Abbey*, which was written by J. Lewis Andre at London, in the United Kingdom, in the year 1883. That date of composition is not an approximation. See also *Cataloging Note, Object 3734*, which was created by a certain Monsieur du Sommerand at Paris, during whichever French polity was then effective, in the year 1864. That date of publication is not an approximation.

**Kang Type 003, Instance 081 of 295, Cumulative Instance 137 of 409:
The Jacquemarts at Saint Thomas' Church, Salisbury.¹³⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of male knights. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a public clock. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Salisbury, in the principality of the Kingdom of England. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object before the year 1600, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹³⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Philip Butterworth’s “The Mechanycal ‘Ymage off Seynt Iorge’ at St. Botolph’s, Billingsgate, 1474,” page 227. The website maintained for Saint Thomas’ Church, Salisbury, which was still an active place of worship when the thesis’ working notes were prepared, is another source of information regarding this instance, but it does not constitute a citable work of scholarship for purposes of this thesis. As an extant material-cultural object as of that time, this instance may itself be consulted as primary source matter, but no further information regarding its provenance is noted.

**Kang Type 003, Instance 082 of 295, Cumulative Instance 138 of 409:
Jack the Smiter, alias Southwold Jack.¹³⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a male soldier. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was assigned an individual character name in its source material, “Jack the Smiter.” The setting in which it appeared was a public clock. This instance’s principal designer and builder are not recorded by the thesis’ working notes. Its location was the municipality of Southwold, in the principality of the Kingdom of England. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1480, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which,

¹³⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Philip Butterworth’s “The Mechanycal ‘Ymage off Seynt Iorge’ at St. Botolph’s, Billingsgate, 1474,” page 227. As was done in the note for the prior instance, some supplemental references are included, although not cited, due to this instance’s neglect in the other consulted works of scholarship; interested parties should see the webpage maintained for The British Clockmaker, Incorporated, which carries a page on automata that includes Jack the Smiter (although the thesis does not endorse The British Clockmaker, Incorporated’s public interpretation of automata as material-cultural objects), and the webpage for the Atlas Obscura, a lay-historical compendium of curiosities, which had or has a page for Jack the Smiter under the close alias “Southside Jack.” As an extant material-cultural object, this instance may itself be consulted as primary source matter, but no further information regarding its provenance is noted

**Kang Type 003, Instance 082 of 295, Cumulative Instance 138 of 409:
Jack the Smiter, alias Southwold Jack.**

regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 083 of 295, Cumulative Instance 139 of 409:
The Byzantine Birds referenced by Sullivan.¹³⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of generic birds of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is unknown to this thesis. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the principality of the Eastern Roman (Byzantine) Empire, Byzantium. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the

¹³⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Penny Sullivan’s “Medieval Automata: The ‘Chambre of Beantes’ in Benoit’s *Roman de Troie*,” page 18, at Footnote 18. A rare tertiary source located by the thesis and noted in the working notes for this instance is *The New Grove Dictionary of Music and Musicians*, Volume XIII, where this instance appears as Illustration No. 25. That dictionary was edited by Stanley Sadie. For this instance’s primary source matter, the source of the given illustration, one must again refer to Sullivan, who writes that it is a “twelfth-century MS [manuscript] from St. Blasien;” this locale, Saint Blasien, is in Germany, but the manuscript shows a Byzantine automaton. On recollection, the author has not seen this illustration, and must speculate that, as it appears in a German source manuscript, it is either an accurate German copy of an original Byzantine illustration of an object, an independently German illustration of a Byzantine object, or that rather than appearing in a German manuscript, the collection at St. Blasien alternatively includes the original Byzantine manuscript which contains an illustration of this instance as a Byzantine object.

**Kang Type 003, Instance 083 of 295, Cumulative Instance 139 of 409:
The Byzantine Birds referenced by Sullivan.**

considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 084 of 295, Cumulative Instance 140 of 409:
The Humanoid Automata referenced by Sullivan.¹⁴⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of generic humanoids of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is unknown to this thesis. This instance’s principal designer, builder, and location are not recorded in the thesis’ working notes. The principal patrons responsible for this instance’s presence in the historical record are also unrecorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁴⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Penny Sullivan’s “Medieval Automata: The ‘Chambre de Beantes’ in Benoit’s *Roman de Troie*,” page 7, and at that work’s Footnote 20, which references an external footnote regarding this instance in the work of Faral, a scholar whose publications were not reviewed in the course of the thesis’ research. According to Sullivan, the primary source evidence for this instance is in “some early technical manuals,” the phrase used on page 7 of her publication. The thesis has become familiar with the primary literature corresponding to that phrase, and can offer that such “manuals” would potentially include those of Jordanus and Taccola, among others. No further information regarding this instance is recorded in the thesis’ working notes, and it has been included in accordance with the thesis’ methodology, which does not omit encountered instances on the ground of limited data.

Kang Type 003, Instance 085 of 295, Cumulative Instance 141 of 409:
La Virgen de los Reyes.¹⁴¹

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of Mary, the mother of Jesus, and a human infant, Jesus Christ. As described in the consulted sources, this instance’s figures partook of the forms termed “saint” and “god” by the thesis, as one figure depicted an individual recognized as a saint by one or more Christian denominations, and the other figure represented a divine being. On review, these automaton figures were assigned individual character names in their source material, “Mary, the mother of Jesus” and “Jesus Christ.” The setting in which they appeared is not applicable, as this instance was portable. According to the thesis’ working notes, this instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Seville, in the principality of the Kingdom of Castile. The principal patrons responsible for this instance’s presence in the historical record, according to the thesis’ working notes, were King Fernando III of Castile and King Louis IX of France (with the latter patron ascribed according to Swift’s conjecture). This instance came into existence as a design or object before the year 1248, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁴¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Christopher Swift’s “Robot Saints,” pages 52, 53, 55, 56---57, 61, 63, 64, 65---67, 69, and 75. As an extant material-cultural object, this instance may itself be consulted as primary source matter; for information regarding its origins and current status in contemporary Spain, see Swift’s article.

**Kang Type 003, Instance 086 of 295, Cumulative Instance 142 of 409:
Rudolf II's First Drummer.¹⁴²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a male musician (a drummer). As described in the consulted sources, this instance’s figure partook of the form termed “musician” and “bellringer” by the thesis, as it played a musical instrument, and as it produced a sound like the ringing of a bell (Koepppe, in translating the German primary source matter for this instance, groups it with “carillion[s] [SIC] wound like a clock,” in which quote “carillion[s]” is taken to mean “carillon[s]”). On review, this automaton figure was not assigned an individual character name in its source material. The setting in which this instance appeared is not applicable, as it was freestanding and mobile, but as with the other entries connected to it, the thesis will record that it was collected in the *Kunstammer* of the Holy Roman Emperor Rudolf II. This instance’s principal designer and builder are not recorded in the thesis’

¹⁴² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 81; and Wolfram Koepppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 256, and note 8 on that same page. Due to limitations of time, money, and energy, only information from the subsection of Koepppe’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. For this instance’s primary source matter, see the 1607---1611 inventory of the Holy Roman Emperor Rudolf II’s *Kunstammer*, folio 344, number 2193; Koepppe’s eighth note on page 256 provides the original German text he cites in proof of this instance’s existence. The range of years for this source’s date of composition is an approximation, and no further publication information is available for the same. Further, the thesis cannot state with certainty whether the instance discussed by Kang is “Rudolf II’s First Drummer” or “Rudolf II’s Second Drummer,” with the latter having a separate entry in this appendix. For its own purposes, the thesis treats this instance (per its nomenclature) as “Rudolf II’s First Drummer,” the one attested by item number 2193 in the *Kunstammer* inventory, not number 2194 in that same inventory. This is because the thesis’ author encountered this instance first during his research. In the *Kunstammer* inventory, this instance is grouped with a flautist automaton and with an automaton with the figure of a *Landsknecht* mercenary, possibly (but not certainly) as an ensemble, whereas “Rudolf II’s Second Drummer” has its own entry under number 2194 in the *Kunstammer* inventory. Of the automata in this group of three instances, the seventh current of thought is applied only to the *Landsknecht* automaton in its subsequent appendix entry, since there is uncertainty as to the military or non-military appearances of this instance, the first drummer, and the flautist. In connection with this instance, “Rudolf II’s First Drummer,” see also an account by Johannes Kepler which either describes it, or which describes “Rudolf II’s Second Drummer.” Kang writes that “the astronomer Johannes Kepler was particularly impressed by a drum-playing automaton in the collection that suggested to him the model of the universe as a vast machine.” Kepler’s primary source is present in Jessica Wolfe’s 2004 work *Humanism, Machinery, and Renaissance Literature*, which is cited by Kang under Endnote 96, which matches the preceding direct quotation, on page 324 of his work, *Sublime Dreams of Living Machines: The Automaton in the European Imagination*.

**Kang Type 003, Instance 086 of 295, Cumulative Instance 142 of 409:
Rudolf II's First Drummer.**

working notes. Its location was the municipality of Prague, in the principality of the Holy Roman Empire. The principal patron responsible for this instance's presence in the historical record, according to the thesis' working notes, was the Holy Roman Emperor Rudolf II. This instance came into existence as a design or object before the year 1611, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 087 of 295, Cumulative Instance 143 of 409:
Fontana's Flying Bird.¹⁴³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was rocket-propulsive. It contained the figure of a generic bird of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. According to the thesis’ working notes, this instance’s principal designer was Giovanni Fontana, and its principal builder was that same person. Its location was the municipality of Venice, in the principality of the Republic of Venice. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁴³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 83; Anthony Grafton’s “The Devil as Automaton: Giovanni Fontana and the Meanings of a Fifteenth-Century Machine,” pages 46, 55, 59; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 175; and Lily V. Filson’s *Engineering Gods*, pages 171 and 211. For this instance’s primary source matter, see *Bellicorum Instrumentorum Liber cum Figuris (Book of War Machines with Figures)*, Bayerische Staatsbibliothek Cod. Icon. 242 (MSS Mixt. 90), Folio 37 Recto, which was written by Giovanni (Johannes) de Fontana at Venice, in the Republic of Venice, thereabout the years 1420---1430, with that range of dates for its composition being an approximation.

**Kang Type 003, Instance 088 of 295, Cumulative Instance 144 of 409:
Fontana's Rabbit.¹⁴⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was rocket-propulsive. It contained the figure of a generic rabbit of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. According to the thesis’ working notes, this instance’s principal designer was Giovanni Fontana, and its principal builder was that same person. Its location was the municipality of Venice, in the principality of the Republic of Venice. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁴³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 83; Anthony Grafton’s “The Devil as Automaton: Giovanni Fontana and the Meanings of a Fifteenth-Century Machine,” pages 46, 55, 59; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 175; and Lily V. Filson’s *Engineering Gods*, pages 171 and 211. For this instance’s primary source matter, see *Bellicorum Instrumentorum Liber cum Figuris (Book of War Machines with Figures)*, Bayerische Staatsbibliothek Cod. Icon. 242 (MSS Mixt. 90), Folio 37 Recto, which was written by Giovanni (Johannes) de Fontana at Venice, in the Republic of Venice, thereabout the years 1420---1430, with that range of dates for its composition being an approximation.

**Kang Type 003, Instance 089 of 295, Cumulative Instance 145 of 409:
Fontana's He-Devil.¹⁴⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a male demon. As described in the consulted sources, this instance’s figure partook of the form termed “devil” by the thesis, as it depicted a hellish being. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is unknown to this thesis. According to the thesis’ working notes, this instance’s principal designer was Giovanni Fontana, and its principal builder was that same person. Its location and principal patrons are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the

¹⁴⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 83; Anthony Grafton’s “The Devil as Automaton: Giovanni Fontana and the Meanings of a Fifteenth-Century Machine,” pages 46, 54, 55, 56, 59; Jessica Riskin’s “Machines in the Garden,” page 18, at Footnote 7; Nadia Amrosetti’s *Cultural Roots of Technology*, page 175; Lily V. Filson’s *Engineering Gods*, pages 171 and 210. See also Jessica Riskin’s introduction, “The Sistine Gap,” for her edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, pages 15 and 24. For this instance’s primary source matter, see *Bellicorum Instrumentorum Liber cum Figuris (Book of War Machines with Figures)*, Bayerische Staatsbibliothek Cod. Icon. 242 (MSS Mixt. 90), 59 Verso --- 60 Recto, which was written by Giovanni (Johannes) de Fontana at Venice, in the Republic of Venice, in the years 1420---1430, with that range of dates for its composition being an approximation.

**Kang Type 003, Instance 089 of 295, Cumulative Instance 145 of 409:
Fontana's He-Devil.**

British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 090 of 295, Cumulative Instance 146 of 409:
Fontana's She-Devil.¹⁴⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a female demon. As described in the consulted sources, this instance’s figure partook of the form termed “devil” by the thesis, as it depicted a hellish being. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is unknown to this thesis. According to the thesis’ working notes, this instance’s principal designer was Giovanni Fontana, and its principal builder was that same person. Its location and principal patrons are not recorded by the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the

¹⁴⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 83; Anthony Grafton’s “The Devil as Automaton: Giovanni Fontana and the Meanings of a Fifteenth-Century Machine,” pages 46, 47, 51, 54, 59; Jessica Riskin’s “Machines in the Garden,” page 18, at Footnote 7; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 174---175, 180, 220, 231; and Lily V. Filson’s *Engineering Gods*, page 171. See also Jessica Riskin’s introduction, “The Sistine Gap,” for her edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, pages 14, 15, and 24. For this instance’s primary source matter, see *Bellicorum Instrumentorum Liber cum Figuris (Book of War Machines with Figures)*, Bayerische Staatsbibliothek Cod. Icon. 242 (MSS Mixt. 90), 63 Verso, which was written by Giovanni (Johannes) de Fontana at Venice, in the Republic of Venice, in the years 1420---1430, with that range of dates for its composition being an approximation.

**Kang Type 003, Instance 090 of 295, Cumulative Instance 146 of 409:
Fontana's She-Devil.**

British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 091 of 295, Cumulative Instance 147 of 409:
Dee's Scarab Beetle.¹⁴⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic. It contained the figure of a scarab beetle, a type of beetle. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a theater. According to the thesis’ working notes, this instance’s principal designer was John Dee, and its principal builder was that same person. Its location was the municipality of Cambridge, in the principality of the Kingdom of England. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁴⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 91; Jessica Riskin’s “Machines in the Garden,” page 25; and Lily V. Filson’s *Engineering Gods*, pages 171---172. For this instance’s primary source matter, see the “Compendious Rehearsal” in *Autobiographical Tracts of John Dee*, as edited by James Crossley and published at Whitefish, Montana, in the United States of America, in the year 2005; the “Compendious Rehearsal” was originally written by Dee in 1592. That date of publication is not an approximation.

**Kang Type 003, Instance 092 of 295, Cumulative Instance 148 of 409:
The Sprites on the Parade Float at the Sforza Wedding.¹⁴⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic. It contained figures of the *spiritello*, a type of fairy. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a parade float. According to the thesis’ working notes, this instance’s principal designers were Giovanni Santi and Lord Costanzo Sforza. Its location was the municipality of Pesaro, in the principality of the city-state of Pesaro. The principal patrons responsible for this instance’s presence in the historical record, according to the thesis’ working notes, was Lord Costanzo Sforza. This instance came into existence as a design or object as of the year 1475, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational

¹⁴⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Anthony Grafton’s “The Devil as Automaton: Giovanni Fontana and the Meanings of a Fifteenth-Century Machine,” page 49; and Nadia Ambrosetti’s *Cultural Roots of Technology*, page 177. For this instance’s primary source matter, see Biblioteca Apostolica Vaticana *MS Urb, Lat. 899*, 113 Recto --- Verso, which was written by Niccolo di Antonio Degli Agni. See also *Le Nozze di Costanzo Sforza e Camilla d'Aragona Celebrate a Pesaro nel Maggio 1475*, which was edited by Tammara de Marinis and published at Florence, in the postwar nation-state of Italy, in the year 1946. That date of publication is not an approximation.

**Kang Type 003, Instance 092 of 295, Cumulative Instance 148 of 409:
The Sprites on the Parade Float at the Sforza Wedding.**

advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 093 of 295, Cumulative Instance 149 of 409:
Fontana's Skeleton.¹⁴⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a human skeleton. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is unknown to this thesis. According to the thesis’ working notes, this instance’s principal designer was Giovanni Fontana, and its principal builder was that same person. Its location and principal patrons are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of

¹⁴⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Anthony Grafton’s “The Devil as Automaton: Giovanni Fontana and the Meanings of a Fifteenth-Century Machine,” pages 54---55; and Nadia Ambrosetti’s *Cultural Roots of Technology*, page 174. For this instance’s primary source matter, see *Bellicorum Instrumentorum Liber cum Figuris (Book of War Machines with Figures)*, Bayerische Staatsbibliothek Cod. Icon. 242 (MSS Mixt. 90), Folio 51 Recto, which was written by Giovanni (Johannes) de Fontana at Venice, in the Republic of Venice, in the years 1420---1430, with that range of dates for its composition being an approximation.

**Kang Type 003, Instance 093 of 295, Cumulative Instance 149 of 409:
Fontana's Skeleton.**

whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 094 of 295, Cumulative Instance 150 of 409:
The Image of Saint Rumwald at Boxley Abbey.¹⁵⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition, although it may have had a remote operator. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a generic boy. As described in the consulted sources, this instance’s figure partook of the forms termed “saint” and “gatekeeper” by the thesis, as it depicted a person recognized as a saint by one or more Christian denominations, and as its figure in some sense monitored a threshold. On review, this automaton figure was assigned an individual character name in its source material, “Saint Rumwald of Buckingham.” The setting in which it appeared was an abbey. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Boxley, in the principality of the Kingdom of England. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁵⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” pages 17---18, 28, 29; and Lily V. Filson’s *Engineering Gods*, pages 167---168. For this instance’s primary source matter, see *A Perambulation of Kent* as edited by Richard Church, which was written by William Lambarde and published at Bath, in the United Kingdom, in the year 1970. That date of publication is not an approximation.

**Kang Type 003, Instance 095 of 295, Cumulative Instance 151 of 409:
The Breton Christ in Chapuis.¹⁵¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of Jesus Christ, Mary, the mother of Jesus, a generic woman, and the Godhead. As described in the consulted sources, this instance’s figures partook of the forms termed “god” and “saint” by the thesis, as at least one figure depicted a divine being and at least one figure depicted a person recognized as a saint by one or more Christian denominations. On review, these automaton figures were assigned individual character names in their source material, “Jesus Christ” and “Mary, mother of Jesus.” The setting in which they appeared is unknown to this thesis. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Brittany, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object after the year 1500, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁵¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 18; Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 119---120; and Lily V. Filson’s *Engineering Gods*, page 168. As an extant material-cultural object as of 1958, this instance may itself be consulted as primary source matter; for information regarding its origins, see Chapuis and Droz’s cited volume in Reid’s translation.

**Kang Type 003, Instance 096 of 295, Cumulative Instance 152 of 409:
The Devil at the Castello Sforzesco.¹⁵²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a male demon. As described in the consulted sources, this instance’s figure partook of the form termed “devil” by the thesis, as it depicted a hellish being. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Milan, in the principality of the Duchy of Milan. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object after the year 1400, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of

¹⁵² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 18; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 175, at footnote 209; and Lily V. Filson’s *Engineering Gods*, pages 171, 207, 208, and 209. An online article by Joanna Ebenstein was also noted by the thesis with respect to this instance, and it is given a citation in the thesis’ bibliography which solely arises from this footnote. As an extant material-cultural object as of 2018, this instance may itself be consulted as primary source matter; for information regarding its origins and status in contemporary Italy, see the cited authors.

**Kang Type 003, Instance 096 of 295, Cumulative Instance 152 of 409:
The Devil at the Castello Sforzesco.**

Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 097 of 295, Cumulative Instance 153 of 409:
The Angels at Florence.¹⁵³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of angels of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “angel” by the thesis, as it depicted a heavenly being. On review, these automaton figures were not assigned an individual character name in its source material. The setting in which it appeared is unknown to this thesis. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Florence, a city on the Italian peninsula. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object after the year 1400, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁵³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden, page 18; and Lily V. Filson’s *Engineering Gods*, page 170. The thesis’ working notes do not record primary source matter for this instance, and readers are accordingly referred to the above secondary sources in the event that any information provided by the same was omitted in error during this document’s preparation.

**Kang Type 003, Instance 098 of 295, Cumulative Instance 154 of 409:
The Automata of the Hellmouth Attested in Medieval Theater.¹⁵⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic. It contained the figures of a generic serpent of unknown or unspecified gender and a dragon of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “devil” by the thesis, as they depicted hellish beings. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a hellmouth stage set. This instance’s principal designer and builder, location, and patron are not recorded in the thesis’ working notes. This instance came into existence as a design or object after the year 1400, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁵⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 19. The thesis’ working notes do not record primary source matter for this instance, and readers are accordingly referred to the above secondary source in the event that any information provided by the same was omitted in error during this document’s preparation. It is worth noting that the authority of Riskin should not be impeached, as she is one of the few professional historians actively writing in the English language on the topic of the thesis’ interest.

**Kang Type 003, Instance 099 of 295, Cumulative Instance 155 of 409:
The Bear Automaton Attested in Medieval Theater.¹⁵⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic. It contained the figure of a generic bear of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a stage set. This instance’s principal designer and builder, location, and patron are not recorded in the thesis’ working notes. This instance came into existence as a design or object after the year 1470, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁵⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 19; and Lily V. Filson’s *Engineering Gods*, page 172. For this instance’s primary source matter, see *Le Mystere du Viel Testament* in James de Rothschild’s edition, Volume 4, which was written by Arnoul Greban, and which was published at Paris, during the era of the French Third Republic, in the years 1878 --- 1891; this work was originally authored by Greban thereabout the year 1450, with that date of composition being an approximation.

**Kang Type 003, Instance 100 of 295, Cumulative Instance 156 of 409:
The Lion of Daniel's Den Attested in Medieval Theater.**¹⁵⁶

This real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was the energy of a concealed human operator. It contained the figure of a lion of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a stage set. This instance’s principal designer and builder, location, and patron are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁵⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 19; and Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 356. The thesis’ working notes do not record primary source matter for this instance, and readers are accordingly referred to the above secondary sources in the event that any information provided by the same was omitted in error during this document’s preparation.

**Kang Type 003, Instance 101 of 295, Cumulative Instance 157 of 409:
The Lions at the Feet of St. Denis Attested in Medieval Theater.¹⁵⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the large scale defined for evaluative purposes. Its power source is unknown to this thesis, but was likely kinetic. It contained the figures of lions of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which it appeared was a stage set. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Paris, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object after the year 1500, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁵⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 19; Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 357; and Lily V. Filson’s *Engineering Gods*, page 172. For this instance’s primary source matter, see *Mystere des Actes des Apotres, Represente a Bourges en Avril 1536, Publie Depuis le Manuscript Original*, as edited by Auguste-Theodore and Baron de Girardot, which was compiled by Arnoul Greban, and which was published at Paris, during the era of the Second French Empire, in the year 1854; Greban’s collection was originally compiled ca. 1450, with that date of compilation being an approximation.

**Kang Type 003, Instance 102 of 295, Cumulative Instance 158 of 409:
The Ass of Balaam Attested in Medieval Theater.**¹⁵⁸

This real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was supplied by a concealed human operator. It contained the figure of a donkey (an ass) of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material; while “the ass of Balaam” denotes a specific animal in the Bible, this ass’ given name is never specified. The setting in which it appeared was a stage set. This instance’s principal designer and builder, location, and patron are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁵⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” pages 19---20; Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 356; and Lily V. Filson’s *Engineering Gods*, page 172. The thesis’ working notes do not record primary source matter for this instance, and readers are accordingly referred to the above secondary sources in the event that any information provided by the same was omitted in error during this document’s preparation.

**Kang Type 003, Instance 103 of 295, Cumulative Instance 159 of 409:
The Serpent Attested in Medieval Theater.¹⁵⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic. It contained the figure of a generic serpent of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “devil” by the thesis, as it depicted a symbolic representation of Satan, a hellish being. On review, this automaton figure was not assigned an individual character name in its source material; while identified as Satan in exegeses, the serpent-figure is not identified with a proper name, and indeed, is usually called only “the serpent.” The setting in which it appeared was a stage set. This instance’s principal designer and builder, location, and patron are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁵⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 20; Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 356; and Lily V. Filson’s *Engineering Gods*, page 172. For this instance’s primary source matter, see the *Jeu d’Adam*, 23, Volume 1, in the edition by Wolfgang van Emden; this publication’s original document is in the Bibliotheque Municipale de Tours as *Manuscript 927*. The edition given above was published at Edinburgh, in the United Kingdom, in the year 1996, with the original manuscript composed ca. 1150, and with that date of composition being an approximation.

**Kang Type 003, Instance 104 of 295, Cumulative Instance 160 of 409:
The Non-Demonic Automata of the Mystery Play at Bourges.¹⁶⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the large scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic. It contained the figures of a boar of unknown or unspecified gender (in Chapuis’ account, a bear, not a boar, although this is possibly a translation error), a leopard of unknown or unspecified gender, and a dromedary (a camel) of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a stage set. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Bourges, in the principality of the Kingdom of France. This instance’s patron is not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1537, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁶⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 20; Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 357; and Lily V. Filson’s *Engineering Gods*, page 172. For this instance’s primary source matter, see *Mystere des Actes des Apotres, Represente a Bourges en Avril 1536, Publie Depuis le Manuscript Original* in the edition by Auguste-Theodore and Baron de Girardot, Volume 4, Folio 67 Verso; Volume 3, Folios 21 Recto and 23 Recto; and Volume 2, Folio 9 Recto. That work was originally compiled by Arnoul Greban in the late Middle Ages, and its cited edition was published at Paris, during the era of the French Second Empire, in the year 1854; Greban originally compiled it ca. 1450, with that date of compilation being an approximation.

**Kang Type 003, Instance 105 of 295, Cumulative Instance 161 of 409:
The Demonic Automata of the Mystery Play at Bourges.¹⁶¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic. It contained the figures of a generic dog of unknown or unspecified gender, a wolf of unknown or unspecified gender, a generic serpent of unknown or unspecified gender, and a dragon of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “devil” by the thesis, as they depicted manifestations of demons, hellish beings. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a stage set. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Bourges, in the principality of the Kingdom of France. This instance’s patron is not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1537, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁶¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 20; and Lily V. Filson’s *Engineering Gods*, page 172. For this instance’s primary source matter, see *Mystere des Actes des Apotres, Represente a Bourges en Avril 1536, Publie Depuis le Manuscript Original* in the edition by Auguste-Theodore and Baron de Girardot, Volume 4, Folio 67 Verso; Volume 3, Folios 21 Recto and 23 Recto; and Volume 2, Folio 9 Recto. That work was originally compiled by Arnoul Greban in the late Middle Ages, and its cited edition was published at Paris, during the era of the French Second Empire, in the year 1854; Greban originally compiled it ca. 1450, with that date of compilation being an approximation.

**Kang Type 003, Instance 106 of 295, Cumulative Instance 162 of 409:
The Automata of the Assumption of the Virgin at Rabastens.¹⁶²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of Mary, the mother of Jesus, and an angel of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “saint” and “angel” by the thesis, as they depicted an individual recognized as a saint in certain Christian denominations and a heavenly being. On review, one of these automaton figures was assigned an individual character name in its source material, “Mary, the mother of Jesus.” The setting in which this instance appeared is unknown to this thesis. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Rabastens, in the principality of the Kingdom of France. This instance’s patron is not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1502, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁶² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 20; and Lily V. Filson’s *Engineering Gods*, page 170. The thesis’ working notes do not record primary source matter for this instance, and readers are accordingly referred to the above secondary sources in the event that any information provided by the same was omitted in error during this document’s preparation. As an aside, the thesis recalls that the source matter presented by either or both of the cited works for this instance may have dated from the late seventeenth century, but it was unclear if that source matter referred to events which postdated or antedated December 31, 1650, the thesis’ cutoff date, and due to this uncertainty, any identified primary source matter was correspondingly excluded from the working notes.

**Kang Type 003, Instance 107 of 295, Cumulative Instance 163 of 409:
The Automaton of the Assumption of the Virgin at Toulouse.¹⁶³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of Mary, the mother of Jesus. As described in the consulted sources, this instance’s figure partook of the form termed “saint” by the thesis, as it depicted a person recognized as a saint by one or more Christian denominations. On review, this automaton figure was assigned an individual character name in its source material, “Mary, the mother of Jesus.” The setting in which it appeared was a church. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Toulouse, in the principality of the Kingdom of France. This instance’s patron is not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. This instance was destroyed as of the year 1666, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the

¹⁶³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 20. As in other cases, Riskin’s cited work stands alone in acknowledging this instance, and that should not be construed as an indication that this instance is only tenuously documented, but rather that, of the prior catalogs consulted by the thesis (which at least include those assembled by Riskin and Bedini), Riskin’s contains the greatest number of documented instances, and by a notable margin. As in the preceding footnote about a similar automaton, the thesis recalls that the source matter presented by Riskin for this instance may have dated from the late seventeenth century, but it was unclear if that source matter referred to events which postdated or antedated December 31, 1650, the thesis’ cutoff date, and due to this uncertainty, any identified primary source matter was correspondingly excluded from the working notes.

**Kang Type 003, Instance 107 of 295, Cumulative Instance 163 of 409:
The Automaton of the Assumption of the Virgin at Toulouse.**

considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 108 of 295, Cumulative Instance 164 of 409:
The Automaton God and Angels at Dieppe.¹⁶⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of an angel of unknown or unspecified gender and an old man, a representation of the Christian Trinitarian concept of God the Father. As described in the consulted sources, this instance’s figures partook of the forms termed “angel” and “god” by the thesis, as they respectively represented a heavenly being and a divine being. On review, one of these automaton figures was assigned an individual character name in its source material, “God the Father.” The setting in which it appeared was a church. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Dieppe, in the principality of the Kingdom of France. This instance’s patron is not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. This instance was destroyed as of the year 1647, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁶⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” pages 20, 29; and Lily V. Filson’s *Engineering Gods*, page 170. For this instance’s primary source matter, see *Memoire Chronologique pour Servir a l’Histoire de Dieppe*, Volume I, which was put forth by Jean-Antoine Samson Desmarquets and published at Paris, in the Kingdom of France, in the year 1785. That date of publication is not an approximation.

**Kang Type 003, Instance 109 of 295, Cumulative Instance 165 of 409:
The Dove of Peace at London.¹⁶⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a dove of unknown or unspecified gender, a representation of the Dove of Peace, which is itself a symbolic Christian Trinitarian representation of God the Holy Spirit. As described in the consulted sources, this instance’s figure partook of the form termed “god” by the thesis, as it represented a divine being. On review, this automaton figure was assigned an individual character name in its source material, “God the Holy Spirit.” The setting in which it appeared was a church. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of London, in the principality of the Kingdom of England. This instance’s patron is not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁶⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” pages 20---21; and Lily V. Filson’s *Engineering Gods*, pages 172---173. For this instance’s primary source matter, see the *Dictionarium Angliae Topographicum*, page 459, which was written by William Lambarde and published at London, in the United Kingdom, in the year 1730. That date of publication is not an approximation. See also *The Every-Day Book and Table Book*, “Entry for September 5, 1825,” which was written by William Tegg and published at London, in the United Kingdom, in the years 1825---1827. That range of dates for publication is not an approximation.

**Kang Type 003, Instance 110 of 295, Cumulative Instance 166 of 409:
The Abbey Clock at Cluny.¹⁶⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a cock (a male chicken), an angel of unknown or unspecified gender, a dove of unknown or unspecified gender (a representation of the Dove of Peace, and thus God the Holy Spirit), God the Father (presumably in His conventionalized representation as an old man), and a female saint, Mary, the mother of Jesus. As described in the consulted sources, this instance’s figures partook of the forms termed “god,” “angel,” and “saint” by the thesis, as its figures respectively depicted a divine being, a heavenly being, and an individual recognized as a saint by one or more Christian denominations. On review, some of these automaton figures were assigned individual character names in its source material, “God the Father,” “God the Holy Spirit,” and “Mary, the mother of Jesus.” The setting in which this instance appeared was an abbey. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Macon, in the principality of the Kingdom of France. This instance’s patron is not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1340, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁶⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 21; and Lily V. Filson’s *Engineering Gods*, page 173. The thesis’ working notes do not record primary source matter for this instance, and readers are accordingly referred to the above secondary sources in the event that any information provided by the same was omitted in error during this document’s preparation.

**Kang Type 003, Instance 111 of 295, Cumulative Instance 167 of 409:
The Cock of the Town Clock at Niort.¹⁶⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a cock (a male chicken) and a generic humanoid. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, one of these automaton figures was assigned an individual character name in its source material, the “Personification of Renown.” The setting in which these figures appeared was a public clock. This instance’s principal designer and builder was Master Jean Bouhin. Its location was the municipality of Niort, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1570, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁶⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 21; Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 51; and Lily V. Filson’s *Engineering Gods*, page 173. For this instance’s primary source matter, see *Bibliothèque Nationale, Fonds Français, Manuscript Number 1774*, which is referenced in *Revue Poitevine et Saintongeaise* 6, as published by Edmond Duret in the year 1889. That date of publication is not an approximation.

**Kang Type 003, Instance 112 of 295, Cumulative Instance 168 of 409:
The Automata of the First Scene of the Town Clock at Niort.¹⁶⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of generic humanoids. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were assigned individual character names in their source material, the “Personification of Care” and the “Personification of Servitude.” The setting in which these figures appeared was a public clock. This instance’s principal designer and builder was Master Jean Bouhin. Its location was the municipality of Niort, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1570, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁶⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 21; and Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 51. For this instance’s primary source matter, see *Bibliothèque Nationale, Fonds Français, Manuscript Number 1774*, which is referenced in *Revue Poitevine et Saintongeaise* 6, as published by Edmond Duret in the year 1889. That date of publication is not an approximation.

**Kang Type 003, Instance 113 of 295, Cumulative Instance 169 of 409:
The Automata of the Second Scene of the Town Clock at Niort.¹⁶⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a male angel, a female saint, God the Holy Spirit (who, to the author’s knowledge, is genderless), and God the Father, who is typically conventionalized as an old man. As described in the consulted sources, this instance’s figures partook of the forms termed “god,” “angel,” and “saint” by the thesis, as its figures respectively depicted two aspects of a divine being, a heavenly being, and an individual recognized as a saint by one or more Christian denominations. On review, these automaton figures were assigned individual character names in their source material, “Mary, the mother of Jesus,” “the Archangel Gabriel,” “God the Holy Spirit,” and “God the Father.” The setting in which these figures appeared was a public clock. This instance’s principal designer and builder was Master Jean Bouhin. Its location was the municipality of Niort, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1570, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁶⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 21; and Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 51. For this instance’s primary source matter, see *Bibliothèque Nationale, Fonds Français, Manuscript Number 1774*, which is referenced in *Revue Poitevine et Saintongeaise* 6, as published by Edmond Duret in the year 1889. That date of publication is not an approximation. As elsewhere and always in this section, “ibidem” has not been used here because this and every footnote reference distinct instances.

**Kang Type 003, Instance 114 of 295, Cumulative Instance 170 of 409:
The Automata of the Third Scene of the Town Clock at Niort.¹⁷⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of an angel of unknown or unspecified gender, a male saint, a generic child, and a female musician (a vocalist). As described in the consulted sources, this instance’s figure partook of the forms termed “angel,” “saint,” “bellringer,” and “musician” by the thesis, as (respectively) one figure depicted a heavenly being, one figure depicted an individual recognized as a saint by one or more Christian denominations, one figure produced the motion and/or sound like the ringing of a bell, and one figure depicted someone who makes music, in this case vocally rather than by playing a musical instrument. On review, some of these automaton figures were assigned individual character names in their source material, “Saint Peter,” “the Twelve Apostles,” all of whom had individual names, and who are included distinctly, despite Saint Peter being among their number, and “Madame de Psalette,” an allegorical representation of a songstress. The setting in which these figures appeared was a public clock. This instance’s principal designer and builder was Master Jean Bouhin. Its location was the municipality of Niort, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1570, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁷⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden, pages 21---22; and Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 51---52. For this instance’s primary source matter, see *Bibliothèque Nationale, Fonds Français, Manuscript Number 1774*, which is referenced in *Revue Poitevine et Saintongeaise* 6, as published by Edmond Duret in the year 1889.

**Kang Type 003, Instance 115 of 295, Cumulative Instance 171 of 409:
The Combatant Automata of the Town Clock at Niort.¹⁷¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a male ancient Greek hero and an ancient Roman god. As described in the consulted sources, this instance’s figures partook of the forms termed “god” and “hero” by the thesis, as they respectively depicted a divine being and a sympathetic individual celebrated for doing good deeds. On review, these automaton figures were assigned individual character names in their source material, “Hercules” and “Vulcan.” The setting in which these figures appeared was a public clock. This instance’s principal designer and builder was Master Jean Bouhin. Its location was the municipality of Niort, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1570, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic

¹⁷¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 22; and Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 52---53. For this instance’s primary source matter, see *Bibliothèque Nationale, Fonds Français, Manuscript Number 1774*, which is referenced in *Revue Poitevine et Saintongeaise* 6, as published by Edmond Duret in the year 1889.

**Kang Type 003, Instance 115 of 295, Cumulative Instance 171 of 409:
The Combatant Automata of the Town Clock at Niort.**

fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 116 of 295, Cumulative Instance 172 of 409:
The Automata of the Second Strasbourg Cathedral Clock, the Habrechts'
Restoration of the First Strasbourg Cathedral Clock.¹⁷²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a cock (a male chicken), three kings, a female saint, and God the Son, Jesus Christ; this instance corresponds to the same physical structure noted in Kang Type 03, Instance 057, but between the automata noted in these two instances, only the figure of the human incarnation of God in the Christian tradition, Jesus Christ, who is God the Son in the trinitarian conceptualization, is noted in both instances. That is because this instance corresponds to the automata preserved from the first Strasbourg cathedral clock in the Habrechts’ restoration of the same, as superintended by Professor Conrad Dasypodius, which produced the second cathedral clock when this restoration was completed. The figure of Jesus Christ is present in both instances because, in the prior presentation of the second Strasbourg cathedral clock’s automata, this figure inseparably appears in a tableau with a skeleton, with the latter figure, the skeleton, being one of the many additions and innovations resultant from the realization of Dasypodius’ and the Habrechts’ interpretation of this great clock. As described in the consulted sources, this instance’s figures partook of the forms termed “god” and “saint” by the thesis, as they respectively depicted a divine being and an individual recognized as a saint by one or more Christian denominations. On review, some of these automaton figures were assigned individual character names in their source material, “Jesus Christ,” “Mary, the mother of Jesus,” “Melchior,” “Caspar,” and “Balthazar.” The setting in which these figures appeared was a public clock. This instance’s principal designers are the same as those recorded for Kang Type 03, Instance 057, namely Professor Conrad Dasypodius, Tobias Stimmer, and the

¹⁷² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 22; Lily V. Filson’s *Engineering Gods*, page 173; and Wolfram Koeppel’s essay “Clocks and Automata: The Art of Technological Development” in his edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 199, and Figure 93 on that same page, which appears to be a detail from a woodcut that is either equivalent or very similar to the one used as the frontispiece to the text of this thesis. Due to limitations of time, money, and energy, only information from the subsection of Koeppel’s edited exhibition guide in which that essay appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. No primary source matter is recorded by the thesis’ working notes, but as is and has always been the case in this section, that should not be taken to mean that no such primary source matter exists; rather, for whatever reason, it either did not appear in the cited sources’ citations or was omitted from this thesis’ working notes in error. However, readers need not labor in search of a primary source, as one is provided by this thesis’ very frontispiece, an antique illustration which was released into the public domain by the Metropolitan Museum of Art in New York City as a digital facsimile from its collections.

**Kang Type 003, Instance 116 of 295, Cumulative Instance 172 of 409:
The Automata of the Second Strasbourg Cathedral Clock, the Habrechts'
Restoration of the First Strasbourg Cathedral Clock.**

Habrecht brothers. Its location was the municipality of Strasbourg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance's presence in the historical record is likewise the same as that recorded for the prior presentation of this device, and namely the Ammeister Hans Hammerer. This instance came into existence as a design or object as of the year 1571---1574, with that date range not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 117 of 295, Cumulative Instance 173 of 409:
The Automata at the Munich Frauenkirche.¹⁷³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of God the Father, most likely in His conventionalized representation as an old man, God the Son, Jesus Christ, a female saint, and a cock (a male chicken). As described in the consulted sources, this instance’s figure partook of the forms termed “god” and “saint” by the thesis, as they respectively depicted a divine being and an individual recognized in one or more Christian denominations as a saint. On review, some of these automaton figures were assigned an individual character name in their source material, “God the Father,” “Jesus Christ,” and “Mary, the mother of Jesus.” The setting in which it appeared was a church. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Munich, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1514, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic

¹⁷³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 22. For this instance’s primary source matter, see *Munchner Intelligenzblatt*, which was written by Joseph Gallmayr and published in 1779. That date of publication is not an approximation.

**Kang Type 003, Instance 117 of 295, Cumulative Instance 173 of 409:
The Automata at the Munich Frauenkirche.**

fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 118 of 295, Cumulative Instance 174 of 409:
The Figure of Saint Peter at Beauvais Cathedral.¹⁷⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was pneumatic. It contained the figure of a male saint. As described in the consulted sources, this instance’s figure partook of the form termed “saint” by the thesis, as it depicted a person recognized as a saint by one or more Christian denominations. On review, this automaton figure was assigned an individual character name in its source material, “Saint Peter.” The setting in which it appeared was an organ. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Beauvais, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1400, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁷⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 22. The thesis’ working notes record no information regarding this instance’s primary source matter, and readers are referred to Riskin’s cited work, the sole text in which this instance is identified by a consulted author.

**Kang Type 003, Instance 119 of 295, Cumulative Instance 175 of 409:
The Herald of the City, the First of Three “Rohraffen,” or Non-Simian “Roaring
Apes,” at Strasbourg Cathedral.¹⁷⁵**

It is unclear whether or not this real-world instance of automata was “false” by the thesis’ definition; it appeared alongside another figure, “The Pretzel Man” (Kang Type 003, Instance 121), which was categorically not a false automaton, but the consulted sources are recalled to leave the degree of human intervention in the operation of “The Herald of the City” ambiguous. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source, provided that it was truly an automaton, would be pneumatic. It contained the figure of a male herald. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material, for while it is called “The Herald of the City,” this nomenclature does not include a given and/or personal name. The setting in which it appeared was an organ. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Strasbourg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object before the year 1494, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially

¹⁷⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 22. According to the thesis’ working notes, this instance is an extant material-cultural object, and as such, it may itself be consulted as primary source matter. As with many of the instances termed “extant” by this thesis, it is possible that any surviving figure presently emplaced as an automaton in a pre-Modern or Early Modern technological device which bears automata, such as the organ at Strasbourg Cathedral, does not date from the pre-Modern or Early Modern periods *per se*, but is a later replacement for a prior figure which became worn with age and use. In the thesis’ estimation, replacements of automaton figures in automaton-bearing works tend to occur every three hundred years or so; sometimes the old figures are retained and preserved in the collections of an associated organization, such as church or municipal offices, or a museum. However, it is reasonable to believe that replacement automaton figures are comparable to the original figures in their respective appearances, both for continuity of the automaton-bearing works’ general appearances and due to the technical constraints introduced by whatever method is used to operate the automatons’ movements. The case of another instance hereinafter identified, that of Hans von Thann, is relevant; while its works have been in situ since the sixteenth century, a recent restoration of Hans von Thann, a jacquemart, revealed that this figure dated from a later century. However, the Hans-figure wears sixteenth-century armor. Thus, the thesis is of the opinion that it is justified in referring readers to extant automata, even if their particular figures, or certain components of their works, postdate the considered periods, as the thesis is uninterested in closely curtailing its catalog by implementing a strict interpretation of the philosophical “Ship of Theseus” problem.

**Kang Type 003, Instance 119 of 295, Cumulative Instance 175 of 409:
The Herald of the City, the First of Three “Rohraffen,” or Non-Simian “Roaring
Apes,” at Strasbourg Cathedral.**

including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 120 of 295, Cumulative Instance 176 of 409:
Samson and the Lion, the Second of Three “Rohraffen,” or Non-Simian
“Roaring Apes,” at Strasbourg Cathedral.¹⁷⁶**

It is unclear whether or not this real-world instance of automata was “false” by the thesis’ definition; it appeared alongside another figure, “The Pretzel Man” (Kang Type 003, Instance 121), which was categorically not a false automaton, but the consulted sources are recalled to leave the degree of human intervention in the operation of “Samson and the Lion” ambiguous. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source, provided that it was truly an automaton, would be pneumatic. It contained the figures of a male biblical hero and a lion, with the latter presumptively being male. As described in the consulted sources, one of this instance’s figures partook of the form termed “hero” by the thesis, as it depicted a sympathetic individual celebrated for doing good deeds. On review, one of these automaton figures was assigned an individual character name in its source material, “Samson.” The setting in which it appeared was an organ. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Strasbourg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object before the year 1494, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁷⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 22. According to the thesis’ working notes, this instance is an extant material-cultural object, and as such, it may itself be consulted as primary source matter.

**Kang Type 003, Instance 121 of 295, Cumulative Instance 177 of 409:
The Pretzel Man, “Der Bretzelmann,” The Third of Three “Rohraffen,” or Non-Simian “Roaring Apes,” at Strasbourg Cathedral, alias “The Bearded Organ Ape.”¹⁷⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was pneumatic. It contained the figure of a male pretzel vendor. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material, for while it is called “The Pretzel Man,” this nomenclature does not include a given and/or personal name. The setting in which it appeared was an organ. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Strasbourg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object before the year 1494, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁷⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” pages 585---586; and Jessica Riskin’s “Machines in the Garden,” pages 22, 23, 27, 28. According to the thesis’ working notes, this instance is an extant material-cultural object, and as such, it may itself be consulted as primary source matter. For this instance’s primary source matter, also see *Petri Schotti Argentinensis Patricii: Juris Utriusque Doctoris Consultissimi: Oratoris et Poetae Elegantissimi; Graecaeque Linguae Probe Aeruditii: Lucubratiunculae Ornatisime*, in the edition of Jacob Wimpheling, Folios 116A --- 117B, which was originally published at Strassburg, in the Holy Roman Empire, in the year 1498. That date of publication is not an approximation.

**Kang Type 003, Instance 122 of 295, Cumulative Instance 178 of 409:
The Automaton Head on the Church Organ at Neustadt-an-der-Harth.¹⁷⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was pneumatic. It contained the figure of a generic male human head. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was an organ. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Neustadt-an-der-Harth (or perhaps Neustadt an der Weinstraße, with this point being unclear in the thesis’ working notes), in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object after the year 1400, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁷⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 23. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Riskin’s cited work in the event that it contains any useful information which does not appear here.

**Kang Type 003, Instance 123 of 295, Cumulative Instance 179 of 409:
The Three Automaton Heads on the Church Organ at Saint-Savin-en-
Lavedan.¹⁷⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was pneumatic. It contained the figures of generic male human heads. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was an organ. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Saint-Savin, Hautes-Pyrénées, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1557, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁷⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 23, at Footnote 41. During the course of the thesis’ research, a webpage featuring this instance was noted; it does not appear to contain authorship information, and it cannot be cited as a scholarly resource as an anonymous and undated text, but like this thesis’ project, it appears to showcase an attempt at cataloging, with its area of interest being pipe organ installations throughout the world rather than automata. It does have a page listing for this instance which shows photographs of the associated organ, and the organ’s expressive automaton masks are visible in the same. The catalog of organs is apparently titled “Music and Musicians” in English and is accessible from the URL <https://www.musiqueorguequebec.ca>. To locate this organ and its automata, click “Organs around the World” under “Organs,” click “France,” click “Instruments,” and then click the link next to the “Saint-Savin-en-Lavedan” listing, which is the only listing under the “Hautes-Pyrenees” header (diacritics omitted). As an extant automaton, this instance may itself be consulted as primary source matter, and in this case, the availability of photographic evidence affords readers the opportunity to visually inspect an instance described by this thesis.

**Kang Type 003, Instance 124 of 295, Cumulative Instance 180 of 409:
The Moor's Head on the Cathedral Organ at Barcelona.¹⁸⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was pneumatic. It contained the figure of a male moor’s head. As described in the consulted sources, this instance’s figure partook of the form termed “villain” by the thesis, as it depicted an unsympathetic individual who did bad deeds or who, for cultural and historical reasons, was reviled on the basis of one or more personal attributes by the members of a given population. On review, this automaton figure may have been assigned an individual character name, “Carassa,” but the use of this name could not be established with certainty, and it was not cataloged in the thesis’ working notes. The setting in which it appeared was an organ. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Barcelona, in the principality of the Kingdom of Spain. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe,

¹⁸⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 23. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Riskin’s cited work in the event that it contains any useful information which does not appear here.

**Kang Type 003, Instance 124 of 295, Cumulative Instance 180 of 409:
The Moor's Head on the Cathedral Organ at Barcelona.**

including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 125 of 295, Cumulative Instance 181 of 409:
Gallima, the Head on the Cloister Organ at Montoire.¹⁸¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was pneumatic. It contained the figure of a generic male human head. As described in the consulted sources, this instance’s figure partook of the form termed “villain” by the thesis, as it depicted an unsympathetic individual who did bad deeds or who, for cultural and historical reasons, was reviled on the basis of one or more personal attributes by the members of a given population. On review, this automaton figure was assigned an individual character name in its source material, “Gallima,” or “He Who Brings Death to the French.” The setting in which it appeared was an organ. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Montoire-sur-le-Loir, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical

¹⁸¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 23. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Riskin’s cited work in the event that it contains any useful information which does not appear here. As elsewhere in this document, “ibidem” has not been used in this footnote because the instance documented by this footnote is distinct from that documented by the prior footnote.

**Kang Type 003, Instance 125 of 295, Cumulative Instance 181 of 409:
Gallima, the Head on the Cloister Organ at Montoire.**

condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 126 of 295, Cumulative Instance 182 of 409:
Charles IV's Automaton Clock at the Frauenkirche in Nuremberg.¹⁸²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are

¹⁸² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 24; and Wolfram Koeppe’s essay “Clocks and Automata: The Art of Technological Development,” in his edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 197, and Figure 91 on that same page. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which that essay appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. According to the thesis’ working notes, this instance is extant and may itself be consulted as primary source matter. Much like the Strasbourg Cathedral Clock, this instance exemplifies the sixth current of thought, wherein technology, and for this thesis’ specific topic, the technology of automata, is construed as the index of civilizational progress, for like the Strasbourg Cathedral Clock, it was restored and improved during the centuries of the pre-Modern and Early Modern periods themselves. In fact, as with the comparable example in Strasbourg, it was originally constructed in a pre-Modern century, and then enhanced and improved during an Early Modern century. This not only demonstrates the enduring importance of automaton-bearing cathedral clocks within the European culture of those eras, but it also suggests that the refinement of these clocks from one era to the next was also important, as this refinement allowed the succeeding generations of technologists to display their advancements as a function and gauge of society’s advancement, which is also true amongst practitioners of many other human endeavors. This notion was encapsulated in later centuries, including the current century, by the term “progress,” which has increasingly been used since the Industrial Revolution to indicate advancement in science and technology; and, in the pre-Modern and Early Modern contexts, the creation of automata was emblematic of those two fields. Thus, the drive to revisit, improve, and newly recreate automaton-bearing devices and their automata exemplified the association of these technological devices with “progress,” “improvement over time,” during the Early Modern period, in one of the first cultural equations of “technology” with “improvement over time” and with its synonymous concept, “progress;” and this conceptualization of “progress,” “improvement over time” as a function reducible to technological advancement, has now to some degree subsumed alternative concepts of “progress,” such as theological progress, or the pilgrim’s progress of traditional Christian morality in the life of the family and society, an example germane to the culture which produced cathedral clocks. Given the *weltanschauung* of the Middle Ages, this is not the reactionary statement it may seem to be, but rather an observation of the significance which attaches to automata, paragons of high technology in the pre-Modern and Early Modern periods, in the sixth current of thought articulated by this thesis. And, to be clear, this presentation of the sixth current’s meaning is not exclusive to the culture of Europe, since Ridwan’s improvement of the clepsydra at the gate of ‘Bab Jayrun, the subject of his technical treatise, shows the same trend. Indeed, Ridwan’s work on that gate’s automaton-bearing clepsydra is the closest parallel in the Arab world to the specific exemplar of restorations as evidentiary illustrations of the sixth current of thought, just as his clepsydra itself, attached to a gate near a religious complex, is an instance which shows that Islamic civilization could, proverbially speaking, “walk up to” the first current of thought by siting an automaton at the liminal periphery of a religious space (like another example from the North African Maghreb categorized under Kang’s fourth type), and just beyond it, but never directly or indirectly recapitulate the first current, as did pre-Modern and Early Modern Christians, due to the strength of Islamic religious convictions on the parameters of idolatry. It is hoped this exposition, which is predicated upon the evidence of material culture and its testaments, will clarify the meaning of the sixth current of thought.

**Kang Type 003, Instance 126 of 295, Cumulative Instance 182 of 409:
Charles IV's Automaton Clock at the Frauenkirche in Nuremberg.**

interpreted to have been of various scales defined for evaluative purposes. Its power source was kinetic. It contained the figures of an emperor and a prince-elect. As described in the consulted sources, this instance's figures partook of the form termed "ruler" by the thesis, as it depicted genericized individuals who exercised authority over others as members of the feudal nobility. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a public clock. This instance's principal designer and builder are not recorded in the thesis' working notes. Its location was the municipality of Nuremberg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance's presence in the historical record was the Holy Roman Emperor Charles IV. This instance came into existence as a design or object as of the year 1361, with that date not being an approximation, and was later restored in the year 1506, although the thesis does not believe that this restoration introduced new figures and vignettes, as was the case with the restoration of the first Strasbourg cathedral clock. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 127 of 295, Cumulative Instance 183 of 409:
The Automata of the Zytglogge at Bern.¹⁸³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source was kinetic. It contained the figures of a cock (a male chicken), a male jester, a king, a (presumptively male) bear of unknown or unspecified gender, a horse of unknown or unspecified gender, a male guard, and a presumptively-male lion. As described in the consulted sources, this instance’s figure partook of the forms termed “ruler,” “bellringer,” “thing of brass,” and “god” by the thesis, as at least one of its figures depicted a member of the feudal nobility, at least one of its figures, and/or the totality of the device, produced a sound like the ringing of a bell, at least one of its figures had a brazen coloration, and at least one of its figures depicted a divine being, who is, in this case, conventionalized as an enthroned king. On review, some of these automaton figures were assigned individual character names in their source material, “Chronos” and “Hans von Thann.” The setting in which it appeared was a public clock. This instance’s principal designer and builder was Gaspard Brunner. Its location was the municipality of Bern, in the principality of the Old Swiss Confederacy, which was associated with the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1530, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁸³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 24, at Footnote 45; Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 53---54 and 132; and Wolfram Koeppe’s essay “Clocks and Automata: The Art of Technological Development” in his edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 199. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which that essay appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. According to the thesis’ working notes, this instance is extant and may itself be consulted as primary source matter. Interestingly, based upon the contents of the prior footnote, this instance registered the sixth current of thought in the first two decades of the twenty-first century, as its present jacquemart, which was examined and found to date from a time after the thesis’ final date of interest, December 31, 1650, was recently restored and re-gilded by a team of specialists; the jacquemart’s dating was established using modern scientific methods during this restoration, which would not have been possible at the last juncture of the jacquemart’s replacement.

**Kang Type 003, Instance 128 of 295, Cumulative Instance 184 of 409:
The Automata of the Marienkirche in Lubeck.¹⁸⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source was kinetic. It contained the figures of an emperor and a prince-elect. As described in the consulted sources, this instance’s figures partook of the form termed “ruler” by the thesis, as it depicted genericized individuals who exercised authority over others as members of the feudal nobility. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a public clock. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Lubeck, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. It is notable that this instance’s automata closely resembled those documented under Kang Type 003, Instance 126. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁸⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 24, at Footnote 46. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Riskin’s cited work in the event that it contains any useful information which does not appear here.

**Kang Type 003, Instance 129 of 295, Cumulative Instance 185 of 409:
Schlottheim's Automaton Crayfishes.¹⁸⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of crayfishes of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is not applicable, as they were freestanding and mobile. This instance’s principal designer and builder was Hans Schlottheim. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was the Prince-Elector Christian I of Saxony. This instance came into existence as a design or object as of the year 1587, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological

¹⁸⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” pages 25, 31; Chapuis & Droz’s *Automata: A Historical and Technological Study*, page 242; and Wolfram Koeppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 242 (the presentation of this instance on the same page in both Chapuis and Droz and in Koeppe is seemingly a strange coincidence). Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. An oblique reference to this instance is very likely made on page 172 of Lily V. Filson’s *Engineering Gods*, and a proper reference is made on page 181 of that same work. Given its appearance in photographs and showings at cultural institutions, this instance is extant and may itself be consulted as primary source matter. A webpage exists for this instance in the online collections of the Staatliche Kunstsammlungen Dresden (Dresden State Art Collections), and as evidenced by the corresponding guide cited above, this instance was also associated with *Making Marvels: Science and Splendor at the Courts of Europe*, a recent exhibition at the Metropolitan Museum of Art in New York City. Regrettably, the cataloging entry for this instance in Koeppe’s exhibition guide states that one of Schlottheim’s two automaton crayfishes, the one “that crawled backward” as described on page 242, was “destroyed” in 1945, during the Second World War.

**Kang Type 003, Instance 129 of 295, Cumulative Instance 185 of 409:
Schlottheim's Automaton Crayfishes.**

achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 130 of 295, Cumulative Instance 186 of 409:
Buontalenti's Mechanized Nativity Scene.¹⁸⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of an angel of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “angel” by the thesis, as it depicted a heavenly being. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a nativity scene. This instance’s principal designer and builder was Bernardo Buontalenti. Its location was the municipality of Florence, in the principality of the Grand Duchy of Tuscany. The principal patron responsible for this instance’s presence in the historical record was the prince, or Grand Duke, Francesco I de Medici (who, as will be seen, was one of the major patrons of automata in the considered periods). While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁸⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 30; and Lily V. Filson’s *Engineering Gods*, page 173. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Riskin and Filson’s cited works if they contain any useful information which does not appear here.

**Kang Type 003, Instance 131 of 295, Cumulative Instance 187 of 409:
Schlottheim's First Mechanized Nativity Scene.¹⁸⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of male shepherds, kings, an angel of unknown or unspecified gender, a male saint, an ox of unknown or unspecified gender, and a donkey (ass) of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the forms termed “angel,” “ruler,” “saint,” and “thing of brass” by the thesis, as its figures respectively depicted at least one heavenly being, at least one member of the feudal aristocracy, at least one individual recognized as a saint by one or more Christian denominations, and at least one figure with a brazen coloration (the thesis recalls that this instance was wrought in the medium of brass, and that all the figures were “things of brass,” which is interesting, given that religious figures are represented using a material formerly associated with “magical” automata). On review, some of these automaton figures were assigned individual character names in their source material, “Joseph, father to Jesus,” “Melchior,” “Caspar,” and “Balthazar.” The setting in which these figures appeared was a nativity scene. This instance’s principal designer and builder was Hans Schlottheim. Its location was the municipality of Dresden, in the principality of the Electorate of Saxony, which was a subsidiary of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1589, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or

¹⁸⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 30; and Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 80. According to the thesis’ working notes, this instance is extant and may itself be consulted as primary source matter. A webpage exists for this instance in the online collections of the Staatliche Kunstsammlungen Dresden (Dresden State Art Collections).

**Kang Type 003, Instance 131 of 295, Cumulative Instance 187 of 409:
Schlottheim's First Mechanized Nativity Scene.**

as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 132 of 295, Cumulative Instance 188 of 409:
Kircher's Scene of the Figures of Saint Peter and Christ on the Water.¹⁸⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was magnetic. It contained the figures of a male saint and God the Son, Jesus Christ. As described in the consulted sources, this instance’s figure partook of the forms termed “god” and “saint” by the thesis, as its figures respectively depicted a divine being and an individual recognized as a saint by one or more Christian denominations. On review, these automaton figures were assigned individual character names in their source material, “Saint Peter” and “Jesus Christ.” The setting in which this instance and its figures appeared is unknown to this thesis. This instance’s principal designer was Father Athanasius Kircher. Its location was the municipality of Wurzburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1631, with that date not being considered an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁸⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 30. For this instance’s primary source matter, see *Ars Magnesia*, which was written by Father Athanasius Kircher and published at Wurzburg, in the Holy Roman Empire, in the year 1631. That date of publication is not an approximation.

**Kang Type 003, Instance 133 of 295, Cumulative Instance 189 of 409:
The Mechanized Nativity Scene Sent to China by the Jesuit Order, First
Grouping.¹⁸⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of kings (the Magi), a female saint, a male saint, a donkey (ass) of unknown or unspecified gender, an ox of unknown or unspecified gender, and presumptively-male shepherds. As described in the consulted sources, this instance’s figures partook of the forms termed “saint” and “ruler” by the thesis, as at least one depicted an individual recognized as a saint by one or more Christian denominations, and at least one depicted a member of the feudal aristocracy. On review, some of these automaton figures were assigned an individual character name in their source material, “Melchior,” “Caspar,” “Balthazar,” “Mary, the mother of Jesus,” and “Joseph, the father to Jesus.” The setting in which these figures appeared was a nativity scene. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Cologne, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was the Prince-Elector Archbishop Ferdinand of Bavaria. This instance came into existence as a design or object as of the year 1618, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection,

¹⁸⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 30. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Riskin’s cited work if it contains any useful information which does not appear here.

**Kang Type 003, Instance 133 of 295, Cumulative Instance 189 of 409:
The Mechanized Nativity Scene Sent to China by the Jesuit Order, First
Grouping.**

conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 134 of 295, Cumulative Instance 190 of 409:
The Mechanized Nativity Scene Sent to China by the Jesuit Order, Second
Grouping.¹⁹⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of God the Father (presumably in His conventionalization as an old man) and an angel of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “god” and “angel” by the thesis, as they respectively depicted a divine being and a heavenly being. On review, one of these automaton figures was assigned an individual character name in its source material, “God the Father.” The setting in which these figures appeared was a nativity scene. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Cologne, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was the Prince-Elector Archbishop Ferdinand of Bavaria. This instance came into existence as a design or object as of the year 1618, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational

¹⁹⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 30. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Riskin’s cited work if it contains any useful information which does not appear here.

**Kang Type 003, Instance 134 of 295, Cumulative Instance 190 of 409:
The Mechanized Nativity Scene Sent to China by the Jesuit Order, Second
Grouping.**

advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 135 of 295, Cumulative Instance 191 of 409:
Reichel's Spider.¹⁹¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a generic spider of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder was Thomas Reichel. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1610, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other

¹⁹¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 31; Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 241 and 242; and Wolfram Koeppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, pages 242---243 (the appearance of this instance on page 242 in both Chapuis and Droz and in Koeppe is a strange coincidence). The cataloging entry for this instance in Koeppe’s exhibition guide states that the spider’s “naturalistic coloring still survives in spots” on page 243, which may or may not mean that it was not originally intended to have the appearance of a “thing of brass” as defined by this thesis, although it certainly has that appearance as photographed for its cataloging entry, and presumably at the present time. The author does not recall that Chapuis and Droz characterized this instance as having anything other than the metallic coloration suggested by its materials. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. This instance is also very likely on page 172 in Lily V. Filson’s *Engineering Gods*, although Filson’s reference is not specific and authoritative. As indicated in the above citations, this automaton was associated with the recent exhibition *Making Marvels: Science and Splendor at the Courts of Europe*, which was staged at the Metropolitan Museum of Art in New York City. According to the thesis’ working notes, it is extant and may itself be consulted as primary source matter.

**Kang Type 003, Instance 135 of 295, Cumulative Instance 191 of 409:
Reichel's Spider.**

technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 136 of 295, Cumulative Instance 192 of 409:
The Neptune and Tortoise in Chapuis as Referenced by Riskin
(Grimaldo's Neptune).¹⁹²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of an ancient Roman god and a tortoise. As described in the consulted sources, one of this instance’s figures partook of the

¹⁹² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 31. This instance is also very likely on page 172 of Lily V. Filson’s *Engineering Gods*, although Filson’s reference is not specific or authoritative. See also materials related to the recent exhibition *Making Marvels: Science and Splendor at the Courts of Europe*, which was staged by the Metropolitan Museum of Art in New York City. Specifically, see Wolfram Koeppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 236. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. According to the thesis’ working notes, and the thesis’ interpretation of Riskin and Filson’s works, this instance was extant when shown in that exhibition, as the automaton referenced by those two authors, and that in the exhibition, are taken to be one and the same; and if still extant, which is likely, this instance may itself be consulted as primary source matter. The thesis wishes to record that, while reviewing Koeppe’s entry for this instance as catalog item no. 133, “Turtle Automaton with Neptune as Vintner,” it noted Koeppe’s mention of another automaton by Leodegar Grimaldo in the second note on page 236: “a turtle automaton by Grimaldo in the Landesmuseum Wurttemberg.” Accordingly, the thesis visited the website of that institution, but after a series of simple queries, was unable to locate this second turtle automaton. It is possible that Grimaldo’s turtle has been deaccessioned by the Landesmuseum Wurttemberg, but this is only the thesis’ conjecture. Interestingly, when searching the museum’s website, four additional instances of pre-Modern or Early Modern automata were located; these four instances respectively contain automata with the animaloid figure of a seated lion, the demi-humanoid figures of the human heads of a queen and a king, the animaloid figures of an ostrich and a bear, and the animaloid figure of a rooster. The respective names given to these four instances by the Landesmuseum Wurttemberg are “Automaten- Tischuhr mit liegendem Löwen auf profiliertem Ebenholzsockel,” “Konsoluhhr mit Automat,” “Automatenuhr ‘Strauß und Bär,’” and “Figurenuhr ‘Hahn.’” As elsewhere in the thesis, the author reminds readers that he has only entered instances in this appendix which have been discussed by the English-language sources which he has consulted, both from the imperatives of academic citation, deference to published authors, and in this case, because he must rely on online translations to read modern European languages other than English, so regrettably, these four instances, while very real, can only remain documented in this footnote. As for Grimaldo’s turtle in Koeppe’s second note on page 236, the author has not generally entered instances in this appendix which he has not been able to corroborate at least visually, with notable exceptions being the multiples of certain automaton designs by Gianello Torriano that are specifically counted by Elizabeth King in her earlier article on Torriano’s first and most notable monk automaton. The website maintained for the Landesmuseum Wurttemberg as of this writing, in mid-July 2023, is <https://www.landmuseum-stuttgart.de>. Its pages read “Landesmuseum Wurttemberg,” not “Landesmuseum Stuttgart” (readers are also reminded that the author has most often omitted diacritics, such as umlauts, from the text of this appendix and the thesis to which it is attached, although they are included in the foregoing accessioning titles for the four automata recorded by this footnote).

**Kang Type 003, Instance 136 of 295, Cumulative Instance 192 of 409:
The Neptune and Tortoise in Chapuis as Referenced by Riskin
(Grimaldo's Neptune).**

form termed “god” by the thesis, as it depicted a divine being. On review, one of these automaton figures was assigned an individual character name in its source material, “Neptune.” The setting in which it appeared is not applicable, as it was mobile and freestanding. This instance’s principal designer and builder was Leodegar Grimaldo. Its location was the municipality of Stuttgart, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was Duke Eberhard III of Wurttemberg. This instance came into existence as a design or object as of the year 1626, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 137 of 295, Cumulative Instance 193 of 409:
The Drummer-Bear in Chapuis as Referenced by Riskin.¹⁹³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a bear of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder, location, and principal patron are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1600, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁹³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 31. This instance is also very likely on page 172 of Lily V. Filson’s *Engineering Gods*, although Filson’s reference is not specific or authoritative. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Riskin and Filson’s cited works if they contain any useful information which does not appear here.

**Kang Type 003, Instance 138 of 295, Cumulative Instance 194 of 409:
The Lion at the Fuggers' Palace in Chapuis as Referenced by Riskin.¹⁹⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic. It contained the figure of a lion of unknown or unspecified gender, although the depiction of lions, and many animals associated with masculinity during the considered periods, almost exclusively represented the male gender to the thesis’ knowledge. As described in the consulted sources, this instance’s figure partook of the form termed “gatekeeper” by the thesis, as its figure in some sense monitored a threshold. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a doorway. This instance’s principal designer and builder, location, and principal patron are not recorded in the thesis’ working notes, although its location corresponds to that of the (unknown) Fugger residence in which it was installed, and its principal patron was presumably a member of the Fugger dynasty. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

¹⁹⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 33. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Riskin’s cited work if it contains any useful information which does not appear here.

**Kang Type 003, Instance 139 of 295, Cumulative Instance 195 of 409:
The Mercury at Saint-Germain-en-Laye.¹⁹⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a classical Roman god. As described in the consulted sources, this instance’s figure partook of the forms termed “god” and “thing of brass” by the thesis, as it depicted a divine being and had a brazen coloration. On review, this automaton figure was assigned an individual character name in its source material, “Mercury.” The setting in which it appeared was a grotto. This instance’s principal designer and builder was Tommaso Francini. Its location was the municipality of Saint-Germain-en-Laye, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record was King Henry IV of France. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an

¹⁹⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 34; and Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 44. It is the thesis’ belief that the same primary source(s), especially those from the Bibliotheque Nationale de France, which attest the historical existence of the other automata at Saint-Germain-en-Laye similarly attest the historical existence of this instance. Accordingly, readers are referred to the prior footnotes the other pre-Modern and Early Modern automata which existed at Saint-Germain-en-Laye for this instance’s primary source matter.

**Kang Type 003, Instance 139 of 295, Cumulative Instance 195 of 409:
The Mercury at Saint-Germain-en-Laye.**

association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 140 of 295, Cumulative Instance 196 of 409:
The Auxiliary Automata of the Perseus Grotto at Saint-Germain-en-Laye.¹⁹⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of unknown scales defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a presumptively-male blacksmith, a weaver of unknown or unspecified gender, a presumptively-male miller, a presumptively-male carpenter, a blade-grinder of unknown or unspecified gender, and a fisherman. As described in the consulted sources, this instance’s figures partook of the form termed “thing of brass” by the thesis, as one or more of its figures had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a grotto. This instance’s principal designer and builder was Tommaso Francini. Its location was the municipality of Saint-Germain-en-Laye, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record was King Henry IV of France. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁹⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 34; and Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 46. It is the thesis’ belief that the same primary source(s), especially those from the Bibliothèque Nationale de France, which attest the historical existence of the other automata at Saint-Germain-en-Laye similarly attest the historical existence of this instance. Accordingly, readers are referred to the prior footnotes for the other pre-Modern and Early Modern automata which existed at Saint-Germain-en-Laye for this instance’s primary source matter.

**Kang Type 003, Instance 141 of 295, Cumulative Instance 197 of 409:
The Automata of the Various Scenes in the Grotto of Torches at Saint-Germain-en-Laye.¹⁹⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of unknown scales defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a generic fish of unknown or unspecified gender, a sea monster of unknown or unspecified gender, a king, a prince, an angel of unknown or unspecified gender, and a fairy of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “thing of brass,” “monster,” “ruler,” and “angel” by the thesis, as (respectively) at least one had a brazen coloration, at least one depicted a fantastical creature, at least one depicted a member of the feudal aristocracy, and at least one depicted a heavenly being. On review, two of these automaton figures were assigned individual character names in their source material, “King Henry IV of France” and Louis XIII of France as *dauphin* (“The Dolphin of France”), the princely heir apparent. The setting in which these figures appeared was a grotto. This instance’s principal designer and builder was Tommaso Francini. Its location was the municipality of Saint-Germain-en-Laye, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record was King Henry IV of France. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁹⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 34; and Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 46. It is the thesis’ belief that the same primary source(s), especially those from the Bibliotheque Nationale de France, which attest the historical existence of the other automata at Saint-Germain-en-Laye similarly attest the historical existence of this instance. Accordingly, readers are referred to the prior footnotes for the other pre-Modern and Early Modern automata which existed at Saint-Germain-en-Laye for this instance’s primary source matter.

**Kang Type 003, Instance 142 of 295, Cumulative Instance 198 of 409:
The Germaul (Big Mouth) at Schloss Hellbrunn.¹⁹⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic male human head. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was assigned an individual character name in its source material, “The Germaul” or “The Big Mouth” (“Germaul,” to the author’s knowledge, means something like “moan” in German, or at least in modern German, so as alternatives, this name could be loosely rendered as “The Moan,” “The Moaner,” or “The Big Moaner”). The setting in which it appeared was a grotto. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Salzburg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was Archbishop Markus Sitticus von Hohenems. This instance came into existence as a design or object at an unclear juncture; Silvio Bedini states that its opening date was the year 1646, but von Hohenems died in the year 1619. Of course, it may have been the case the interval between these years was the duration required for the complete realization of the early waterworks at Hellbrunn, and that construction continued on these waterworks after the death of their patron, but the thesis is not prepared to state that this explanation was the fact of the matter. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁹⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” pages 37---38; and Silvio Bedini’s “The Role of Automata in the History of Technology,” page 27. According to the thesis’ working notes, it is extant and may itself be consulted as primary source matter, although the extant version may have been restored and/or replaced at some point.

**Kang Type 003, Instance 143 of 295, Cumulative Instance 199 of 409:
The First Grotto Scene of the Royal Way at Schloss Hellbrunn.¹⁹⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a presumptively-male miller. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a grotto. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Salzburg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was Archbishop Markus Sitticus von Hohenems. This instance came into existence as a design or object at an unclear juncture; Silvio Bedini states that its opening date was the year 1646, but von Hohenems died in the year 1619. Of course, it may have been the case the interval between these years was the duration required for the complete realization of the early waterworks at Hellbrunn, and that construction continued on these waterworks after the death of their patron, but the thesis is not prepared to state that this explanation was the fact of the matter. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

¹⁹⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 38; and Silvio Bedini’s “The Role of Automata in the History of Technology, page 27. According to the thesis’ working notes, it is extant and may itself be consulted as primary source matter, although the extant version may have been restored and/or replaced at some point.

**Kang Type 003, Instance 144 of 295, Cumulative Instance 200 of 409:
The Second Grotto Scene of the Royal Way at Schloss Hellbrunn.²⁰⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a presumptively-male potter. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a grotto. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Salzburg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was Archbishop Markus Sitticus von Hohenems. This instance came into existence as a design or object at an unclear juncture; Silvio Bedini states that its opening date was the year 1646, but von Hohenems died in the year 1619. Of course, it may have been the case the interval between these years was the duration required for the complete realization of the early waterworks at Hellbrunn, and that construction continued on these waterworks after the death of their patron, but the thesis is not prepared to state that this explanation was the fact of the matter. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁰⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 38; and Silvio Bedini’s “The Role of Automata in the History of Technology,” page 27. According to the thesis’ working notes, it is extant and may itself be consulted as primary source matter, although the extant version may have been restored and/or replaced at some point. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 145 of 295, Cumulative Instance 201 of 409:
The Third Grotto Scene of the Royal Way at Schloss Hellbrunn.²⁰¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a blade-grinder of unknown or unspecified gender and a generic child of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a grotto. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Salzburg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was Archbishop Markus Sitticus von Hohenems. This instance came into existence as a design or object at an unclear juncture; Silvio Bedini states that its opening date was the year 1646, but von Hohenems died in the year 1619. Of course, it may have been the case the interval between these years was the duration required for the complete realization of the early waterworks at Hellbrunn, and that construction continued on these waterworks after the death of their patron, but the thesis is not prepared to state that this explanation was the fact of the matter. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁰¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 38; and Silvio Bedini’s “The Role of Automata in the History of Technology,” page 27. According to the thesis’ working notes, it is extant and may itself be consulted as primary source matter, although the extant version may have been restored and/or replaced at some point. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 146 of 295, Cumulative Instance 202 of 409:
The Fourth Grotto Scene of the Royal Way at Schloss Hellbrunn.²⁰²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male Greek hero, a princess, and a dragon of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “hero,” “ruler,” and “monster,” as one depicted a sympathetic individual celebrated for doing good deeds, one depicted a member of the feudal aristocracy, and one depicted a fantastical creature. On review, some of these automaton figures were assigned individual character names in their source material, “Perseus” and “Andromeda.” The setting in which these figures appeared was a grotto. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Salzburg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was Archbishop Markus Sitticus von Hohenems. This instance came into existence as a design or object at an unclear juncture; Silvio Bedini states that its opening date was the year 1646, but von Hohenems died in the year 1619. Of course, it may have been the case the interval between these years was the duration required for the complete realization of the early waterworks at Hellbrunn, and that construction continued on these waterworks after the death of their patron, but the thesis is not prepared to state that this explanation was the fact of the matter. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same

²⁰² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 38; and Silvio Bedini’s “The Role of Automata in the History of Technology,” page 27. According to the thesis’ working notes, it is extant and may itself be consulted as primary source matter, although the extant version may have been restored and/or replaced at some point. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 146 of 295, Cumulative Instance 202 of 409:
The Fourth Grotto Scene of the Royal Way at Schloss Hellbrunn.**

civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 147 of 295, Cumulative Instance 203 of 409:
The Fifth Grotto Scene of the Royal Way at Schloss Hellbrunn.²⁰³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of an ancient Greek god and a satyr. As described in the consulted sources, this instance’s figures partook of the forms termed “god” and “monster” by the thesis, as at least one of its figures depicted a divine being, and at least one of its figures depicted a fantastical creature. On review, these automaton figures were assigned individual character names in their source material, “Apollo” and “Marsyas.” The setting in which these figures appeared was a grotto. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Salzburg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was Archbishop Markus Sitticus von Hohenems. This instance came into existence as a design or object at an unclear juncture; Silvio Bedini states that its opening date was the year 1646, but von Hohenems died in the year 1619. Of course, it may have been the case the interval between these years was the duration required for the complete realization of the early waterworks at Hellbrunn, and that construction continued on these waterworks after the death of their patron, but the thesis is not prepared to state that this explanation was the fact of the matter. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory

²⁰³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 38; and Silvio Bedini’s “The Role of Automata in the History of Technology,” page 27. According to the thesis’ working notes, it is extant and may itself be consulted as primary source matter, although the extant version may have been restored and/or replaced at some point. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 147 of 295, Cumulative Instance 203 of 409:
The Fifth Grotto Scene of the Royal Way at Schloss Hellbrunn.**

association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 148 of 295, Cumulative Instance 204 of 409:
The First Grotto Scene of the Palatine Elector Frederick V's Palace at
Heidelberg.²⁰⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of unknown scales defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a satyr and a nymph. As described in the consulted sources, this instance’s figures partook of the forms termed “god” and “monster” by the thesis, as at least one depicted a divine being, and at least one depicted a fantastical being. On review, one of these automaton figures was assigned an individual character name in its source material, “Echo.” The setting in which these figures appeared was a grotto. This instance’s principal designer and builder was Salomon de Caus. Its location was the municipality of Heidelberg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was the Prince-Elector of the Palatinate Frederick V, called “The Winter King.” This instance came into existence as a design or object as of the years 1613---1620, with that range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it

²⁰⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 38; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 81---82; and Chapuis & Droz’s *Automata: A Historical and Technological Study*, page 40. For this instance’s primary source matter, see *Les Raisons des Forces Mouvantes*, which was written by Salomon de Caus under the patronage of, or to describe work done under the patronage of, the Prince-Elector of the Palatinate Frederick V in the year 1615. Frederick V was called “The Winter King,” and his wife, Elizabeth Stuart, was called “The Winter Queen,” because they ruled during a single season (with the latter, Elizabeth, named as de Caus’ patron on page 74 of Scott Maisano’s “Infinite Gesture: Automata and the Emotions in Descartes and Shakespeare,” as cited by this thesis). That date of publication is not an approximation. See also *Hortus Palatinus*, which was written by Salomon de Caus under the patronage of, or to describe work done under the patronage of, the Prince-Elector of the Palatinate Frederick V, called “The Winter King,” and which was published at Frankfurt, in the Holy Roman Empire, in the year 1620. That date of publication is not an approximation.

**Kang Type 003, Instance 148 of 295, Cumulative Instance 204 of 409:
The First Grotto Scene of the Palatine Elector Frederick V's Palace at
Heidelberg.**

partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 149 of 295, Cumulative Instance 205 of 409:
The Second Grotto Scene of the Palatine Elector Frederick V's Palace at
Heidelberg, "The Grotto of Orpheus;" Humanoid Grouping.²⁰⁵**

Nothing suggests that this real-world instance of automata was "false" by the thesis' definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of an ancient Greek hero. As described in the consulted sources, this instance's figure partook of the form termed "hero" by the thesis, as it depicted a sympathetic individual celebrated for doing good deeds. On review, this automaton figure was assigned an individual character name in its source material, "Orpheus." The setting in which it appeared was a grotto. This instance's principal designer and builder was Salomon de Caus. Its location was the municipality of Heidelberg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance's presence in the historical record was the Prince-Elector of the Palatinate Frederick V, called "The Winter King." This instance came into existence as a design or object as of the years 1613---1620, with that range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to

²⁰⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin's "Machines in the Garden," page 38; Minsoo Kang's *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 81---82; and Chapuis & Droz's *Automata: A Historical and Technological Study*, page 40. For this instance's primary source matter, see *Les Raisons des Forces Mouvantes*, which was written by Salomon de Caus under the patronage of, or to describe work done under the patronage of, the Prince-Elector of the Palatinate Frederick V in the year 1615. Frederick V was called "The Winter King," and his wife, Elizabeth Stuart, was called "The Winter Queen," because they only ruled for a single season (with the latter, Elizabeth, named as de Caus' patron on page 74 of Scott Maisano's "Infinite Gesture: Automata and the Emotions in Descartes and Shakespeare," as cited by this thesis). That date of publication is not an approximation. See also *Hortus Palatinus*, which was written by Salomon de Caus under the patronage of, or to describe work done under the patronage of, the Prince-Elector of the Palatinate Frederick V, called "The Winter King," and which was published at Frankfurt, in the Holy Roman Empire, in the year 1620. That date of publication is not an approximation. "Ibidem" has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 149 of 295, Cumulative Instance 205 of 409:
The Second Grotto Scene of the Palatine Elector Frederick V's Palace at
Heidelberg, "The Grotto of Orpheus;" Humanoid Grouping.**

be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 150 of 295, Cumulative Instance 206 of 409:
The Second Grotto Scene of the Palatine Elector Frederick V's Palace at
Heidelberg, "The Grotto of Orpheus;" Animaloid Grouping.²⁰⁶**

Nothing suggests that this real-world instance of automata was "false" by the thesis' definition. In the absence of information, its figures are interpreted to have been of unknown scales defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a leopard of unknown or unspecified gender, a ram, a presumptively-male lion, a boar, a stag, a sheep of unknown or unspecified gender, and a rabbit of unknown or unspecified gender. As described in the consulted sources, this instance's figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a grotto. This instance's principal designer and builder was Salomon de Caus. Its location was the municipality of Heidelberg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance's presence in the historical record was the Prince-Elector of the Palatinate Frederick V, called "The Winter King." This instance came into existence as a design or object as of the years 1613---1620, with that range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western

²⁰⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin's "Machines in the Garden," page 38; Minsoo Kang's *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 81---82; and Chapuis & Droz's *Automata: A Historical and Technological Study*, page 40. For this instance's primary source matter, see *Les Raisons des Forces Mouvantes*, which was written by Salomon de Caus under the patronage of, or to describe work done under the patronage of, the Prince-Elector of the Palatinate Frederick V in the year 1615. Frederick V was called "The Winter King," and his wife, Elizabeth Stuart, was called "The Winter Queen," because they only ruled for a single season (with the latter, Elizabeth, named as de Caus' patron on page 74 of Scott Maisano's "Infinite Gesture: Automata and the Emotions in Descartes and Shakespeare," as cited by this thesis). That date of publication is not an approximation. See also *Hortus Palatinus*, which was written by Salomon de Caus under the patronage of, or to describe work done under the patronage of, the Prince-Elector of the Palatinate Frederick V, called "The Winter King," and which was published at Frankfurt, in the Holy Roman Empire, in the year 1620. That date of publication is not an approximation. "Ibidem" has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 150 of 295, Cumulative Instance 206 of 409:
The Second Grotto Scene of the Palatine Elector Frederick V's Palace at
Heidelberg, "The Grotto of Orpheus;" Animaloid Grouping.**

Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 151 of 295, Cumulative Instance 207 of 409:
The Second Grotto Scene of the Palatine Elector Frederick V's Palace at
Heidelberg, "The Grotto of Orpheus;" Reptiloid Grouping.²⁰⁷**

Nothing suggests that this real-world instance of automata was "false" by the thesis' definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a serpent of unknown or unspecified gender. As described in the consulted sources, this instance's figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a grotto. This instance's principal designer and builder was Salomon de Caus. Its location was the municipality of Heidelberg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance's presence in the historical record was the Prince-Elector of the Palatinate Frederick V, called "The Winter King." This instance came into existence as a design or object as of the years 1613---1620, with that range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or

²⁰⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin's "Machines in the Garden," page 38; Minsoo Kang's *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 81---82; and Chapuis & Droz's *Automata: A Historical and Technological Study*, page 40. For this instance's primary source matter, see *Les Raisons des Forces Mouvantes*, which was written by Salomon de Caus under the patronage of, or to describe work done under the patronage of, the Prince-Elector of the Palatinate Frederick V in the year 1615. Frederick V was called "The Winter King," and his wife, Elizabeth Stuart, was called "The Winter Queen," because they only ruled for a single season (with the latter, Elizabeth, named as de Caus' patron on page 74 of Scott Maisano's "Infinite Gesture: Automata and the Emotions in Descartes and Shakespeare," as cited by this thesis). That date of publication is not an approximation. See also *Hortus Palatinus*, which was written by Salomon de Caus under the patronage of, or to describe work done under the patronage of, the Prince-Elector of the Palatinate Frederick V, called "The Winter King," and which was published at Frankfurt, in the Holy Roman Empire, in the year 1620. That date of publication is not an approximation. "Ibidem" has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 151 of 295, Cumulative Instance 207 of 409:
The Second Grotto Scene of the Palatine Elector Frederick V's Palace at
Heidelberg, "The Grotto of Orpheus;" Reptiloid Grouping.**

as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 152 of 295, Cumulative Instance 208 of 409:
The Third Grotto Scene of the Palatine Elector Frederick V's Palace at
Heidelberg, "The Grotto of Neptune."²⁰⁸**

Nothing suggests that this real-world instance of automata was "false" by the thesis' definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of an ancient Roman god, a horse of unknown or unspecified gender, a nymph, an angel of unknown or unspecified gender, and a dolphin of unknown or unspecified gender. As described in the consulted sources, some of these instance's figures partook of the forms termed "god" and "angel" by the thesis, as one depicted a divine being, and another a heavenly being. On review, one of these automaton figures was assigned an individual character name in its source material, "Neptune." The setting in which these figures appeared was a grotto. This instance's principal designer and builder was Salomon de Caus. Its location was the municipality of Heidelberg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance's presence in the historical record was the Prince-Elector of the Palatinate Frederick V, called "The Winter King." This instance came into existence as a design or object as of the years 1613---1620, with that range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to

²⁰⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin's "Machines in the Garden," pages 38---39; and Minsoo Kang's *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 81---82. For this instance's primary source matter, see *Les Raisons des Forces Mouvantes*, which was written by Salomon de Caus under the patronage of, or to describe work done under the patronage of, the Prince-Elector of the Palatinate Frederick V in the year 1615. Frederick V was called "The Winter King," and his wife, Elizabeth Stuart, was called "The Winter Queen," because they only ruled for a single season (with the latter, Elizabeth, named as de Caus' patron on page 74 of Scott Maisano's "Infinite Gesture: Automata and the Emotions in Descartes and Shakespeare," as cited by this thesis). That date of publication is not an approximation. See also *Hortus Palatinus*, which was written by Salomon de Caus under the patronage of, or to describe work done under the patronage of, the Prince-Elector of the Palatinate Frederick V, called "The Winter King," and which was published at Frankfurt, in the Holy Roman Empire, in the year 1620. That date of publication is not an approximation.

**Kang Type 003, Instance 152 of 295, Cumulative Instance 208 of 409:
The Third Grotto Scene of the Palatine Elector Frederick V's Palace at
Heidelberg, "The Grotto of Neptune.**

be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 153 of 295, Cumulative Instance 209 of 409:
Ramelli's Household Birds.²⁰⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition; it did feature a remote operator. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was pneumatic, as it could be configured for activation with bellows by the remote operator. It contained the figures of birds of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis (unless the birds were fashioned from brass, in which case they would be “things of brass”). On review, these automaton figures were not assigned individual character names in their source material. The setting in which this instance and its figures appeared was one or more private houses. This instance’s principal designer was Captain Agostino Ramelli. Its location was the municipality of Paris, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record is not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to

²⁰⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 39, at Footnote 129. For this instance’s primary source matter, see *Le Diverse e Artificiose Macchine*, which was written by Captain Agostino Ramelli under the patronage of King Henry III of France and published at Paris, in the Kingdom of France, in the year 1588. That date of publication is not an approximation. For the classical technology which undergirds this instance, see Bur, “T5: Singing Birds,” pages 155—165, in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.” For the classical technology which undergirds this instance, see Bur, “T5: Singing Birds,” pages 155—165, in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.” For the classical technology which undergirds this instance, see Bur, “T5: Singing Birds,” pages 155—165, in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.”

**Kang Type 003, Instance 153 of 295, Cumulative Instance 209 of 409:
Ramelli's Household Birds.**

automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 154 of 295, Cumulative Instance 210 of 409:
Richelieu's Automaton Musketeers.²¹⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of male musketeers, soldiers armed with muskets. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a garden. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Rueil-Malmaison, near Paris, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record was Cardinal Armand Jean du Plessis, who is usually called Cardinal Richelieu. This instance came into existence as a design or object before the year 1644, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

²¹⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 41. For this instance’s primary source matter, see *The Diary of John Evelyn*, “Entry for February 27, 1644,” which was written by John Evelyn in the year 1644. A copy of this work is available online through Project Gutenberg, where it is accessible using the search parameter “41218-h;” because that copy is a published edition, it can be construed as both a primary and secondary source, as it is recollected to contain annotations and a scholarly apparatus, although it was mainly consulted to corroborate Riskin’s presentation of this instance.

**Kang Type 003, Instance 155 of 295, Cumulative Instance 211 of 409:
The Automata of the *Surya Siddhanta*.²¹¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of unknown scales defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a peacock, a generic man, and a monkey of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is unknown to this thesis. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was an unknown municipality and principality on the Indian subcontinent, or in the immediately-adjacent environs of the same. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²¹¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Derek J. De Solla Price’s “On the Origin of Clockwork, Perpetual Motion Devices, and the Compass,” under the section headed “Mechanized Astronomical Models,” which corresponds to pages 19 and 21 in the thesis’ copy. For this instance’s primary source matter, see the *Surya Siddhanta* in the translation by E. Burgess, which was published at New Haven, Connecticut, in the United States of America, in the year 1860; the original text of that work approximately dates to the year 1075. The date of publication for Burgess’ translation is not an approximation.

**Kang Type 003, Instance 156 of 295, Cumulative Instance 212 of 409:
d'Este's Triumphal Automata.²¹²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male saint and an angel of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “saint” and “angel” by the thesis, as they respectively depicted a person recognized as a saint by one or more Christian denominations and a heavenly being. On review, this automaton figure was assigned an individual character name in its source material, “Saint Prosper, Patron of Reggio.” The setting in which it appeared was a parade float. This instance’s principal designer was Malatesta Ariosto. Its location was the municipality of Reggio Emilia, in the principality of the Duchy of Modena and Reggio. The principal patron responsible for this instance’s presence in the historical record was Count Borso d’Este (there is some confusion on this point, as Chapuis, or his English translator and/or editors, misstates the date of Count Borso’s patronage for this instance as the year 1492, after Count Borso’s death; Ambrosetti corrects the date of Count Borso’s patronage for this instance to approximately the year 1453). This instance came into existence as a design or object as of the year 1453, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially

²¹² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 34; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 176---177, 228; and Lily V. Filson’s *Engineering Gods*, pages 182 and 183. For this instance’s primary source matter, see *Ex Annalium Libris Marchionum Estensium Excerpta*, in L. Simeoni’s edition of *Rerum Italicarum Scriptores*, which was published at Bologna, in the fascist Italian state, in the year 1936; the original author of the cited “excerpt” was the chronicler Giovanni da Ferrara, who wrote it in the year 1453. According to the thesis’ working notes, neither the original date of composition nor date of the specified edition are approximations. Here, we have a direct recapitulation of the first current of thought in its senses of both technology and purpose; if its original subject matter were also retained, this instance would be a perfect replica from the ancient world. Yet it is precisely the replacement of figures reflecting polytheistic Greek religious subject matter with those reflecting monotheistic Christian religious subject matter that allows this instance to retain the first current of thought’s religious function for automata, and to do so more than a millennium after its design’s appearance in Heron of Alexandria’s extant automaton-building treatise. For this instance’s technology, which is documented and well-understood, see Tatiana Bur’s cited work, where Heron’s original Greek automaton, not its reinterpretation from the Italian Renaissance with different figures, but with the same underlying technology, is given a full presentation. Bur’s section on the direct antecedent of this instance is on pages 99---105 in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.”

**Kang Type 003, Instance 156 of 295, Cumulative Instance 212 of 409:
d'Este's Triumphal Automata.**

including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 157 of 295, Cumulative Instance 213 of 409:
al-Jazari's Elephant Clock.²¹³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male mahout (an elephant-driver), a generic bird of unknown or unspecified gender, a generic man, a falcon, a serpent of unknown or unspecified gender, and a male scribe. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis per the thesis’ working notes, but this instance may have partaken of the form termed “thing of brass” if some of its figures (e.g., the serpents) had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a public clock. This instance’s principal designer and builder was Badīʿ-al-Zamān (the Wonder of the Age) Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in

²¹³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 38---40, 289; Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 13; and Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 111, 112, 116, and 117. This instance was also associated with the recent exhibition *Making Marvels: Science and Splendor at the Courts of Europe* at the Metropolitan Museum of Art in New York City, but only in manuscript, not as an assembled reproduction built for the exhibition. For this instance of automata in that exhibition, see Wolfram Koeppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 239. As someone who has read Hill’s translation of al-Jazari’s instructions for the construction of this instance, the author would note the following: Koeppe makes no reference to Hill’s translation of al-Jazari, and seems to rely upon conferral with colleagues to discuss this instance; the author does not recall that the balls used to sound the hours would be collected in a visible receptacle in this design, unlike al-Jazari’s candle clocks; al-Jazari calls the serpent-like monsters “dragons” in Hill’s translation, at least to the author’s recollection, as does Francesca Leoni, who is directly quoted and cited by Koeppe, but Koeppe, in a rhetorical flourish, calls each of these creatures an “Egyptian phoenix,” which strikes the author as being an unjustified characterization; and lastly, in Figure 105 on page 239, a reconstruction of al-Jazari’s design of this instance at the Kasimiye Medrese in Mardin, Turkey is pictured with a color photograph, while another reconstruction at the Ibn Battuta Mall in Dubai, United Arab Emirates, is only mentioned in Koeppe’s cataloging text, although of the two, the author is of the opinion that the reconstruction in Dubai is superior. The Turkish reconstruction lacks the mahout (elephant-driver) automaton altogether, one which has a very simple operating principle, but which is described with somewhat confusing language in Hill’s translation. The proportions and scale of the Emirati reconstruction also strike this author as being superior to the pictured Turkish reconstruction, although no offense is meant to the creators of the Turkish realization critiqued in this footnote. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab Fi Maʿrifat al-Hiyal al-Handasiyya)* in Donald R. Hill’s edition, the frontispiece, and pages 58, 59, 61, 62, 63, 66, 67---68, 210, 211, 212, 247, 248, and 272. That work was written by Badīʿ-al-Zamān (“The Wonder of the Age”) Ibn al-Razzaz al-Jazari under the patronage of al-Salih Nasir al-Din abi al-Fath Mahmud bin Muhammad bin Qara Arslan bin Dawud Ibn Sukman bin Artuq, an Artuqid king, at Diyarbakir, in Diyar Bakr, al-Jazira, in the year 1206. That date of publication is not an approximation.

**Kang Type 003, Instance 157 of 295, Cumulative Instance 213 of 409:
al-Jazari's Elephant Clock.**

the principality of Diyar Bakr, al-Jazira. The principal patron responsible for this instance's presence in the historical record was King Nasir al-Din, an Artuqid king whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 158 of 295, Cumulative Instance 214 of 409:
The Animal Figures in the Grotto of Orpheus at Saint-Germain-en-Laye.²¹⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a ram, a leopard of unknown or unspecified gender, a nightingale of unknown or unspecified gender, a cock (a male chicken), and a generic bird of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “thing of brass” by the thesis, as at least one had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a grotto. This instance’s principal designer and builder was Tomasso Francini. Its location was the municipality of Saint-Germain-en-Laye, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record was King Henry IV of France. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²¹⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 45 and 46. For this instance’s primary source matter, see an engraving by Abraham Bosse, “*Recueil. Modeles de Grottoes et de Fontaines. Dessins Laves*,” which is or was filed in the collections of the Bibliotheque Nationale de France under “Estampes et Photographie, Reserve HD-100(A)-Pet Fol; Archives Nationales O1 1598,” which is authorially credited to Alessandro Francini, and which was published at Paris, in the Kingdom of France, in the year 1625. That date of publication is not an approximation.

**Kang Type 003, Instance 159 of 295, Cumulative Instance 215 of 409:
The Automaton Clock at the Palace of Fontainebleu.²¹⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of an ancient Roman god, a presumptively-male cyclops, and a presumptively-male blacksmith. As described in the consulted sources, this instance’s figures partook of the forms termed “god” and “monster” by the thesis, as one depicted a divine being, and another depicted a fantastical creature. On review, one of these automaton figures was assigned an individual character name in its source material, “Sol.” The setting in which it appeared was a public clock. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Fontainebleu, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record was King Francis I of France. This instance came into existence as a design or object before the year 1547, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational

²¹⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study*, page 50; and Jessica Riskin’s “Machines in the Garden,” page 36. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Chapuis and Droz’s cited work, and to Riskin’s cited work, if they contain any useful information which does not appear here.

**Kang Type 003, Instance 159 of 295, Cumulative Instance 215 of 409:
The Automaton Clock at the Palace of Fontainebleu.**

advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 160 of 295, Cumulative Instance 216 of 409:
The Jacquemart on the Clock at the Fountain of the Samaritaine.²¹⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a blackamoor (usually a male person with a black African appearance). As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a public clock. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Paris, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object before the year 1622, with that date being an approximation, and it was inoperative or destroyed as of the year 1715, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²¹⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 50. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Chapuis and Droz’s cited work if it contains any useful information which does not appear here. It may accurately be noted that Chapuis was one of the foremost scholars of automata as material-cultural objects prior to the late twentieth century, being the author of at least two major works on this topic in the 1920s and the 1950s, respectively, and that his presentation of this instance should not be contested on the ground of authority.

**Kang Type 003, Instance 161 of 295, Cumulative Instance 217 of 409:
The Automata of the Clock at Solothurn.²¹⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a presumptively-male soldier, a king, an allegorical personification of death, and a generic man. As described in the consulted sources, this instance’s figures partook of the forms termed “ruler” and “death” by the thesis, as one such figure depicted a member of the feudal aristocracy, while another depicted an allegorical personification of death. On review, one of these automaton figures was assigned an individual character name in its source material, “Death.” The setting in which these figures appeared was a public clock. This instance’s principal designers and builders were Lorenz Liechti of Winterthur and Joachim Habrecht of Schaffhausen. Its location was the municipality of Solothurn, in the principality of the Old Swiss Confederacy, which was a subsidiary of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1545, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or “reclamation” of classical Greek and Roman civilizational achievements; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical

²¹⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 56---58, 59, and 60. According to the thesis’ working notes, it is extant and may itself be consulted as primary source matter, although the extant version may have been restored and/or replaced at some point.

**Kang Type 003, Instance 161 of 295, Cumulative Instance 217 of 409:
The Automata of the Clock at Solothurn.**

figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 162 of 295, Cumulative Instance 218 of 409:
The Automaton of the Primitive Chamber Clock in Chapuis.²¹⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a male guard, a “sentinel.” As described in the consulted sources, this instance’s figure partook of the form termed “bellringer” by the thesis, as either it or the totality of the device to which it was attached produced a sound like the ringing of a bell. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a chamber clock. This instance’s principal designer and builder, location at the levels of municipality and principality, and principal patron are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²¹⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 67 and 68. According to the thesis’ working notes, it was extant when noted by Chapuis, and if still extant, this instance may itself be consulted as primary source matter.

**Kang Type 003, Instance 163 of 295, Cumulative Instance 219 of 409:
The Automata of the First Renaissance-Era Chamber Clock in Chapuis.²¹⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a presumptively-male knight. As described in the consulted sources, this instance’s figure partook of the form termed “bellringer” by the thesis, as either it or the totality of the device to which it was attached produced a sound like the ringing of a bell. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a chamber clock. This instance’s principal designer and builder, location at the levels of municipality and principality, and principal patron are not recorded in the thesis’ working notes. This instance came into existence as a design or object during the years 1501---1600, with that date range (the sixteenth century) being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or “reclamation” of classical Greek and Roman civilizational achievements.

²¹⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 67 and 68. According to the thesis’ working notes, it was extant when noted by Chapuis, and if still extant, this instance may itself be consulted as primary source matter. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 164 of 295, Cumulative Instance 220 of 409:
The Automaton of the Late Renaissance-Era Chamber Clock in Chapuis.²²⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a generic boy. As described in the consulted sources, this instance’s figure partook of the forms termed “bellringer” and “thing of brass” by the thesis, as either it or the totality of the device to which it was attached produced a sound like the ringing of a bell, and as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a chamber clock. This instance’s principal designer and builder was Nicolo Roccatagliata. Its location was the municipality of Venice, in the principality of the Republic of Venice. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the years 1601---1636, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²²⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 67 and 69. According to the thesis’ working notes, it was extant when noted by Chapuis, and if still extant, this instance may itself be consulted as primary source matter.

**Kang Type 003, Instance 165 of 295, Cumulative Instance 221 of 409:
The Automata of the Second Renaissance-Era Chamber Clock in Chapuis.²²¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a generic man. As described in the consulted sources, this instance’s figure partook of the form termed “bellringer” by the thesis, as either it or the totality of the device to which it was attached produced a sound like the ringing of a bell. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a chamber clock. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location is not recorded in the thesis’ working notes at the levels of municipality and principality, but these notes do record that it originated on the Italian peninsula. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1600, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²²¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 68 and 72. According to the thesis’ working notes, it was extant when noted by Chapuis, and if still extant, this instance may itself be consulted as primary source matter.

**Kang Type 003, Instance 166 of 295, Cumulative Instance 222 of 409:
An Automated Animal Entourage in a Renaissance-Era Sculpture of Diana the
Huntress.²²²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a stag, a generic dog of unknown or unspecified gender, and a classical Roman goddess; it also contains the minor figures of a Roman god who, like the goddess Diana, wields a bow, and is the putto Cupid (in certain, less popular versions of classical mythology, Cupid is Diana’s son), a serpent of unknown or unspecified gender, and other figures which may be a frog and a beetle, both of unknown or unspecified gender. For the reasons explained below, the figure of Diana itself, and all the minor figures here recorded, were not initially noted by the thesis’ reading of this instance’s description in Chapuis, and accordingly, they were not tracked in the thesis’ working notes. The minor figures have a secondary and more ornamental character (with the possible exception of Cupid, who also sits atop the stag), which was one reason they were not tracked. As a word of explanation before proceeding, the figures of this instance, and others like it, do not themselves have mechanical motions at all, or to the same degree as other figural automata, but sit on a self-propelled, moving base, which was the fashion of certain small automata in the late sixteenth and early seventeenth centuries. They are considered automata by the thesis for that reason, since the base and figures comprise a unified object when this device is in kinetic operation. Of course, this does not mean that a static figure alongside an automaton would be considered an automaton by association with the adjacent, moving figure, unless both figures were on a self-moving platform, like the one evidenced by this instance, in which case the motion provided by that platform, not the static or the moving figures, would render any figures atop this platform automata for practical purposes. If, rather than this rationale, a stricter criterion for the

²²² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 77 and 78. This instance was also associated with *Making Marvels: Science and Splendor at the Courts of Europe*, a recent exhibition at the Metropolitan Museum of Art in New York City. Specifically, see Wolfram Koeppe’s essay “Clocks and Automata: The Art of Technological Development” in his edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 202, which obliquely references this and one other automaton figure of Diana, and pages 240---241. Koeppe indicates in note 5 on page 241 that “About twenty objects of the same type as The Met’s *Diana* are known today in various collections;” the thesis is not disposed to individually locate and present each of these Diana automatons in this appendix for its own purposes, but has included this information to again demonstrate the ubiquity of automata in the Early Modern period. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which that essay appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. According to the thesis’ working notes, it was extant when noted by Chapuis, and if still extant, as is likely the case in view of its exhibition history, this instance may itself be consulted as primary source matter.

**Kang Type 003, Instance 166 of 295, Cumulative Instance 222 of 409:
An Automated Animal Entourage in a Renaissance-Era Sculpture of Diana the
Huntress.**

individuated motions of figures is applied (and which was applied during preparation of the thesis' working notes), only the stag and at least one of the dogs would be considered automata, as Chapuis wrote that their heads move slightly. This distinction, that only the stag and dogs were identified as moving figures, is the second reason why both one of the major figures, the goddess Diana, and the remaining minor figures were not tracked by the thesis. However, based upon the further description offered for this object by the Metropolitan Museum of Art, at least one motion of those seen from the moving figures (per Chapuis), that of the stag, is simply attributable to the removable design of the stag's head, which suggests that one or more of the dogs' heads may also be removable, or, if not removable, that the dog-figure(s) have a jointed seam or some other segmentation between their bodies and heads. The motion of the stag's head, and most likely the dog's head or heads, was most parsimoniously produced by the bouncing and jerking of the device when in operation, and moving forward under its own power, as the disassembled view offered by the Metropolitan Museum of Art for this instance does not show any mechanical linkages between the clockwork which produces the base's propulsive motion and the upper, detachable portion of the device, the cover for the base which is the ground for the noted figures. Moving from this explanatory digression to the controlled markup, it can be said that, as described in the consulted sources, this instance's figures partook of the forms termed "god" and "thing of brass" by the thesis, as at least two of these figures depicted divine beings, and one or more had a brazen coloration. On review, some of these automaton figures were assigned individual character names in their source material, "Diana" and "Cupid." The setting in which this instance and its figures appeared is not applicable, as it was freestanding and mobile. This instance's principal designer and builder are known by the preserved maker's mark "J.F." the initials of that maker's name as identified by the Metropolitan Museum of Art, Joachim Friess. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance's presence in the historical record are not recorded in the thesis' working notes. This instance came into existence as a design or object as of the year 1620, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of

**Kang Type 003, Instance 166 of 295, Cumulative Instance 222 of 409:
An Automated Animal Entourage in a Renaissance-Era Sculpture of Diana the
Huntress.**

Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 167 of 295, Cumulative Instance 223 of 409:
Schlottheim's Second Mechanized Nativity Scene.²²³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a male shepherd, a king, an angel of unknown or unspecified gender, a male saint, an ox of unknown or unspecified gender, a donkey (ass) of unknown or unspecified gender, and a female saint. As described in the consulted sources, this instance’s figures partook of the forms termed “angel,” “ruler,” “saint,” and “thing of brass” by the thesis, as one or more of its figures respectively depicted a heavenly being, a member of the feudal aristocracy, an individual recognized as a saint by one or more Christian denominations, and had a brazen coloration. On review, some of these automaton figures were assigned an individual character name in their source material, “Joseph, the father to Jesus,” “Melchior,” “Caspar,” “Balthazar,” and “Mary, the mother of Jesus.” The setting in which it appeared was a nativity scene. This instance’s principal designer and builder was Hans Schlottheim. Its location was the municipality of Cologne, in the principality of the Electorate of Cologne, a subsidiary of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was the Elector Ferdinand of Bavaria. This instance came into existence as a design or object before the year 1616, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the

²²³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 79--81. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Chapuis and Droz’s cited work if it contains any useful information which does not appear here. It may accurately be noted that Chapuis was one of the foremost scholars of automata as material-cultural objects prior to the late twentieth century, being the author of at least two major works on this topic in the 1920s and the 1950s, respectively, and that his presentation of this instance should not be contested on the ground of authority.

**Kang Type 003, Instance 167 of 295, Cumulative Instance 223 of 409:
Schlottheim's Second Mechanized Nativity Scene.**

technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 168 of 295, Cumulative Instance 224 of 409:
Elisabeth of Lorraine's Donated Chamber Clock.²²⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a centaur. As described in the consulted sources, this instance’s figure partook of the form termed “monster” by the thesis, as it depicted a fantastical creature. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a chamber clock. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record was Duchess Elisabeth of Bavaria (formerly of Lorraine before her marriage). This instance came into existence as a design or object before the year 1616, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative

²²⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 81. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Chapuis and Droz’s cited work if it contains any useful information which does not appear here. It may accurately be noted that Chapuis was one of the foremost scholars of automata as material-cultural objects prior to the late twentieth century, being the author of at least two major works on this topic in the 1920s and the 1950s, respectively, and that his presentation of this instance should not be contested on the ground of authority.

**Kang Type 003, Instance 168 of 295, Cumulative Instance 224 of 409:
Elisabeth of Lorraine's Donated Chamber Clock.**

of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 169 of 295, Cumulative Instance 225 of 409:
The First Chamber Clock Comparable to Elisabeth of Lorraine's Donated
Chamber Clock.²²⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a centaur, an ancient Roman goddess, and a generic dog of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “monster” and “god” by the thesis, as one depicted a divine being, and another depicted a fantastical creature. On review, one of these automaton figures was assigned an individual character name in its source material, “Diana.” The setting in which these figures appeared was a chamber clock. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as

²²⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 81. According to the thesis’ working notes, it was extant when noted by Chapuis, and if still extant, this instance may itself be consulted as primary source matter.

**Kang Type 003, Instance 169 of 295, Cumulative Instance 225 of 409:
The First Chamber Clock Comparable to Elisabeth of Lorraine's Donated
Chamber Clock.**

representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 170 of 295, Cumulative Instance 226 of 409:
The Second Chamber Clock Comparable to Elisabeth of Lorraine's Donated
Chamber Clock.²²⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a centaur, an ancient Roman goddess, and a generic dog of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “monster” and “god” by the thesis, as one depicted a divine being, and another depicted a fantastical creature. On review, one of these automaton figures was assigned an individual character name in its source material, “Diana.” The setting in which these figures appeared was a chamber clock. This instance’s principal designer and builder is only known to this thesis by the surname “Werner,” a name which presumably originates from a maker’s mark. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same

²²⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 81. According to the thesis’ working notes, it was extant when noted by Chapuis, and if still extant, this instance may itself be consulted as primary source matter. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 170 of 295, Cumulative Instance 226 of 409:
The Second Chamber Clock Comparable to Elisabeth of Lorraine's Donated
Chamber Clock.**

civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 171 of 295, Cumulative Instance 227 of 409:
A Princely Chamber Clock.²²⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a male saint and a female saint. As described in the consulted sources, this instance’s figures partook of the form termed “saint” by the thesis, as it depicted one or more individuals recognized as a saint by one or more Christian denominations. On review, these automaton figures were assigned individual character names in their source material, “Saint John” and “Mary, the mother of Jesus.” The setting in which these figures appeared was a chamber clock. This instance’s principal designer and builder, location at the levels of municipality and principality, and principal patrons are not recorded in the thesis’ working notes, except in the sense that the title of its patron was presumably the junior prince with which it is associated; speculatively, this prince may have been named “John,” as his chamber clock’s iconography may include a sainted namesake. This instance came into existence as a design or object before the year 1616, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection,

²²⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 82. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Chapuis and Droz’s cited work if it contains any useful information which does not appear here. It may accurately be noted that Chapuis was one of the foremost scholars of automata as material-cultural objects prior to the late twentieth century, being the author of at least two major works on this topic in the 1920s and the 1950s, respectively, and that his presentation of this instance should not be contested on the ground of authority.

**Kang Type 003, Instance 171 of 295, Cumulative Instance 227 of 409:
A Princely Chamber Clock.**

conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 172 of 295, Cumulative Instance 228 of 409:
Cosimo II de Medici's Dragon Automaton.²²⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a dragon of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “monster” by the thesis, as it depicted a fantastical creature. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a chamber clock. This instance’s principal designer and builder, and its location at the levels of municipality and principality, are not recorded in the thesis’ working notes. The principal patron responsible for this instance’s presence in the historical record was the Grand Duke Cosimo II de Medici. This instance came into existence as a design or object before the year 1616, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or “reclamation” of classical Greek and Roman civilizational achievements.

²²⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 82. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Chapuis and Droz’s cited work if it contains any useful information which does not appear here. It may accurately be noted that Chapuis was one of the foremost scholars of automata as material-cultural objects prior to the late twentieth century, being the author of at least two major works on this topic in the 1920s and the 1950s, respectively, and that his presentation of this instance should not be contested on the ground of authority. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 173 of 295, Cumulative Instance 229 of 409:
The First Chamber Clock with an Automated Hunting Scene in Chapuis.²²⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a male hunter and a stag. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a chamber clock. This instance’s principal designer and builder, location at the levels of municipality and principality, and principal patron are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1600, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

²²⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 85 and 88. According to the thesis’ working notes, it was extant when noted by Chapuis, and if still extant, this instance may itself be consulted as primary source matter.

**Kang Type 003, Instance 174 of 295, Cumulative Instance 230 of 409:
The Second Chamber Clock with an Automated Hunting Scene in Chapuis.²³⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a male hunter and a stag. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a chamber clock. This instance’s principal designer and builder, location at the levels of municipality and principality, and principal patron are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1600, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

²³⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 85 and 88. According to the thesis’ working notes, it was extant when noted by Chapuis, and if still extant, this instance may itself be consulted as primary source matter. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 175 of 295, Cumulative Instance 231 of 409:
The Skeletal Chamber Clock in Chapuis.²³¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a human skeleton. As described in the consulted sources, this instance’s figure partook of the form termed “death” by the thesis, as its figure was an allegorical representation of death. On review, this automaton figure was assigned an individual character name in its source material, “Death.” The setting in which it appeared was a chamber clock. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1645, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

²³¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 86, 89---90. According to the thesis’ working notes, it was extant when noted by Chapuis, and if still extant, this instance may itself be consulted as primary source matter.

**Kang Type 003, Instance 176 of 295, Cumulative Instance 232 of 409:
The Peasant Automaton in Chapuis.²³²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a male peasant and a generic bird of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a chamber clock. This instance’s principal designer was Georg Smitt. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²³² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 88, 90---91. According to the thesis’ working notes, it was extant when noted by Chapuis, and if still extant, this instance may itself be consulted as primary source matter.

**Kang Type 003, Instance 177 of 295, Cumulative Instance 233 of 409:
The Chamber Clock with Commedia dell'Arte Dancers in Chapuis.²³³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of various Commedia dell’Arte characters of unknown or unspecified gender; male and female characters existed in this theatrical style, although both genders could be played by biological men during the considered period (as in Shakespearean drama), but identification of the specific characters, and their represented genders, is not offered by the author, as these automaton figures are shown masked, which was the expected practice of Commedia dell’Arte performance. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were assigned individual character names in their source material, and these names corresponded to the Commedia dell’Arte characters which were respectively depicted by these figures. The setting in which it appeared was a chamber clock. This instance’s principal designers and builders were Veit Langenbucher, Samuel Bidermann, and Samuel Bidermann’s son, whose name is not known to this thesis. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1625, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with

²³³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 89, 90, 91---94. This instance was also associated with the recent exhibition *Making Marvels: Science and Splendor at the Courts of Europe*, which was staged at the Metropolitan Museum of Art in New York City. Specifically, see Wolfram Koeppé’s published exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, pages 192 (a full-color detail of this instance which is unmarked with a page number as the frontispiece to the subsection “Technological Marvels in Motion”), 222, and 223. Due to limitations of time, money, and energy, only information from this subsection of Koeppé’s edited exhibition guide, “Technological Marvels in Motion,” was reviewed during the thesis’ research. According to the thesis’ working notes, this instance was extant when noted by Chapuis, and if still extant, which is likely, given its presence in the noted exhibition, this instance may itself be consulted as primary source matter.

**Kang Type 003, Instance 177 of 295, Cumulative Instance 233 of 409:
The Chamber Clock with Commedia del'Arte Dancers in Chapuis.**

the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 178 of 295, Cumulative Instance 234 of 409:
Harsdorfer's Barber Automaton.²³⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic. It contained the figure of a presumptively-male barber. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder was Georg-Philipp Harsdorfer. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1600, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²³⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 335. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Chapuis and Droz’s cited work if it contains any useful information which does not appear here. It may accurately be noted that Chapuis was one of the foremost scholars of automata as material-cultural objects prior to the late twentieth century, being the author of at least two major works on this topic in the 1920s and the 1950s, respectively, and that his presentation of this instance should not be contested on the ground of authority.

**Kang Type 003, Instance 179 of 295, Cumulative Instance 235 of 409:
Harsdorfer's Painter Automaton.²³⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic. It contained the figure of a presumptively-male painter. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder was Georg-Philipp Harsdorfer. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1600, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²³⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 335. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Chapuis and Droz’s cited work if it contains any useful information which does not appear here. It may accurately be noted that Chapuis was one of the foremost scholars of automata as material-cultural objects prior to the late twentieth century, being the author of at least two major works on this topic in the 1920s and the 1950s, respectively, and that his presentation of this instance should not be contested on the ground of authority. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 180 of 295, Cumulative Instance 236 of 409:
Harsdsorfer's Butcher Automaton.²³⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic. It contained the figure of a presumptively-male butcher. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder was Georg-Philipp Harsdorfer. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1600, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²³⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 335. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Chapuis and Droz’s cited work if it contains any useful information which does not appear here. It may accurately be noted that Chapuis was one of the foremost scholars of automata as material-cultural objects prior to the late twentieth century, being the author of at least two major works on this topic in the 1920s and the 1950s, respectively, and that his presentation of this instance should not be contested on the ground of authority. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 181 of 295, Cumulative Instance 237 of 409:
Harsdorfer's Baker Automaton.²³⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic. It contained the figure of a presumptively-male baker. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder was Georg-Philipp Harsdorfer. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1600, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²³⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 335. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Chapuis and Droz’s cited work if it contains any useful information which does not appear here. It may accurately be noted that Chapuis was one of the foremost scholars of automata as material-cultural objects prior to the late twentieth century, being the author of at least two major works on this topic in the 1920s and the 1950s, respectively, and that his presentation of this instance should not be contested on the ground of authority. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 182 of 295, Cumulative Instance 238 of 409:
Richelieu's Automaton Basilisk.²³⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a basilisk of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the forms termed “monster” and “thing of brass” by the thesis, as it depicted a fantastical creature and had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a garden. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Rueil-Malmaison, an inhabited place associated with greater Paris, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record was Cardinal Armand Jean du Plessis, called Cardinal Richelieu. This instance came into existence as a design or object before the year 1644, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the sixth current of thought, as it partakes in the celebratory association of automata with the

²³⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see *The Diary of John Evelyn*, “Entry for February 27, 1644,” which was written by John Evelyn in the year 1644. A copy of this work is available online through Project Gutenberg, where it is accessible using the search parameter “41218-h;” because that copy is a published edition, it can be construed as both a primary and secondary source, as it is recollected to contain annotations and a scholarly apparatus. While the thesis’ author did not read this entire work, and only consulted it incidentally to verify its presentation of another instance cataloged here as no. 210, “Richelieu’s Automaton Musketeers,” the present instance, no. 238, was noted during even that cursory examination. Unlike the other instances heretofore cataloged, this instance, no. 238, was independently identified by this thesis and was not noted during consultations of other authors’ scholarship. The case that the basilisk here presented by the thesis was an automaton is strong in consideration of Evelyn’s description, and it is perhaps stronger even than the identification of the musketeer-figures as automata, for while these figures produced the semblance of life by their enactment of a seemingly responsive action, “shooting” jets of water at passers-by while otherwise remaining stationary, the basilisk actually moved as a fountain installation while doing likewise, and indeed moved in a way suggestive of intentionality. Evelyn, to the thesis’ recollection, correctly states that such movement was accomplished by the will of the basilisk’s builder, an engineer specialized in the production of such automata, which suggests either that the basilisk was controlled remotely, much like the later waterworks at the gardens of King Louis XIV, or that, like a true automaton, it executed a sequence of preestablished operations when functioning as an article of amusing technology. Evelyn’s work is given a citation in the thesis’ bibliography which solely arises from this footnote.

**Kang Type 003, Instance 182 of 295, Cumulative Instance 238 of 409:
Richelieu's Automaton Basilisk.**

technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 183 of 295, Cumulative Instance 239 of 409:
The Perseus and Pegasus Machines for Pierre Corneille's Staging of *Le
Andromede*.²³⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis, but was most likely kinetic. It contained the figures of an ancient Greek hero and a male winged horse. As described in the consulted sources, this instance’s figures partook of the forms termed “hero” and “monster” by the thesis, as they respectively depicted a sympathetic individual celebrated for doing good deeds and a fantastical creature. On review, these automaton figures were assigned individual character names in their source material, “Perseus” and “Pegasus.” The setting in which they appeared was a stage set. This instance’s principal designer and builder was Giacomo Torelli. Its location was the municipality of Paris, in the principality of the Kingdom of France. The principal patron responsible for this instance’s presence in the historical record was Cardinal Jules Mazarin. This instance came into existence as a design or object as of the year 1650, with that date not being an approximation, and it was destroyed as of the year 1660 or thereafter, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with

²³⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, page 357. For this instance’s primary source matter, see *Le Andromede*, which was written by Pierre Corneille under the patronage of Cardinal Jules Mazarin and published at Paris, in the Kingdom of France, in the year 1650. That date of publication is not an approximation.

Kang Type 003, Instance 183 of 295, Cumulative Instance 239 of 409:
The Perseus and Pegasus Machines for Pierre Corneille's Staging of *Le*
***Andromede*.**

the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 184 of 295, Cumulative Instance 240 of 409:
Sabbatini's Dolphin Automata.²⁴⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a dolphin of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a stage set. This instance’s principal designer and builder was Nicola Sabbatini. Its location at the levels of municipality and principality is not recorded by the thesis’ working notes, but it is believed to have originated on the Italian peninsula. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1638, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁴⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study* in Reid’s translation, pages 357 and 407. For this instance’s primary source matter, see *Pratique pour Fabriquer Scenes et Machines de Theatre*, which was written by Nicola Sabbatini and published at Ravenna, in the Papal States, in the year 1638. That date of publication is not an approximation. In the course of attempts to investigate this instance, the thesis’ author noted that a facsimile copy of Sabbatini’s work, under the Italian title *Practica di Fabrica*, is or was available on the Internet Archive, and that this instance is potentially visible on page 125 of that Italian copy in the reckoning of its pages by the Internet Archive. Owing to the author’s lack of fluency in languages other than English and simple Latin, he cannot authoritatively establish that the page in question contains meaningful information about this instance, but page 125 does show illustrations of dolphin figures atop shafts or machine components of some kind in the author’s recollection. Generally speaking, the thesis’ author does not rely upon illustrative or diagrammatic matter to make identifications of automata, or indeed, to make points of any kind, but it would seem that his research into this instance at some level corroborates Chapuis’ presentation of the same.

**Kang Type 003, Instance 185 of 295, Cumulative Instance 241 of 409:
The Elephant Clock from Augsburg.²⁴¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a male warrior, an elephant, and a male mahout (an elephant-driver). As described in the consulted sources, this instance’s figures partook of the form termed “thing of brass” by the thesis, as one or more of its figures had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a chamber clock. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the years 1600---1610, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations,

²⁴¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see materials related to the recent exhibition *Making Marvels: Science and Splendor at the Courts of Europe*, which was staged by the Metropolitan Museum of Art in New York City. Specifically, see Wolfram Koeppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, pages 237---238. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. The thesis wishes to record two points: firstly, that it could not locate any information on the Internet regarding the “automaton clock in the Lemmers-Danforth Collection in Wetzlar, Germany,” which is called “comparable” to this instance by Koeppe on page 238, and which may therefore have represented another instance in this appendix, provided that it was created prior to January 1, 1651, if it was located; and secondly, that “the snakelike creatures trampled by the elephant” discussed in note 6 on page 238 are not tracked by the thesis, as they appear in low relief and are taken to be of an ornamental character (despite being on a moving base, and therefore “automata” by the thesis’ definition), especially since they are barely visible in the photograph of this instance on page 237, and to the degree that they are visible, seem like incidental embellishments of a two-dimensional plane, with an appearance to this author, who has not seen the object in person, more suggestive of foliage, or of the Persian *boteh* or *buta*, the traditional decorative design known contemporaneously as paisley patterning. If paisley patterns, these designs would underscore the exoticism of the instance’s presentation. As another and final point, the comparable clock with Turkish numerals shown in Figure 104 on page 238 is not included as a distinct instance in this appendix because this author has no conclusive proof that the depicted clock was created prior to January 1, 1651, given that the image of this second clock shown in Figure 104 is a sketch from the year 1760, with that date being an approximation. According to the thesis’ working notes, this instance (no. 185, this appendix) was extant when shown in Koeppe’s exhibition, and if still extant, which is likely, this instance may itself be consulted as primary source matter.

**Kang Type 003, Instance 185 of 295, Cumulative Instance 241 of 409:
The Elephant Clock from Augsburg.**

which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 186 of 295, Cumulative Instance 242 of 409:
The Chariot Clock with Diana the Huntress from Augsburg.²⁴²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of an ancient Roman goddess, a monkey of unknown or unspecified gender, a leopard of unknown or unspecified gender, and a generic bird of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “god” and “thing of brass” by the thesis, as one of its respective figures depicted a divine being, while one or more of the others had a brazen coloration. On review, one of these automaton figures was assigned an individual character name in its source material, “Diana.” The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1610, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or

²⁴² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see materials related to the recent exhibition *Making Marvels: Science and Splendor at the Courts of Europe*, which was staged by the Metropolitan Museum of Art in New York City. Specifically, see Wolfram Koeppe’s essay “Clocks and Automata: The Art of Technological Development” in his edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 202, which obliquely references this and one other automaton figure of Diana, and pages 240---241. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which that essay appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. According to the thesis’ working notes, it was extant when shown in that exhibition, and if still extant, which is likely, this instance may itself be consulted as primary source matter. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 186 of 295, Cumulative Instance 242 of 409:
The Chariot Clock with Diana the Huntress from Augsburg.**

as it partakes in representations of the technology and/or culture of these same civilizations; the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 187 of 295, Cumulative Instance 243 of 409:
The Cittern Player Exhibited by the Metropolitan Museum of Art.²⁴³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a female musician (a cittern player). As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass” and “musician” by the thesis, as it had a brazen coloration and either played or appeared to play a musical instrument (the cittern). On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location is not recorded in the thesis’ working notes at the level of a given municipality, but is so recorded as a locale in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological

²⁴³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see materials related to the recent exhibition *Making Marvels: Science and Splendor at the Courts of Europe*, which was staged by the Metropolitan Museum of Art in New York City. Specifically, see Wolfram Koeppe’s essay “Clocks and Automata: The Art of Technological Development” in his edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 202, which references the catalog entry for this instance, and page 234, where this instance is presented with a color photograph as catalog entry no. 130 (Koeppe’s numbering). Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which that essay appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. According to the thesis’ working notes, it was extant when shown in that exhibition, and if still extant, which is likely, this instance may itself be consulted as primary source matter. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 187 of 295, Cumulative Instance 243 of 409:
The Cittern Player Exhibited by the Metropolitan Museum of Art.**

achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 188 of 295, Cumulative Instance 244 of 409:
Lotter's Lion.²⁴⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a male lion. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a chamber clock. This instance’s principal designer and builder was Daniel Lotter. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a

²⁴⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see materials related to the recent exhibition *Making Marvels: Science and Splendor at the Courts of Europe*, which was staged by the Metropolitan Museum of Art in New York City. Specifically, see Wolfram Koeppé’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, pages 252---253; this instance is shown in a color photograph on page 253. Due to limitations of time, money, and energy, only information from the subsection of Koeppé’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. According to the thesis’ working notes, it was extant when shown in the Metropolitan Museum of Art’s exhibition, and if still extant, which is likely, this instance may itself be consulted as primary source matter. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects. The thesis wishes to record that, while attempting to corroborate Koeppé’s assertion that two additional chariot-borne Bacchus automata comparable to “The Bacchus from Augsburg,” exist at the Galerie J. Kugel in Paris, France, and at the Armory Chamber of the Moscow Kremlin Museums in Moscow, Russia, respectively, its author visited the websites of both institutions, as documented in the footnote for “The Bacchus from Augsburg.” Coincidentally, the Galerie J. Kugel, which apparently showcases only a handful of its art objects from various categories of material-cultural holdings on its website at any given time, happened to have a webpage available upon the author’s visit which documents what it terms an “automaton clock in the form of a pacing lion.” This object could be another instance, as it is quite comparable to, but distinct from, the present instance; however, the thesis’ author has made a point not to enter instances of pre-Modern and Early Modern automata which have not been discussed by the authors consulted in the course of his research, a decision based upon the imperatives of academic citation and deference to the authority of published authors on his topic. For those interested in the automaton lion at the Galerie J. Kugel, it is modeled to support the heraldic escutcheon of the del Bufalo de Cancellieri armigers, has a base which is attributed by the exhibitors at the Galerie J. Kugel to Ulrich Baumgartner, and is given a point of origin by these exhibitors in the city of Augsburg, in the Holy Roman Empire, in the years 1620---1630, with that date range being an approximation. Based upon the design of the Galerie J. Kugel’s website, the author surmises that highlighted objects are cycled on a regular basis, so any link in proof of Baumgartner’s lion automaton clock must be considered ephemeral. The author accessed the lion at the address <https://www.galeriekugel.com/en/oeuvres/horloge-a-automate-figurant-un-lion-au-pas/> thereabout the middle of the month of July in the year 2023.

**Kang Type 003, Instance 188 of 295, Cumulative Instance 244 of 409:
Lotter's Lion.**

design or object as of the year 1619, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 189 of 295, Cumulative Instance 245 of 409:
A Landgravine's June Bug Automaton.²⁴⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a June bug, a species also known as the May worm, of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location at the level of a given municipality is not recorded in the thesis’ working notes, but these notes do record that it originated at a locale in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was the Landgravine of Hesse-Kassel, Agnes of Solms-Laubach. This instance came into existence as a design or object as of the year 1600, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents

²⁴⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see materials related to the recent exhibition *Making Marvels: Science and Splendor at the Courts of Europe*, which was staged by the Metropolitan Museum of Art in New York City. Specifically, see Wolfram Koeppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 243. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. According to the thesis’ working notes, it was extant when shown in that exhibition, and if still extant, which is likely, this instance may itself be consulted as primary source matter. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 189 of 295, Cumulative Instance 245 of 409:
A Landgravine's June Bug Automaton.**

the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 190 of 295, Cumulative Instance 246 of 409:
The Bacchus from Augsburg.²⁴⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of an ancient Roman god, a generic bird of unknown or unspecified gender, a stag, a male blackamoor, a bear of unknown or unspecified gender, and a dog of unknown or unspecified gender; there also appear to be other (likely static) figures of an ornamental character, namely a male knight and a boy, which may not themselves be automata, but which are elements of a self-propelled automaton, much like the frog, insect, and snake on the similarly self-propulsive figure of Diana the huntress atop a stag, a prior instance. As described in the consulted sources, this instance’s figures partook of the forms termed “god” and “thing of brass” by the thesis, as one or more of its figures depicted a divine being, and one or more of its figures had a brazen coloration. On review, one of these automaton figures was assigned an individual character name in its source material, “Bacchus.” The setting in which these figures appeared is not applicable, as this instance was freestanding and mobile. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of

²⁴⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see materials related to the recent exhibition *Making Marvels: Science and Splendor at the Courts of Europe*, which was staged by the Metropolitan Museum of Art in New York City. Specifically, see Wolfram Koeppe’s published exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 194 (a full-color detail of this instance which is unmarked with a page number as the frontispiece to the essay “Clocks and Automata: The Art of Technological Development”), and pages 235---236, where it appears as catalog entry no. 132 (Koeppe’s numbering). Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which that essay and its corresponding selection of cataloged objects appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. According to the thesis’ working notes, this instance was extant when shown in that exhibition, and if still extant, which is likely, this instance may itself be consulted as primary source matter. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects. The thesis wishes to record that, while reviewing Koeppe’s exhibition guide, it was noted that two other pre-Modern or (presumably) Early Modern examples of chariot-borne Bacchus automata are referenced by Koeppe. He states on page 236 that “one [is] in the Galerie J. Kugel in Paris, the other in the Armory Chamber of the Moscow Kremlin Museums.” The thesis was disposed to corroborate the existence of these two additional Bacchus automatons, which Koeppe established as distinct instances, both from each other and from the present instance. Accordingly, the websites of the Galerie J. Kugel and Armory Chamber of the Moscow Kremlin Museums were queried using a variety of simple search parameters such as “Bacchus,” “clock,” “automaton,” and “god,” although without successfully retrieving either of these two other automatons. Koeppe is not taken to be incorrect, given his position at the Metropolitan Museum of Art, but the thesis is not prepared to enter these two additional Bacchus chariots without at least seeing their images, and without thereby reproducing Koeppe’s assertion.

**Kang Type 003, Instance 190 of 295, Cumulative Instance 246 of 409:
The Bacchus from Augsburg.**

Augsburg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance's presence in the historical record are not recorded in the thesis' working notes. This instance came into existence as a design or object as of the years 1575---1600, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 191 of 295, Cumulative Instance 247 of 409:
Schiller's First Urania Chamber Clock.²⁴⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of an ancient Greek goddess. As described in the consulted sources, this instance’s figure partook of the forms termed “god” and “thing of brass” by the thesis, as it depicted a divine being and had a brazen coloration. On review, this automaton figure was assigned an individual character name in its source material, “Urania, Muse of Astronomy.” The setting in which it appeared was a chamber clock. This instance’s principal designer and builder was Paullus Schiller. Its location was the municipality of Nuremberg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the years 1620---1630, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and

²⁴⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see materials related to the recent exhibition *Making Marvels: Science and Splendor at the Courts of Europe*, which was staged by the Metropolitan Museum of Art in New York City. Specifically, see Wolfram Koeppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, pages 252 and 253. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. According to the thesis’ working notes, this instance was extant when shown in that exhibition, and if still extant, which is likely, this instance may itself be consulted as primary source matter. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects. As an aside, note 5 on page 253 of Koeppe’s edited exhibition guide indicates that a comparable instance, another Urania automaton clock signed by Paullus Schiller (or by someone using his first initial and surname), “was included in a sale at Artcurial, Paris, June 19, 2012, no. 34,” making this clock sold in the year 2012 the third of Schiller’s Urania clocks known to this thesis, with the last clock included as a later instance sorted under Kang’s third type in this section. Because Artcurial, an auction-house and/or antique dealer comparable to Christie’s, does not make its back catalogues available online, and charges a subscription fee to access its current catalogue, the thesis could neither verify the appearance of the clock sold in 2012, nor locate a resource to consult regarding this object, unlike the Urania clock sold at Christie’s in 2009, which is again a later instance noted in this section. Accordingly, the Urania automaton clock sold by Artcurial in 2012 can only be mentioned in this footnote, and not entered as a distinct instance, without corroborating information of the kind helpfully offered by Christie’s.

**Kang Type 003, Instance 191 of 295, Cumulative Instance 247 of 409:
Schiller's First Urania Chamber Clock.**

religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 192 of 295, Cumulative Instance 248 of 409:
al-Jazari's Clock of the Drummers.²⁴⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a generic man, a falcon of unknown or unspecified gender, a male musician (a trumpeter), another male musician (a cymbalist), and a third male musician (a drummer). As described in the consulted sources, this instance’s figure partook of the form termed “musician” by the thesis, as one or more of its figures played or appeared to play a musical instrument. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a public clock. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁴⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 111 and 115. This instance, along with al-Jazari’s first device of the fifty devices he presents, the castle clock, is also obliquely referenced on page 161 of Lily V. Filson’s *Engineering Gods*. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 42, 43, 44, 45, 46, 47, 48, 49, 209, 246, 247, 271, and 276, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation.

**Kang Type 003, Instance 193 of 295, Cumulative Instance 249 of 409:
al-Jazari's Clock of the Boat.²⁴⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a falcon of unknown or unspecified gender, a serpent of unknown or unspecified gender, and a male scribe. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis, although some of these figures (the serpent(s)) may have been “things of brass” if left unpainted and with a naturally brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which it appeared was a chamber clock. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁴⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 51, 52, 53, 54, 55, 56, and 57, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 194 of 295, Cumulative Instance 250 of 409:
al-Jazari's Beaker Clock.²⁵⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a male scribe. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a chamber clock. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁵⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 71, 72, 213, 214, and 250, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 195 of 295, Cumulative Instance 251 of 409:
al-Jazari's Clock of the Peacocks.²⁵¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a peacock, a peahen, and peacock chicks of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which it appeared was a public clock. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁵¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 13; and Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 113 and 118. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 75---76, 77, 78, 79, 215, 216, 251, 252, and 276, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation.

**Kang Type 003, Instance 196 of 295, Cumulative Instance 252 of 409:
al-Jazari's Candle Clock of the Swordsman.²⁵²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a swordsman and a falcon of unknown or unspecified gender. As described in the consulted sources, one of this instance’s figures partook of the form termed “servant” by the thesis, as it depicted an individual (the swordsman, in this case) who is identified or identifiable as someone in a servile, or even an enslaved position. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a chamber clock. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or “reclamation” of classical Greek and Roman civilizational achievements.

²⁵² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 83, 84---85, 85---86, 217, 252, and 253, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din, an Artuqid king, (whose full name is given elsewhere in the document) at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 197 of 295, Cumulative Instance 253 of 409:
al-Asturlabi's Defective Candle Clock of the Swordsman.²⁵³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a swordsman and a falcon of unknown or unspecified gender. As described in the consulted sources, one of this instance’s figures partook of the form termed “servant” by the thesis, as it depicted an individual (the swordsman, in this case) who is identified or identifiable as someone in a servile, or even an enslaved position. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a chamber clock. This instance’s principal designer and builder was Yunus al-Asturlabi. Its location at the levels of municipality and principality is not recorded in the thesis’ working notes, but its point of origin was presumably somewhere in the medieval Dar al-Islam. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁵³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices* (*Kitab fi ma 'Rifat al-Hiyal al-Handasiyya*) in Hill’s edition, page 87, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 198 of 295, Cumulative Instance 254 of 409:
al-Jazari's Candle Clock of the Scribe.²⁵⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a male scribe and a falcon of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis, although, as always, the brass figures in al-Jazari’s work, such as the falcons in this and other cases, and the serpents in still others, could be “things of brass” if unpainted or uncolored, as they would then have a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which it appeared was a chamber clock. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or “reclamation” of classical Greek and Roman civilizational achievements.

²⁵⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Donald R. Hill’s introduction to his edition of the Banu Musa’s *Book of Ingenious Devices*, page 21. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 87, 88, 89, 253, and 254, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation.

**Kang Type 003, Instance 199 of 295, Cumulative Instance 255 of 409:
al-Jazari's First Candle Clock of the Monkey.²⁵⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a falcon of unknown or unspecified gender, a male monkey-keeper, and a monkey of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis, although, as always, the brass figures in al-Jazari’s work could be “things of brass” if unpainted or uncolored, as they would then have a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a chamber clock. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁵⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, where there is potentially an oblique reference to this instance on page 161; however, Filson’s matching citation of a work by Derek J. De Solla Price from that page was checked by this thesis, and this citation does not match the contents of De Solla Price’s work. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, page 90, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation.

**Kang Type 003, Instance 200 of 295, Cumulative Instance 256 of 409:
al-Jazari's Second Candle Clock of the Monkey.²⁵⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a falcon of unknown or unspecified gender, a male monkey-keeper, and a monkey of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis, although, as always, the brass figures in al-Jazari’s work could be “things of brass” if unpainted or uncolored, as they would then have a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a chamber clock. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. While this instance may strike readers as a duplicate of the preceding instance, it differs in technical design from the same. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁵⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, where there is potentially an oblique reference to this instance on page 161; however, Filson’s matching citation of a work by Derek J. De Solla Price from that page was checked by this thesis, and this citation does not match the contents of De Solla Price’s work. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, page 91, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation.

**Kang Type 003, Instance 201 of 295, Cumulative Instance 257 of 409:
al-Jazari's Candle Clock of the Doors.²⁵⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a falcon of unknown or unspecified gender and a generic man. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis, although, as always, the brass figures in al-Jazari’s work could be “things of brass” if unpainted or uncolored, as they would then have a brazen coloration; however, in presenting the last falcon from al-Jazari’s first chapter, which concerns clockmaking, it should be noted that any brazen figure in al-Jazari, or in any Islamic source, lacks the “magical” dimension associated with this material in the literary and religious culture of pre-Modern and Early Modern Europe. To al-Jazari and his peers, a brazen automaton figure would simply be a brazen automaton figure; to his European contemporaries, whose conceptualization of “things of brass” was doubtless informed by the early existence of Islamic and Asian automata, a brazen automaton figure has an added, “magical” dimension, as European audiences had not developed comparable automata at the dates when they were exposed to this technology, as when Harun al-Rashid sent the automaton clock to Charlemagne that is described in this section. Returning to the particular instance of al-Jazari’s Candle Clock of the Doors, its automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a chamber clock. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁵⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices* (*Kitab fi ma ‘Rifat al-Hiyal al-Handasiyya*) in Hill’s edition, pages 92, 93, and 254, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 202 of 295, Cumulative Instance 258 of 409:
al-Jazari's First Arbiter-Goblet.²⁵⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic duck of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis, given the distinction previously made under the entry for Instance 202, Cumulative Instance 257. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a goblet. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁵⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 94, 96, 97, and 218, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 203 of 295, Cumulative Instance 259 of 409:
al-Jazari's Second Arbiter-Goblet.²⁵⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic duck of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis, given the distinction previously made under the entry for Instance 202, Cumulative Instance 257. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a goblet. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. While this instance may strike readers as a duplicate of the preceding instance, it differs in technical design from the same. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁵⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, page 98, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 204 of 295, Cumulative Instance 260 of 409:
al-Jazari's Imposing Arbiter of the Revels.²⁶⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a generic woman, a female musician (a flautist), another female musician (a tambourine player), another female musician (a lutenist), another female musician (a drummer), a male dancer, a male lancer, a horse of unknown or unspecified gender, and a generic man. As described in the consulted sources, this instance’s figures partook of the forms termed “servant” and “musician” by the thesis, as one or more depicted a servile, or even an enslaved individual, and one or more played or appeared to play a musical instrument. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is not applicable, as the large device to which they were affixed featured a modular design and was portable (which is remarkable, but which, as will be seen, led to an issue involving the inaccessibility of its internals). This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the

²⁶⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 99, 100, 101, 102, 103, 104, 105, 106 (99---106), 219, 255, 276, 277, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 204 of 295, Cumulative Instance 260 of 409:
al-Jazari's Imposing Arbiter of the Revels.**

considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 205 of 295, Cumulative Instance 261 of 409:
al-Jazari's Party Boat.²⁶¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a female musician (a flautist), another female musician (a harpist), another female musician (a tambourine player), and a male sailor. As described in the consulted sources, this instance’s figures partook of the forms termed “servant” and “musician” by the thesis, as one or more

²⁶¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Clifford A. Pickover’s *Artificial Intelligence: An Illustrated History*, page 13; and Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 111, 113, and 118. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 107, 108---109, 220, and 256, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. Some commentary is warranted on this instance. In a note which the thesis recollects in Pickover’s presentation of the same, he references an enthusiastic argument made by Sharkey, another scholar who has written regarding al-Jazari’s party boat. Sharkey, as cited in Pickover, asserts that the music produced while this boat was in operation can be identified as “programmable,” so far as that term is applicable to analog devices, in consideration of its mechanism. This argument made by Sharkey is based upon the contention that the boat’s design, wherein the rotation of a bent shaft would trigger the sounding of musical notes from its interior, allowed for the interchangeability of one such shaft for another; provided that these bent shafts had distinct configurations for the contact points which triggered the sounding of the notes, each shaft, according to this conceptualization, would produce a different song. However, the source matter contradicts Sharkey’s argument. When presenting the prior instance, no. 261, which is styled by this thesis as an “Imposing Arbiter of the Revels,” and which immediately precedes the presentation of the party boat in al-Jazari’s treatise, just as in this section, al-Jazari makes an uncharacteristic complaint. Apparently, the arbiter of the revels which he actually constructed, according to his recorded design, required maintenance after the elapse of some thirty years, and in his own construction, al-Jazari found it difficult to access its internal mechanism, causing him to express some frustration on this point in an aside to readers. Hill, himself a petrochemical engineer, is sympathetic to al-Jazari on this point, acknowledging that even modern systems sometimes suffer from the same design flaw, which is namely that their internals cannot easily be accessed for replacement or repair without disassembly, which can be cumbersome, or without actually causing damage to the system. This complaint from al-Jazari is relevant to the case of the party boat because it shares the same mechanism for producing music as the arbiter of the revels. Thus, it is unlikely, in the thesis’ opinion, that the party boat was “programmable,” for aside from being a sealed craft intended to float on water, al-Jazari’s complaint regarding the arbiter of revels demonstrates that he did not envision the bent-shaft system, which is equivalent in both instances, as one which could readily be disassembled for the substitution of one interchangeable but distinct component with another. To be clear, this is by no means a criticism or diminishment of al-Jazari’s body of work, which, like that of his true peer Leonardo da Vinci, is stunning in its intellectual achievement. Both were polymaths, and al-Jazari’s physical realizations of his many automata, as well as a set of doors which could well be considered the Islamic analogue of those made for the Florentine Baptistery, underscore the appropriateness of his Arabic epithet, the “Wonder of the Age.”

**Kang Type 003, Instance 205 of 295, Cumulative Instance 261 of 409:
al-Jazari's Party Boat.**

depicted a servile, or even an enslaved individual, and one or more played or appeared to play a musical instrument. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is not applicable, as they were affixed to a device which was freestanding and mobile (but which, as a functional boat, was designed to operate in water, and presumably in the shallow pools of palaces and pleasure-gardens). This instance's principal designer and builder was "The Wonder of the Age," Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance's presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 206 of 295, Cumulative Instance 262 of 409:
al-Jazari's Boon-Companion.²⁶²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic boy. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was portable. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁶² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 111, 113, and 119. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 115, 116, 117, 222, and 257, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation.

**Kang Type 003, Instance 207 of 295, Cumulative Instance 263 of 409:
al-Jazari's Slave-Boy Cupbearer.²⁶³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a male cupbearer. As described in the consulted sources, this instance’s figure partook of the form termed “servant” by the thesis, as it depicted a servile, or even an enslaved individual. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁶³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 113 and 120. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 118, 119, and 257, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation.

**Kang Type 003, Instance 208 of 295, Cumulative Instance 264 of 409:
al-Jazari's Slave-Boy Quaffer.²⁶⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic boy. As described in the consulted sources, this instance’s figure partook of the form termed “servant” by the thesis, as it depicted a servile, or even an enslaved individual. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. While this instance may seem identical to the preceding instance in view of the thesis’ implementation of a controlled descriptive vocabulary, these two automaton figures had distinct designs and actions when in operation, and each impressively approaches modern expectations for humanoid robots, or at least by comparison with miniature automata of the type often seen in latter-day European-style chamber and pendulum clocks; the latter pendulum clocks are, of course, beyond the thesis’ period of study. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or

²⁶⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 120, 121, 223, and 257, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 208 of 295, Cumulative Instance 264 of 409:
al-Jazari's Slave-Boy Quaffer.**

as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 209 of 295, Cumulative Instance 265 of 409:
al-Jazari's Dais of the Shaykhs.²⁶⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of an old man. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as the device to which it was attached, the dais, was portable; like all presented instances, additional automata in any given instance which have the same figures as others in that same instance are not presented as duplicates, triplicates, etc. and pluralized, but there is some value in mentioning that the dais of this instance contained two shaykhs, both old men, who toasted and gestured towards one another in a display of amity. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁶⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 122---124, 224, 225, and 258, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 210 of 295, Cumulative Instance 266 of 409:
al-Jazari's Omitted Bird Automatons.²⁶⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a generic bird of unknown or unspecified gender and a duck of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a pitcher. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁶⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 130 and 260, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 211 of 295, Cumulative Instance 267 of 409:
al-Jazari's Slave Boy Valet.²⁶⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a generic boy and a generic bird of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “servant” by the thesis, as at least one depicted a servile, or even an enslaved individual. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is not applicable, as they comprised or were elements of a portable object. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁶⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, pages 6 and 59, which are errored, as Filson claims that this male figure is female, and that it serves tea rather than pouring water for ritual ablutions. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 133 --- 135, 260, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation.

**Kang Type 003, Instance 212 of 295, Cumulative Instance 268 of 409:
al-Jazari's Peacock Pitcher.²⁶⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a peacock. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a pitcher. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁶⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 136 and 260, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 213 of 295, Cumulative Instance 269 of 409:
al-Jazari's Phlebotomy Basin of the Monk.²⁶⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a male Christian monk. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a basin. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or “reclamation” of classical Greek and Roman civilizational achievements.

²⁶⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 137, 138 --- 139, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 214 of 295, Cumulative Instance 270 of 409:
al-Jazari's Phlebotomy Basin of the Two Scribes.²⁷⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a male scribe. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a basin. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁷⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 140 --- 142, 228, and 229, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 215 of 295, Cumulative Instance 271 of 409:
al-Jazari's Phlebotomy Basin of the Reckoner.²⁷¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male scribe and a generic man. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material, given that the descriptor attached to the generic man, “reckoner,” is not a proper title, just as it is not construed to be an occupational descriptor, but rather an appellation indicative of simple numeracy. The setting in which these figures appeared was a basin. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁷¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 114 and 121. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 143 --- 145, 261, and 262, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation.

**Kang Type 003, Instance 216 of 295, Cumulative Instance 272 of 409:
al-Jazari's Phlebotomy Basin of the Castle.²⁷²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male scribe and a generic boy. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a basin. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁷² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices* (*Kitab fi ma 'Rifat al-Hiyal al-Handasiyya*) in Hill’s edition, pages 146 --- 148, 262, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 217 of 295, Cumulative Instance 273 of 409:
al-Jazari's Washbasin of the Slave.²⁷³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male slave, duck of unknown or unspecified gender, generic bird of unknown or unspecified gender, and peacock. As described in the consulted sources, one of this instance’s figures partook of the form termed “servant” by the thesis, as it depicted a servile, or indeed, an enslaved individual. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a basin. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁷² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 146 --- 148, 262, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 218 of 295, Cumulative Instance 274 of 409:
al-Jazari's Omitted Musical Automata.²⁷⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes, although the author is inclined to believe that an assignation of the medium scale defined for those purposes would most likely apply to the figures of this instance. Its power source is unknown to this thesis. It contained the figures of a humanoid musician of unknown or unspecified gender (a trumpeter), another humanoid musician of unknown or unspecified gender (a flautist), and a third humanoid musician of unknown or unspecified gender, with the means by which this last figure produced or appeared to produce music unspecified by the thesis’ working notes. As described in the consulted sources, this instance’s figures partook of the form termed “musician” by the thesis, as one or more played or appeared to play a musical instrument. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a pool, an enclosed depression filled with water as an ornamental architectural feature of palaces and pleasure-gardens. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations

²⁷⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Donald R. Hill’s introduction to his translated edition of the Banu Musa’s *Book of Ingenious Devices*, page 22. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, page 170, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation.

**Kang Type 003, Instance 218 of 295, Cumulative Instance 274 of 409:
al-Jazari's Omitted Musical Automata.**

of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 219 of 295, Cumulative Instance 275 of 409:
al-Jazari's Ornamental Waterworks Cow.²⁷⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a female cow. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which this figure appeared was a pool, an enclosed depression filled with water as an ornamental architectural feature of palaces and pleasure-gardens. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁷⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 182 --- 183, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary or tertiary source matter for this instance, as it was not discussed by the other consulted authors.

**Kang Type 003, Instance 220 of 295, Cumulative Instance 276 of 409:
al-Jazari's Alarm Clock.²⁷⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a male sailor. As described in the consulted sources, this instance’s figure partook of the form termed “musician” by the thesis, as it played or appeared to play a musical instrument. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as the object featuring this instance was portable. This instance’s principal designer and builder was “The Wonder of the Age,” Ibn al-Razzaz al-Jazari. Its location was the municipality of Diyarbakir, in the principality of Diyarbakr, al-Jazira. The principal patron responsible for this instance’s presence in the historical record was King Nasir al-Din, whose full name is given elsewhere in this document. This instance came into existence as a design or object before the year 1206, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁷⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 114, 122, and 123. For this instance’s primary source matter, see *The Book of Knowledge of Ingenious Mechanical Devices (Kitab fi ma 'Rifat al-Hiyal al-Handasiyya)* in Hill’s edition, pages 204 --- 205, 237, and 270, which was written by Ibn al-Razzaz al-Jazari while under the patronage of King Nasir al-Din (whose full name is given elsewhere in the document), an Artuqid king, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation.

**Kang Type 003, Instance 221 of 295, Cumulative Instance 277 of 409:
al-Muradi's Clepsydra of the Gazelles.²⁷⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a generic woman (called a “girl” in the translated source referenced for this instance, perhaps as a shortening of the idiomatic English usage “harem girl”), a gazelle of unknown or unspecified gender, a male slave, and a generic serpent of unknown or unspecified gender. As described in the consulted sources, one of this instance’s figures partook of the form termed “servant” by the thesis, as it depicted a servile, or indeed, an enslaved individual. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is not applicable, as it was freestanding. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁷⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” pages 10, 11, 12, 13, 14, 15, 16, and 17; and Nadia Ambrosetti’s *Cultural Roots of Technology*, page 107. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata’iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation.

**Kang Type 003, Instance 222 of 295, Cumulative Instance 278 of 409:
al-Muradi's Scene of the Joust.²⁷⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a male knight, a prince, and a generic woman, or “damsel.” As described in the consulted sources, one of this instance’s figures partook of the form termed “ruler” by the thesis, as it depicted a member of the feudal aristocracy. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is unknown to this thesis. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁷⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 13; and Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 107 and 108. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata'iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation.

**Kang Type 003, Instance 223 of 295, Cumulative Instance 279 of 409:
al-Muradi's Blind Man and Dog.²⁷⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a blind man and a generic dog of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is unknown to this thesis. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁷⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 13; and Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 107, 108, and 180. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata'iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation.

**Kang Type 003, Instance 224 of 295, Cumulative Instance 280 of 409:
al-Muradi's Fighting Billy-Goats.²⁸⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a male goat and a generic man. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is unknown to this thesis. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁸⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 13; and Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 107 and 108. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata'iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation.

**Kang Type 003, Instance 225 of 295, Cumulative Instance 281 of 409:
al-Muradi's Fighting Men.²⁸¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic man. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis, although it is possible to construe this instance as one which partakes of the form termed “death.” On review, this automaton figure was not assigned an individual character name in its source material. The setting in which these figures appeared is unknown to this thesis. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic

²⁸¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 13; and Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 107 and 109. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata’iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation.

**Kang Type 003, Instance 225 of 295, Cumulative Instance 281 of 409:
al-Muradi's Fighting Men.**

fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 226 of 295, Cumulative Instance 282 of 409:
al-Muradi's Clock of the Pedestrian.²⁸²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a generic woman (called a “girl” in the translated source referenced for this instance, perhaps as a shortening of the idiomatic English usage “harem girl”) and a generic humanoid of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is unknown to this thesis. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁸² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 13. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata’iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation.

**Kang Type 003, Instance 227 of 295, Cumulative Instance 283 of 409:
al-Muradi's Clock of the Woman.²⁸³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a generic woman (called a “girl” in the translated source referenced for this instance, perhaps as a shortening of the idiomatic English usage “harem girl”). As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is unknown to this thesis. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁸³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 13. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata’iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 228 of 295, Cumulative Instance 284 of 409:
al-Muradi's First Clock of the Astrologer.²⁸⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male astrologer and a generic woman (called a “girl” in the translated source referenced for this instance, perhaps as a shortening of the idiomatic English usage “harem girl”). As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is unknown to this thesis. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁸⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 13. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata’iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 229 of 295, Cumulative Instance 285 of 409:
al-Muradi's Clock of the Gifts.²⁸⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male astrologer, a generic man, and a generic woman (called a “girl” in the translated source referenced for this instance, perhaps as a shortening of the idiomatic English usage “harem girl”). As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is unknown to this thesis. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the

²⁸⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 14. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata’iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation. The thesis recalls that the scene presented by this instance could be interpreted to suggest misogynistic ideation comparable to the patterns of thinking associated in contemporary times with online communities of men embittered by the facts of their private lives; in this scene, an male astronomer-automaton regularly gives gifts to a female automaton via an intermediary male automaton dispatched as a courier, and upon receipt, the female automaton proceeds to deposit each such gift into a trunk or similar receptacle, effectively throwing the astronomer’s gifts into a box. This sequence repeats itself as a timekeeping measure. It might be fruitful to subject this scene to a feminist interpretation, lest it instead be seized as a tableau which expresses the frustrations of involuntary celibacy in the elite space inhabited by medieval Islamic intellectuals, and specifically, by the scientific technicians of that time. Whether or not such an analysis is mounted, and especially in any such analysis, it should be remembered that the scene memorialized by al-Muradi in this instance could be construed as somewhat humorous, and quite harmless, according to some sensibilities of the twenty-first century, much less the eleventh, and even by those who may now find a scene of this nature mildly misogynistic.

**Kang Type 003, Instance 229 of 295, Cumulative Instance 285 of 409:
al-Muradi's Clock of the Gifts.**

technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 230 of 295, Cumulative Instance 286 of 409:
al-Muradi's Clock of the Assailant.²⁸⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a generic woman (called a “girl” in the translated source referenced for this instance, perhaps as a shortening of the idiomatic English usage “harem girl”) and a male slave. As described in the consulted sources, this instance’s figures partake of the forms termed “death” and “servant” by the thesis, as they enact a scene of malicious violence, and one figure depicts a servile, and indeed an enslaved individual. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is unknown to this thesis. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence

²⁸⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 14. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata’iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 230 of 295, Cumulative Instance 286 of 409:
al-Muradi's Clock of the Assailant.**

upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 231 of 295, Cumulative Instance 287 of 409:
al-Muradi's Second Clock of the Astrologer.²⁸⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male astrologer, a serpent of unknown or unspecified gender, and a generic woman (called a “girl” in the translated source referenced for this instance, perhaps as a shortening of the idiomatic English usage “harem girl”). As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is unknown to this thesis, but as with any other of al-Muradi’s timekeeping devices, they were elements of clepsydrae, hydraulic clocks; however, the thesis’ working notes did not have sufficient information to place these freestanding and potentially portable clocks in any given environment. As has already been established, such clocks, when they appeared in indoor chambers, and not when they were affixed to the exteriors of buildings as public clocks, tended to exist in aristocratic spaces. Therefore, it could be speculated that these clepsydrae existed in secular palaces, great households, places of civic assembly, etc., but in accords with the definitive parameters of the second current of thought, as directly articulated by al-Jazari, they never appeared in or on Islamic religious structures, such as mosques, minarets, shrines, mausoleums, and similar edifices with which the author is unfamiliar. Returning to this instance’s markup, its principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of

²⁸⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 14; and Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 107 and 109. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata'iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation.

**Kang Type 003, Instance 231 of 295, Cumulative Instance 287 of 409:
al-Muradi's Second Clock of the Astrologer.**

ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 232 of 295, Cumulative Instance 288 of 409:
al-Muradi's Third Clock of the Astrologer.²⁸⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male astrologer and a generic man. Another point which does not arise in the markup, but which should be noted in the event it is not already known to readers, is that within al-Muradi’s cultural context and historical era, “astrologer” and “astronomer” are mostly synonymous, and the former should be construed to denote the intellectual accomplishment and prestige of the latter, for the profession of astrological consultation involved observation of the celestial dome, and it was considered a learned enterprise. However, the presence of an astronomer no more spurs identification of the sixth current of thought than the presence of a monk spurs identification of the first current of thought, for a figure representative of a man (the gender exclusively associated with these professions during the considered period) in either vocation is construed by the thesis as a simple occupational identifier. Absent the broader context of a monkish figure’s presence in a place such as a church, or as an object of devotional utility or worship, and absent the astrologer-figure’s cultural identification as an object conducive to or worthy of study, or of preservation and improvement to demonstrate the state of scientific or other arts, neither should necessarily be strongly associated with the first or sixth currents, respectively, although weaker arguments could be made that the existence of al-Muradi’s treatise lends the sixth current to the automata it describes, or that the figures of religious and scientific workers are respectively emblematic of religion and science. The thesis, after a long period of contemplation, has sought not to ascribe the first and sixth currents using these weak arguments. Returning to this instance’s markup, its automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is unknown to this thesis. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical

²⁸⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 14. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata’iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation.

**Kang Type 003, Instance 232 of 295, Cumulative Instance 288 of 409:
al-Muradi's Third Clock of the Astrologer.**

civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 233 of 295, Cumulative Instance 289 of 409:
al-Muradi's Clock of the Falconer.²⁸⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male falconer and a generic falcon of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is unknown to this thesis. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁸⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 14. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata’iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 234 of 295, Cumulative Instance 290 of 409:
al-Muradi's Clock of the Doorkeeper.²⁹⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic humanoid. As described in the consulted sources, this instance’s figure partook of the form termed “gatekeeper” by the thesis, as it in some sense monitored a threshold. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is unknown to this thesis. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁹⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 14. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata’iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 235 of 295, Cumulative Instance 291 of 409:
al-Muradi's Clock of the Sportswoman.²⁹¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic woman (called a “girl” in the translated source referenced for this instance, perhaps as a shortening of the idiomatic English usage “harem girl”). While this figure is described as one which depicts acts of athleticism, the thesis does not recall that there is any particular reason to record it as anything other than the representation of a generic woman, at least in terms of such factors as dress, since it did not bear marks of affiliation with a team or the special costume of any given sport. Team “colors” are attested in Roman antiquity and the Byzantium of early pre-Modernity, so the thesis believes that its assignation of the descriptor “generic woman,” combined with the eponymous descriptor “sportswoman,” are sufficient. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which this figure appeared is unknown to this thesis. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁹¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 14. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata’iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 236 of 295, Cumulative Instance 292 of 409:
al-Muradi's Fourth Clock of the Astrologer.²⁹²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male astrologer and a generic woman (called a “girl” in the translated source referenced for this instance, perhaps as a shortening of the idiomatic English usage “harem girl”). As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is unknown to this thesis. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁹² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 14. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata’iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 237 of 295, Cumulative Instance 293 of 409:
al-Muradi's Clock of the Astrolabe.²⁹³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic humanoid. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which this figure appeared is unknown to this thesis. This instance’s principal designer and builder was Ahmad (or Muhammad) ibn Jalaf al-Muradi. Its location at the levels of municipality and principality, and its principal patron, are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1050, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or “reclamation” of classical Greek and Roman civilizational achievements.

²⁹³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Eduard Farre Olive’s “The Clepsydra of the Gazelles, from *The Manuscript of Clocks*, by al-Muradi,” page 14. For this instance’s primary source matter, see *The Book of Secrets on the Consequences of Thoughts (Kitab Asrar fi Nata’iy al-Afkar)*, which was edited by the medieval Iberian translator Isaac ibn Sid as *The Manuscript of Clocks (MS Misc. OR 152)*, and which was originally written by Ahmad (alias Muhammad) ibn Jalaf al-Muradi thereabout the year 1050, with that date of composition being an approximation. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 238 of 295, Cumulative Instance 294 of 409:
Huang Gun's Party Boat.²⁹⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a female musician (a singer), a musician of unknown or unspecified gender (which produced music by unknown means), a dancer of unknown or unspecified gender, a tumbler of unknown or unspecified gender, a male sailor, a cup-bearer of unknown or unspecified gender, and a servant of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “musician” and “servant” by the thesis, as one or more produced or appeared to produce music, and one or more depicted an individual which acted in a servile capacity. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a palace. This instance’s principal designer and builder was Huang Gun. Its location at the levels of municipality and principality is not recorded in the thesis’ working notes, and neither is the patron responsible for this instance’s presence in the historical record. This instance came into existence as a design or object as of the years 601---700, the seventh century in the common reckoning, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions

²⁹⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 87 and 88. For this instance’s primary source matter, see the *Illustrated Manual of Hydraulic Elegances (Shui Shi Tu Jing)*, which was written by Huang Gun in the seventh century, that is, between the years 601 --- 700, with that range of dates for its composition being an approximation. The relationship between this instance and al-Jazari’s party boat is unclear, but the two are comparable in design and function. To the thesis’ recollection, cited authors who offered conjectures on the mutually-shared automaton-bearing device in Huang Gun and al-Jazari’s respective texts, a device which unexpectedly reappears in the very different cultural and temporal contexts represented by those two primary sources in the thesis’ long period of study, opined that Huang Gun and al-Jazari may have each drawn upon a common Old World source which is now lost, in much the same way that the Gaza clock, the clock gifted to Charlemagne, and al-Jazari’s castle clock, which are all documented in this section, utilize the same mechanism for the realization of a specific effect, the emergence of automaton figures from their doors. This mechanism must evidently have dated from a time no later than late Roman antiquity, although in the case of these exemplars, the transmission of the clocks’ mechanism remained localized in Western Asia, whereas the party boats’ design, as demonstrated by the Arabian and Chinese examples, seem to have at least permeated the entirety of the Asian Old World. The original sources for clocks in the style of that at Gaza and for party boats remain unknown, but the persistence of both designs makes a compelling case for a continuity of technical knowledge that spans multiple cultures and many centuries.

**Kang Type 003, Instance 238 of 295, Cumulative Instance 294 of 409:
Huang Gun's Party Boat.**

associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 239 of 295, Cumulative Instance 295 of 409:
The Automata of the Kuan Wen Library Hall.²⁹⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a Jian (or Xian) bird, a legendary being described in Chinese myths. As described in the consulted sources, this instance’s figure partook of the forms termed “gatekeeper” and “monster” by the thesis, as it respectively monitored a threshold and depicted a fantastical creature. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a library. This instance’s principal designer and builder, location at the levels of municipality and principality, and principal patron are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the years 601---700, the seventh century in the common reckoning, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁹⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 88. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Ambrosetti’s cited work if it contains any useful information which does not appear here.

**Kang Type 003, Instance 240 of 295, Cumulative Instance 296 of 409:
The Banu Musa's Fifth Model.²⁹⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a presumptively-male lion and a gazelle of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is not applicable, as it was a freestanding device. This instance’s principal designers and builders were Ahmad, Muhammad, and al-Hasan, the three sons of Musa bin Shakir. Its location was the municipality of Baghdad, in the principality of the ‘Abbasid Caliphate. The principal patron responsible for this instance’s presence in the historical record was the Caliph al-Mutawakkil. This instance came into existence as a design or object as of the year 850, the middle of the ninth century, with that date being an approximation, and with the year 862 potentially being a better approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it

²⁹⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 98. For this instance’s primary source matter, see the *Book of Ingenious Devices* in Hill’s edition, pages 50---51, which was written by Jafar Muhammad ibn Musa, Ahmad ibn Musa, and al-Hasan ibn Musa, the three sons of Musa bin Shakir, who were together known as the Banu Musa, while these three were under the patronage of the Caliph al-Mutawakkil at Baghdad, in the Abbasid Caliphate, thereabout the year 850, with that date of composition being an approximation.

**Kang Type 003, Instance 240 of 295, Cumulative Instance 296 of 409:
The Banu Musa's Fifth Model.**

represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 241 of 295, Cumulative Instance 297 of 409:
The Banu Musa's Sixth Model.²⁹⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a bull, a male cow. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was a freestanding device. This instance’s principal designers and builders were Ahmad, Muhammad, and al-Hasan, the three sons of Musa bin Shakir. Its location was the municipality of Baghdad, in the principality of the ‘Abbasid Caliphate. The principal patron responsible for this instance’s presence in the historical record was the Caliph al-Mutawakkil. This instance came into existence as a design or object as of the year 850, the middle of the ninth century, with that date being an approximation, and with the year 862 potentially being a better approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents

²⁹⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 100. For this instance’s primary source matter, see the *Book of Ingenious Devices* in Hill’s edition, pages 52---53, which was written by Jafar Muhammad ibn Musa, Ahmad ibn Musa, and al-Hasan ibn Musa, the three sons of Musa bin Shakir, who were together known as the Banu Musa, while these three were under the patronage of the Caliph al-Mutawakkil at Baghdad, in the Abbasid Caliphate, thereabout the year 850, with that date of composition being an approximation.

**Kang Type 003, Instance 241 of 295, Cumulative Instance 297 of 409:
The Banu Musa's Sixth Model.**

the recovery or "reclamation" of classical Greek and Roman civilizational achievements;

**Kang Type 003, Instance 242 of 295, Cumulative Instance 298 of 409:
The Khan's Serpent Fountain.²⁹⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a serpent of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass,” as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a fountain. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Karakorum, in the principality of the Mongol Empire. The principal patron responsible for this instance’s presence in the historical record was the reigning khan thereabout the years of its creation. This instance came into existence as a design or object as of the years 1322---1323, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

²⁹⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 134. For this instance’s primary source matter, see *Itinerarium de Mirabilibus Orientalium Tartarorum*, which was written by Friar Odoric of Pordenone at Padua, in whichever polity then governed that city, in the year 1330. That date of composition is not an approximation. This instance may fruitfully be compared to the representation of the khan’s throne in *The Travels of Sir John Mandeville*, which this thesis does not consider to be an instance of pre-Modern or Early Modern automata. Thus, as interpreted by the thesis’ readings of the sources cited for those two articles of material culture in close proximity to the khan and to his semi-fictionalized counterpart, the fountain which existed in reality featured automata, whereas the throne which existed in a work noted for inaccuracies and exaggerations, much like Marco Polo’s itinerary, did not feature automata, although the throne and fountain otherwise have a similar aesthetic. This juxtaposition of the fountain and throne is ironic, since one might have expected that Mandeville’s semi-fictionalized account would contain the more elaborate of the two regnal objects.

**Kang Type 003, Instance 243 of 295, Cumulative Instance 299 of 409:
Maurizio, the Jacquemart at Orvieto.²⁹⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a male overseer. As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass,” “bellringer,” and “ruler” by the thesis, as it respectively had a brazen coloration, produced a sound like the ringing of a bell, either by the operation of its figure or the totality of the device to which this figure was affixed, and had a figure which did not depict a member of the feudal aristocracy, but which did depict a taskmaster granted authority over a group of workers. On review, this automaton figure was assigned an individual character name in its source material, “Maurizio,” which is etymologically derived from a corruption of the Italian term for the working yard with which this figure is historically associated. The setting in which it appeared was a public clock (the clock built for the working yard, which was a public space). This instance’s principal designer and builder is known to history and recorded in the thesis’ working notes only as “Francesco,” which is likely a given name. Its location was the municipality of Orvieto, in the principality of the Papal States. The principal patrons responsible for this instance’s presence in the historical record were the members of Orvieto’s Committee on Cathedral Works, as that working yard which was regulated by a public clock featuring the automaton figure called Maurizio had been established at the behest of the Committee on Cathedral Works for the purpose of completing the labors entailed by the project of constructing Orvieto’s cathedral, and as the successful completion of this project was the express goal of that committee. This instance came into existence as a design or object as of the year 1348, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the

²⁹⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 163. As an extant automaton, this instance may itself be consulted as primary source matter. According to the thesis’ working notes, it was built by a certain Francesco, who worked under the patronage of the sponsoring Committee on Cathedral Works, a medieval organization, at Orvieto, in the Papal States, in the year 1348. That date of assembly is not an approximation, and as such, Maurizio, as this instance is called, is one of the oldest examples of automata *in situ*, if not the oldest, being contemporaneous with the years of the Black Death. Dr. Katherine Clark-Walter, one of the thesis’ readers, has advised that much of the surviving material-cultural objects from the European Middle Ages postdate the plague years, making Maurizio’s age quite extraordinary if this figure is indeed original. The thesis does not venture any conjectures for the uniqueness of this instance’s longevity other than those which follow from its environment, such as, for instance, its placement atop a tower in a climate favorable to preservation.

**Kang Type 003, Instance 243 of 295, Cumulative Instance 299 of 409:
Maurizio, the Jacquemart at Orvieto.**

cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 244 of 295, Cumulative Instance 300 of 409:
Toschi's Clock at Parma.³⁰⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a male angel. As described in the consulted sources, this instance’s figure partook of the forms termed “angel” and “musician” by the thesis, as it depicted a heavenly being and produced or appeared to produce music. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a public clock. This instance’s principal designer and builder was Marchionne Toschi of Brescello. Its location was the municipality of Parma, in the principality of the Papal States. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1443, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of

³⁰⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 172. For this instance’s primary source matter in Ambrosetti, see G. Campori, *Gli Orologeri degli Estensi. Atti della Deput. di Parma e Modena Nuova Serie*, Volume II, which was published in the year 1891. That date of publication is not believed to be an approximation, and no further information regarding that document and any primary sources contained therein is known to this thesis.

**Kang Type 003, Instance 244 of 295, Cumulative Instance 300 of 409:
Toschi's Clock at Parma.**

Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 245 of 295, Cumulative Instance 301 of 409:
The Town Clock at Bologna.³⁰¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a male knight, a male angel, and the Magi. As described in the consulted sources, this instance’s figure partook of the forms termed “angel,” “saint,” and “musician” by the thesis, as one depicted a heavenly being, while others depicted individuals recognized as saints by one or more Christian denominations, and at least one produced or appeared to produce music. On review, some of these automaton figures were assigned an individual character name in their source material, “Caspar,” “Melchior,” and “Balthazar.” The setting in which it appeared was a public clock. This instance’s principal designer and builder was Bartolomeo di Gnudolo. Its location was the municipality of Bologna, in the principality of the Papal States. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1492, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be

³⁰¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 172---173. For this instance’s primary source matter in Ambrosetti, see B. Podesta, *I Primi Oriuoli Pubblici di Bologna. Atti e Memorie – Deputazioni di Storia Patria per le Province di Romagna* VIII, which was published in the year 1890. That date of publication is not believed to be an approximation, and no further information regarding that document and any primary sources contained therein is known to this thesis.

**Kang Type 003, Instance 245 of 295, Cumulative Instance 301 of 409:
The Town Clock at Bologna.**

indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 246 of 295, Cumulative Instance 302 of 409:
The Automaton Bird in Manuscript *Palatino* 767.³⁰²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic bird. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was assigned an individual character name in its source material. The setting in which it appeared was a fountain. This instance’s principal designer and builder, location at the levels of municipality and principality, and principal patron are not recorded in the thesis’ working notes. This instance came into existence as a design or object between the years 1450 and 1502, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or “reclamation” of classical Greek and Roman civilizational achievements.

³⁰² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 176. For this instance’s primary source matter, see Biblioteca Nazionale di Firenze, Manuscript *Palatino* 767, Folio 2, which was written thereabout the years 1450---ante 1502, with that range of dates for its composition being an approximation. No further information regarding that primary source is recorded by the thesis’ working notes.

**Kang Type 003, Instance 247 of 295, Cumulative Instance 303 of 409:
da Vinci's Standing Gate Lion.³⁰³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a presumptively-male lion. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a gate, and per Truitt, this is a liminal space; however, unlike the many other instances of automata which appear on or near gates in the fiction and reality of the pre-Modern and Early Modern worlds, the author’s reading of this instance’s presentation does not suggest that the lion “kept” the gate, either by monitoring or appearing to monitor it, or by actively or incidentally preventing entry, whether as a guard or barrier. As such, it is not construed to partake of the form “gatekeeper.” The thesis recalls that this lion was positioned atop the gate, on a parapet or similar structure, and that it was activated as part of the ceremonial pageantry surrounding the progress of King Louis XII’s entourage, saluting that monarch with its motion. Its function was therefore distinct from that of the several other “gatekeeper” automata hereinbefore identified. Returning to the markup, this instance’s principal designer and builder was Leonardo da Vinci. Its location was the municipality of Milan, in the principality of the Duchy of Milan. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1509, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁰³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 180 and 181. For this instance’s primary source matter, see *Fond. Princ.* II.IV.171, which is a document housed at the Biblioteca Nazionale di Firenze (the National Library of Florence). The thesis’ working notes contain no further information regarding that document, which is presumably, although not necessarily, a manuscript.

**Kang Type 003, Instance 248 of 295, Cumulative Instance 304 of 409:
da Vinci's Second Walking Lion.³⁰⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a presumptively-male lion. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder was Leonardo da Vinci. Its location was the municipality of Florence, in the principality of the Republic of Florence. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes, but the thesis is aware that it was produced by da Vinci for the entrance of King Francis I into the city of Lyon; da Vinci was based in Florence at this time. This instance came into existence as a design or object as of the year 1515, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁰⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 180 and 181. For this instance’s primary source matter, see *Descrizione delle Felicissime Nozze della Cristianissima Maesta' di Maria Medici Regina di Francia e di Navarra*, which was written by Michelangelo Buonarroti il Giovane (the Younger) at Florence, in the Grand Duchy of Tuscany, in the year 1600. That date for this text’s appearance is not an approximation.

**Kang Type 003, Instance 249 of 295, Cumulative Instance 305 of 409:
Manzoli's Breather.³⁰⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was pneumatic. It contained the figure of a generic man. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which this figure appeared is unknown to this thesis. This instance’s principal designer and builder are not recorded in the thesis’ working notes; it was only reported by Manzolli, not created by him. Its location was the municipality of Rome, in the principality of the Papal States. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object before the year 1521, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents

³⁰⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 192. For this instance’s primary source matter, see *Zodiacus Vitae*, Book XI, which was written by Pier Angelo Manzolli, who adopted and likely wrote under the Latinate pseudonym Marcellus Pallingenius Stellatus, in the year 1530. That date for this text’s appearance is not an approximation. No further information on this instance is recorded by the thesis’ working notes.

**Kang Type 003, Instance 249 of 295, Cumulative Instance 305 of 409:
Manzoli's Breather.**

the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 250 of 295, Cumulative Instance 306 of 409:
Campi's Turtle.³⁰⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a tortoise of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “servant” by the thesis, as it depicted a being which acted in a servile capacity. The thesis usually reserves the identification of the form “servant” to humanoid automata, but it accurately presents the identification of this form in the case of this instance per its working notes. The setting in which the figure of this instance appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder was Bartolomeo Campi of Pesaro. Its location at the levels of municipality and principality is unknown to this thesis. The principal patron responsible for this instance’s presence in the historical record was the Duke of Urbino, presumably Guidobaldo II della Rovere. This instance came into existence as a design or object as of the year 1550, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁰⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 192. For this instance’s primary source matter, see the edition of Heron's *Automata* translated by Bernardino Baldi and published in the year 1589. That date of publication is not an approximation.

**Kang Type 003, Instance 251 of 295, Cumulative Instance 307 of 409:
Torriano's Dancers.³⁰⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a male dancer. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder was Giannello Torriano of Cremona. Its location was the municipality of San Yuste, in the principality of the Kingdom of Spain (Castile). The principal patron responsible for this instance’s presence in the historical record was the Holy Roman Emperor Charles V. This instance came into existence as a design or object as of the years 1557---1558, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁰⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 193. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists; readers are asked to accept, as did the thesis’ author, that Ambrosetti’s identification and characterization of this instance are accurate and are referred to her work if any information it contains was erroneously neglected. In the belief that no instance of pre-Modern or Early Modern automata located in the course of his research should be omitted from this catalog, the thesis’ author has duly included the automaton dancers associated with Gianello Torriano, a historical figure, by Doctor Ambrosetti, a published historian who specializes in this thesis’ topic of interest.

**Kang Type 003, Instance 252 of 295, Cumulative Instance 308 of 409:
Torriano's Dogs.³⁰⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a generic dog of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder was Giannello Torriano of Cremona. Its location was the municipality of San Yuste, in the principality of the Kingdom of Spain (Castile). The principal patron responsible for this instance’s presence in the historical record was the Holy Roman Emperor Charles V. This instance came into existence as a design or object as of the years 1557---1558, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

³⁰⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 193. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists; readers are asked to accept, as did the thesis’ author, that Ambrosetti’s identification and characterization of this instance are accurate, and are referred to her work if any information it contains was erroneously neglected. In the belief that no instance of pre-Modern or Early Modern automata located in the course of his research should be omitted from this catalog, the thesis’ author has duly included the automaton dogs associated with Gianello Torriano, a historical figure, by Doctor Ambrosetti, a published historian who specializes in this thesis’ topic of interest. “Ibidem” has not been used in this footnote, despite the equivalence of the citations in the preceding footnote, because these two footnotes document primary and secondary sources for distinct physical objects.

**Kang Type 003, Instance 253 of 295, Cumulative Instance 309 of 409:
The Automata of the *Grotta del Diluvio* at the Medici Villa of Pratolino.³⁰⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a harpy, a generic child of unknown or unspecified gender, a generic duck of unknown or unspecified gender, a presumptively-male miller, an ox, and a blade-grinder of unknown or unspecified gender. As described in the consulted sources, one of this instance’s figures partook of the form termed “monster” by the thesis, as it depicted a fantastical creature. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a grotto. This instance’s principal designer and builder was Bernardo Buontalenti. Its location was the municipality of Vaglia, in the principality of the Grand Duchy of Tuscany. The principal patron responsible for this instance’s presence in the historical record was Francesco I de Medici. This instance came into existence as a design or object as of the year 1581, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be

³⁰⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 197, 198; and Lily V. Filson’s *Engineering Gods*, pages 20, 313, and 355. For this instance’s primary source matter, see *Discorsi della Meravigliose Opere di Pratolino, et d’Amore*, which was written by Francesco de Vieri under the patronage of Francesco I de Medici and published at Florence, in the Grand Duchy of Tuscany, in the year 1587. That date of publication is not an approximation. See also *Journal de Voyage*, a primary source for this instance which is mentioned by Filson when criticizing one of Jessica Riskin’s publications on page 20 of *Engineering Gods*; it was written in the sixteenth century by Lord Michel de Montaigne and is noted elsewhere in this thesis.

**Kang Type 003, Instance 253 of 295, Cumulative Instance 309 of 409:
The Automata of the *Grotta del Diluvio* at the Medici Villa of Pratolino.**

indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 254 of 295, Cumulative Instance 310 of 409:
The Automata of the *Grotta di Galatea* at the Medici Villa of Pratolino.³¹⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a triton (a merman), a dolphin of unknown or unspecified gender, and a nymph. As described in the consulted sources, this instance’s figures respectively partook of the forms termed “monster,” “goddess,” and “musician” by the thesis, as at least one depicted a fantastical creature, at least one depicted a divine being, and at least one produced or appeared to produce music. On review, one of these automaton figures was assigned an individual character name in its source material, “Galatea.” The setting in which these figures appeared was a grotto. This instance’s principal designer and builder was Bernardo Buontalenti. Its location was the municipality of Vaglia, in the principality of the Grand Duchy of Tuscany. The principal patron responsible for this instance’s presence in the historical record was Francesco I de Medici. This instance came into existence as a design or object as of the year 1581, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological

³¹⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 198---199; and Lily V. Filson’s *Engineering Gods*, pages XII, 7, 16, 80, 82---83, 227, 340---341, and 358. For this instance’s primary source matter, see *Discorsi della Meravigliose Opere di Pratolino, et d'Amore*, which was written by Francesco de Vieri under the patronage of Francesco I de Medici and published at Florence, in the Grand Duchy of Tuscany, in the year 1587. That date of publication is not an approximation. As primary source matter for this instance, see also the description of the Medici villa at Pratolino in the anonymous *MS. 2312*, which is housed at the Biblioteca Riccardiana in the contemporary city of Florence, Italy.

**Kang Type 003, Instance 254 of 295, Cumulative Instance 310 of 409:
The Automata of the *Grotta di Galatea* at the Medici Villa of Pratolino.**

achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 255 of 295, Cumulative Instance 311 of 409:
The Automata of the *Grotta del Cielo* at the Medici Villa of Pratolino.³¹¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a male shepherd, a male cupbearer, a generic woman, a Roman god, and a male hunter. As described in the consulted sources, this instance’s figures respectively partook of the forms termed “god,” “saint,” and “musician” by the thesis, as at least one depicted a divine being, at least one depicted an individual recognized as a saint by one or more Christian denominations, and at least one produced or appeared to produce music. On review, one of these automaton figures was assigned an individual character name in its source material, “Saint Photine.” The setting in which these figures appeared was a grotto. This instance’s principal designer and builder was Bernardo Buontalenti. Its location was the municipality of Vaglia, in the principality of the Grand Duchy of Tuscany. The principal patron responsible for this instance’s presence in the historical record was Francesco I de Medici. This instance came into existence as a design or object as of the year 1581, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to

³¹¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 200---201; Jessica Riskin’s “Machines in the Garden,” page 33; and Lily V. Filson’s *Engineering Gods*, pages 2, 6, 20, 58, 60, 247, 313, and 314. For this instance’s primary source matter, see the description of the Medici villa at Pratolino by Giovanni Guerra, which was written by Giovanni Guerra under the patronage of Pope Clement VIII in the year 1598. That date of composition is an approximation. See also selected sketches by Heinrich Schickhardt (per Filson, these sketches are contained in *Cod. Hist. 4, MS. 148, Württembergische Landesbibliothek*, which dates from the year 1600, and which is presently located as a bound volume in the contemporary city of Stuttgart). These sketches were, of course, drawn by Heinrich Schickhardt himself, while working under the patronage of Duke Friedrich I of Württemberg, and according to the thesis’ working notes, they may be found in the book wherein they were presented, now a holding of the collections at the Stuttgart Landesbibliothek in the contemporary nation-state of Germany, the Bundesrepublik Deutschland. While the book dates from the year 1600, Schickhardt made his sketches closer to the year 1598, although that date is an approximation.

**Kang Type 003, Instance 255 of 295, Cumulative Instance 311 of 409:
The Automata of the *Grotta del Cielo* at the Medici Villa of Pratolino.**

automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 256 of 295, Cumulative Instance 312 of 409:
The Automata of the *Grotta della Fama* at the Medici Villa of Pratolino.³¹²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of an ancient Roman goddess, a male farmer, and a dragon of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “god,” “monster,” and “musician” by the thesis, as at least one depicted a divine being, at least one depicted a fantastical creature, and at least one produced or appeared to produce music. On review, one of these automaton figures was assigned an individual character name in its source material, which is variously rendered as “Fama,” “Pheme,” or “Fame.” The setting in which these figures appeared was a grotto. This instance’s principal designer and builder was Bernardo Buontalenti. Its location was the municipality of Vaglia, in the principality of the Grand Duchy of Tuscany. The principal patron responsible for this instance’s presence in the historical record was Francesco I de Medici. This instance came into existence as a design or object as of the year 1581, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between

³¹² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 202; and Lily V. Filson’s *Engineering Gods*, pages 9, 44, 61, 63, 79, 185, and 312. For this instance’s primary source matter, the thesis’ working notes record that Ambrosetti, in presenting this instance, notes that “sources are almost unanimous” when discussing it at page 202 of her cited work; this is taken to be a reference to some combination of the sources for Pratolino’s automata which are known to this thesis, and which are namely de Vieri, Guerra, the later author Sgrilli, and the anonymous source, which is distinct from the other three. See also the engraving by Stefano della Bella titled “Grottoes of Pan and Fame” from *Descrizione delle Regia Villa, Fontane, e Fabbriche de Pratolino*, which was written by Bernardo Sansone Sgrilli and published at Florence, in the Holy Roman Empire, in the year 1742. That date of publication is not an approximation. Insofar as patronage is concerned, it could be said that della Bella’s patron was Giuseppe Zocchi, but owing to the late date of della Bella’s representation of this instance, one well into the eighteenth century, the relationship between these two is that of Zocchi, employer, to della Bella, employee, and not the more traditional patronage relationship which predominated throughout the thesis’ proper period of study. A third primary source for this instance is the description of the Medici villa at Pratolino by Giovanni Guerra, which was written by Giovanni Guerra under the patronage of Pope Clement VIII and is now housed at the Albertina Museum in Vienna, in the contemporary nation-state of Austria. The copy of Guerra’s work at that institution, which dates from the year 1601, contains his drawings from the year 1598. Neither of those dates is an approximation.

**Kang Type 003, Instance 256 of 295, Cumulative Instance 312 of 409:
The Automata of the *Grotta della Fama* at the Medici Villa of Pratolino.**

automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 257 of 295, Cumulative Instance 313 of 409:
The Automata of the *Grotta di Pan* at the Medici Villa of Pratolino.³¹³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a satyr. As described in the consulted sources, this instance’s figure partook of the forms termed “god” and “musician” by the thesis, as it depicted a divine being and produced or appeared to produce music. On review, this automaton figure was assigned an individual character name in its source material, “Pan.” The setting in which these figures appeared was a grotto. This instance’s principal designer and builder was Bernardo Buontalenti. Its location was the municipality of Vaglia, in the principality of the Grand Duchy of Tuscany. The principal patron responsible for this instance’s presence in the historical record was Francesco I de Medici. This instance came into existence as a design or object as of the year 1581, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of

³¹³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 202---203; and Lily V. Filson’s *Engineering Gods*, pages 44, 61, 62, 82, 83, 227, and 247. For this instance’s primary source matter, the thesis’ working notes record that Ambrosetti, in presenting this instance, notes that “sources are almost unanimous” when discussing it at page 202 of her cited work; this is taken to be a reference to some combination of the sources for Pratolino’s automata which are known to this thesis, and which are namely de Vieri, Guerra, the later author Sgrilli, and the anonymous source, which is distinct from the other three. See also the engraving by Stefano della Bella titled “Grottoes of Pan and Fame” from *Descrizione delle Regia Villa, Fontane, e Fabbriche de Pratolino*, which was written by Bernardo Sansone Sgrilli and published at Florence, in the Holy Roman Empire, in the year 1742. That date of publication is not an approximation. Insofar as patronage is concerned, it could be said that della Bella’s patron was Giuseppe Zocchi, but owing to the late date of della Bella’s representation of this instance, one well into the eighteenth century, the relationship between these two is that of Zocchi, employer, to della Bella, employee, and not the more traditional patronage relationship which predominated throughout the thesis’ proper period of study. A third primary source for this instance is the description of the Medici villa at Pratolino by Giovanni Guerra, which was written by Giovanni Guerra under the patronage of Pope Clement VIII and is now housed at the Albertina Museum in Vienna, in the contemporary nation-state of Austria. The copy of Guerra’s work at that institution, which dates from the year 1601, contains his drawings from the year 1598. Neither of those dates is an approximation. “Ibidem” has not been used for this instance’s primary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct physical objects.

**Kang Type 003, Instance 257 of 295, Cumulative Instance 313 of 409:
The Automata of the *Grotta di Pan* at the Medici Villa of Pratolino.**

ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 258 of 295, Cumulative Instance 314 of 409:
The Automaton of the *Grotta di Cupido* at the Medici Villa of Pratolino.³¹⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of an ancient Roman god. As described in the consulted sources, this instance’s figure partook of the forms termed “god” and “thing of brass” by the thesis, as it depicted a divine being and had a brazen coloration. On review, this automaton figure was assigned an individual character name in its source material, “Cupid.” The setting in which these figures appeared was a grotto. This instance’s principal designer and builder was Bernardo Buontalenti. Its location was the municipality of Vaglia, in the principality of the Grand Duchy of Tuscany. The principal patron responsible for this instance’s presence in the historical record was Francesco I de Medici. This instance came into existence as a design or object as of the year 1581, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of

³¹⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 204; and Lily V. Filson’s *Engineering Gods*, pages 4, 6, 47, 57, 77, and 80. For this instance’s primary source matter, see the description of the Medici villa at Pratolino by Giovanni Guerra, which was written by Giovanni Guerra under the patronage of Pope Clement VIII in the year 1598. That date of composition is an approximation, and this source has been noted elsewhere in the present section.

**Kang Type 003, Instance 258 of 295, Cumulative Instance 314 of 409:
The Automaton of the *Grotta di Cupido* at the Medici Villa of Pratolino.**

automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 259 of 295, Cumulative Instance 315 of 409:
The Automata of the *Fonte di Parnaso* at the Medici Villa of Pratolino.³¹⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of an ancient Roman goddess and a generic male human head. As described in the consulted sources, this instance’s figures partook of the forms termed “god” and “musician” by the thesis, as at least one depicted a divine being, and at least one produced or appeared to produce music. On review, one of these automaton figures was assigned an individual character name in its source material, although in this case, the identification of this name is an ascription; the figure of the ancient Roman goddess most likely represented Euterpe, so that name would be “Euterpe.” The setting in which these figures appeared was a fountain. This instance’s principal designer and builder was Bernardo Buontalenti. Its location was the municipality of Vaglia, in the principality of the Grand Duchy of Tuscany. The principal patron responsible for this instance’s presence in the historical record was Francesco I de Medici. This instance came into existence as a design or object as of the year 1581, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of

³¹⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 204---205; and Lily V. Filson’s *Engineering Gods*, pages 48 and 80. For this instance’s primary source matter, see the description of the Medici villa at Pratolino by Giovanni Guerra, which was written by Giovanni Guerra under the patronage of Pope Clement VIII in the year 1598. That date of composition is an approximation, and this source has been noted elsewhere in the present section. “Ibidem” has not been used for this instance’s primary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct physical objects.

**Kang Type 003, Instance 259 of 295, Cumulative Instance 315 of 409:
The Automata of the *Fonte di Parnaso* at the Medici Villa of Pratolino.**

automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 260 of 295, Cumulative Instance 316 of 409:
The Banu Musa's Seventy-Eighth Model.³¹⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a presumptively-male lion. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a basin. This instance’s principal designers and builders are recorded in the thesis’ working notes as Ahmad, Muhammad, and al-Hasan, the three sons of Musa bin Shakir called the Banu Musa, as their work, the *Book of Ingenious Devices*, is the treatise in which this instance appears; however, Donald R. Hill, the translator of that work into English, opines that approximately the final twenty-five of the one hundred devices which it presents, or the last quarter of its contents, likely do not originate with the Banu Musa themselves, but are later interpolations introduced by unknown persons, and perhaps the school of the House of Wisdom with which the Banu Musa were associated, because these devices differ from the others (which are, for the most part, numerous permutations in the design of so-called “assassin’s teapots,” a phrase which the thesis uses independently). On that ground, Hill is prepared to conclude that the final quarter of the Banu Musa’s original work was lost, but that its gaping lacuna was repopulated with unoriginal devices by a later cohort of intellectuals and scribes who were interested in *hiyal*, “ingenious devices,” the Banu Musa’s subject matter. For this thesis’ purposes, this point is irrelevant. Even if Hill’s conclusion is correct, the final twenty-five devices are obviously of early or high medieval vintage, easily antedating the late Middle Ages, and are therefore germane to the thesis’ topic, whatever their provenance. Returning to the markup, this instance’s location was the municipality of Baghdad, in the principality of the ‘Abbasid Caliphate. Provided that this instance did originate with the Banu Musa, the principal patron responsible for this instance’s presence in the historical record would be the Caliph al-Mutawakkil, and it would have come into existence as a design or object as of the year 850, with that date being an approximation, and with the year 862 being a better approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish

³¹⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, the work of Ahmad and his brothers, the sons of Musa bin Shakir together called the Banu Musa, the *Book of Ingenious Devices* in Hill’s edition, pages 198---199, which was written under the patronage of the Caliph al-Mutawakkil in Baghdad, in the Abbasid Caliphate, in the year 850. That date of composition is an approximation. The thesis’ working notes do not record any other primary or secondary sources for this instance, as it was not discussed by any other consulted authors.

**Kang Type 003, Instance 260 of 295, Cumulative Instance 316 of 409:
The Banu Musa's Seventy-Eighth Model.**

civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 261 of 295, Cumulative Instance 317 of 409:
The Banu Musa's Seventy-Ninth Model.³¹⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a horned bull. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a basin. This instance’s principal designers and builders are recorded in the thesis’ working notes as Ahmad, Muhammad, and al-Hasan, the three sons of Musa bin Shakir called the Banu Musa, as their work, the *Book of Ingenious Devices*, is the treatise in which this instance appears; however, Donald R. Hill, the translator of that work into English, opines that approximately the final twenty-five of the one hundred devices which it presents, or the last quarter of its contents, likely do not originate with the Banu Musa themselves, but are later interpolations introduced by unknown persons, and perhaps the school of the House of Wisdom with which the Banu Musa were associated, because these devices differ from the others (which are, for the most part, numerous permutations in the design of so-called “assassin’s teapots,” a phrase which the thesis uses independently). On that ground, Hill is prepared to conclude that the final quarter of the Banu Musa’s original work was lost, but that its gaping lacuna was repopulated with unoriginal devices by a later cohort of intellectuals and scribes who were interested in *hiyal*, “ingenious devices,” the Banu Musa’s subject matter. For this thesis’ purposes, this point is irrelevant. Even if Hill’s conclusion is correct, the final twenty-five devices are obviously of early or high medieval vintage, easily antedating the late Middle Ages, and are therefore germane to the thesis’ topic, whatever their provenance. Returning to the markup, this instance’s location was the municipality of Baghdad, in the principality of the ‘Abbasid Caliphate. Provided that this instance did originate with the Banu Musa, the principal patron responsible for this instance’s presence in the historical record would be the Caliph al-Mutawakkil, and it would have come into existence as a design or object as of the year 850, with that date being an approximation, and with the year 862 being a better approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it

³¹⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, the work of Ahmad and his brothers, the sons of Musa bin Shakir together called the Banu Musa, the *Book of Ingenious Devices* in Hill’s edition, pages 200---201, which was written under the patronage of the Caliph al-Mutawakkil in Baghdad, in the Abbasid Caliphate, in the year 850. That date of composition is an approximation. The thesis’ working notes do not record any other primary or secondary sources for this instance, as it was not discussed by any other consulted authors. “Ibidem” has not been used for this instance’s primary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct physical objects.

**Kang Type 003, Instance 261 of 295, Cumulative Instance 317 of 409:
The Banu Musa's Seventy-Ninth Model.**

partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 262 of 295, Cumulative Instance 318 of 409:
The Banu Musa's Eighty-Third Model.³¹⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a gazelle of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a basin. This instance’s principal designers and builders are recorded in the thesis’ working notes as Ahmad, Muhammad, and al-Hasan, the three sons of Musa bin Shakir called the Banu Musa, as their work, the *Book of Ingenious Devices*, is the treatise in which this instance appears; however, Donald R. Hill, the translator of that work into English, opines that approximately the final twenty-five of the one hundred devices which it presents, or the last quarter of its contents, likely do not originate with the Banu Musa themselves, but are later interpolations introduced by unknown persons, and perhaps the school of the House of Wisdom with which the Banu Musa were associated, because these devices differ from the others (which are, for the most part, numerous permutations in the design of so-called “assassin’s teapots,” a phrase which the thesis uses independently). On that ground, Hill is prepared to conclude that the final quarter of the Banu Musa’s original work was lost, but that its gaping lacuna was repopulated with unoriginal devices by a later cohort of intellectuals and scribes who were interested in *hiyal*, “ingenious devices,” the Banu Musa’s subject matter. For this thesis’ purposes, this point is irrelevant. Even if Hill’s conclusion is correct, the final twenty-five devices are obviously of early or high medieval vintage, easily antedating the late Middle Ages, and are therefore germane to the thesis’ topic, whatever their provenance. Returning to the markup, this instance’s location was the municipality of Baghdad, in the principality of the ‘Abbasid Caliphate. Provided that this instance did originate with the Banu Musa, the principal patron responsible for this instance’s presence in the historical record would be the Caliph al-Mutawakkil, and it would have come into existence as a design or object as of the year 850, with that date being an approximation, and with the year 862 being a better approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it

³¹⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, the work of Ahmad and his brothers, the sons of Musa bin Shakir together called the Banu Musa, the *Book of Ingenious Devices* in Hill’s edition, pages 208---209, which was written under the patronage of the Caliph al-Mutawakkil in Baghdad, in the Abbasid Caliphate, in the year 850. That date of composition is an approximation. The thesis’ working notes do not record any other primary or secondary sources for this instance, as it was not discussed by any other consulted authors. “Ibidem” has not been used for this instance’s primary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct physical objects.

**Kang Type 003, Instance 262 of 295, Cumulative Instance 318 of 409:
The Banu Musa's Eighty-Third Model.**

partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations;

**Kang Type 003, Instance 263 of 295, Cumulative Instance 319 of 409:
The Banu Musa's Eighty -Fourth Model.³¹⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic humanoid of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a basin. This instance’s principal designers and builders are recorded in the thesis’ working notes as Ahmad, Muhammad, and al-Hasan, the three sons of Musa bin Shakir called the Banu Musa, as their work, the *Book of Ingenious Devices*, is the treatise in which this instance appears; however, Donald R. Hill, the translator of that work into English, opines that approximately the final twenty-five of the one hundred devices which it presents, or the last quarter of its contents, likely do not originate with the Banu Musa themselves, but are later interpolations introduced by unknown persons, and perhaps the school of the House of Wisdom with which the Banu Musa were associated, because these devices differ from the others (which are, for the most part, numerous permutations in the design of so-called “assassin’s teapots,” a phrase which the thesis uses independently). On that ground, Hill is prepared to conclude that the final quarter of the Banu Musa’s original work was lost, but that its gaping lacuna was repopulated with unoriginal devices by a later cohort of intellectuals and scribes who were interested in *hiyal*, “ingenious devices,” the Banu Musa’s subject matter. For this thesis’ purposes, this point is irrelevant. Even if Hill’s conclusion is correct, the final twenty-five devices are obviously of early or high medieval vintage, easily antedating the late Middle Ages, and are therefore germane to the thesis’ topic, whatever their provenance. Returning to the markup, this instance’s location was the municipality of Baghdad, in the principality of the ‘Abbasid Caliphate. Provided that this instance did originate with the Banu Musa, the principal patron responsible for this instance’s presence in the historical record would be the Caliph al-Mutawakkil, and it would have come into existence as a design or object as of the year 850, with that date being an approximation, and with the year 862 being a better approximation. With respect to the model proposed by this thesis,

³¹⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, the work of Ahmad and his brothers, the sons of Musa bin Shakir together called the Banu Musa, the *Book of Ingenious Devices* in Hill’s edition, pages 210---211, which was written under the patronage of the Caliph al-Mutawakkil in Baghdad, in the Abbasid Caliphate, in the year 850. That date of composition is an approximation. The thesis’ working notes do not record any other primary or secondary sources for this instance, as it was not discussed by any other consulted authors. “Ibidem” has not been used for this instance’s primary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct physical objects.

**Kang Type 003, Instance 263 of 295, Cumulative Instance 319 of 409:
The Banu Musa's Eighty -Fourth Model.**

which is an elaboration of Kang's typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 264 of 295, Cumulative Instance 320 of 409:
The Banu Musa's Eighty-Fifth Model.³²⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a male goat. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a basin. This instance’s principal designers and builders are recorded in the thesis’ working notes as Ahmad, Muhammad, and al-Hasan, the three sons of Musa bin Shakir called the Banu Musa, as their work, the *Book of Ingenious Devices*, is the treatise in which this instance appears; however, Donald R. Hill, the translator of that work into English, opines that approximately the final twenty-five of the one hundred devices which it presents, or the last quarter of its contents, likely do not originate with the Banu Musa themselves, but are later interpolations introduced by unknown persons, and perhaps the school of the House of Wisdom with which the Banu Musa were associated, because these devices differ from the others (which are, for the most part, numerous permutations in the design of so-called “assassin’s teapots,” a phrase which the thesis uses independently). On that ground, Hill is prepared to conclude that the final quarter of the Banu Musa’s original work was lost, but that its gaping lacuna was repopulated with unoriginal devices by a later cohort of intellectuals and scribes who were interested in *hiyal*, “ingenious devices,” the Banu Musa’s subject matter. For this thesis’ purposes, this point is irrelevant. Even if Hill’s conclusion is correct, the final twenty-five devices are obviously of early or high medieval vintage, easily antedating the late Middle Ages, and are therefore germane to the thesis’ topic, whatever their provenance. Returning to the markup, this instance’s location was the municipality of Baghdad, in the principality of the ‘Abbasid Caliphate. Provided that this instance did originate with the Banu Musa, the principal patron responsible for this instance’s presence in the historical record would be the Caliph al-Mutawakkil, and it would have come into existence as a design or object as of the year 850, with that date being an approximation, and with the year 862 being a better approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it

³²⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, the work of Ahmad and his brothers, the sons of Musa bin Shakir together called the Banu Musa, the *Book of Ingenious Devices* in Hill’s edition, pages 212---213, which was written under the patronage of the Caliph al-Mutawakkil in Baghdad, in the Abbasid Caliphate, in the year 850. That date of composition is an approximation. The thesis’ working notes do not record any other primary or secondary sources for this instance, as it was not discussed by any other consulted authors. “Ibidem” has not been used for this instance’s primary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct physical objects.

**Kang Type 003, Instance 264 of 295, Cumulative Instance 320 of 409:
The Banu Musa's Eighty-Fifth Model.**

partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 265 of 295, Cumulative Instance 321 of 409:
The Banu Musa's Eighty-Sixth Model.³²¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic cat of unknown or unspecified gender (the thesis recalls that this instance’s illustration in its source matter was so abstracted, or less charitably, so poor, that it was barely recognizable as a feline, or indeed, any animal, and for that reason, it was apparently spared the censorious defacement which was applied to most of the other illustrations of figural automata). As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a basin. This instance’s principal designers and builders are recorded in the thesis’ working notes as Ahmad, Muhammad, and al-Hasan, the three sons of Musa bin Shakir called the Banu Musa, as their work, the *Book of Ingenious Devices*, is the treatise in which this instance appears; however, Donald R. Hill, the translator of that work into English, opines that approximately the final twenty-five of the one hundred devices which it presents, or the last quarter of its contents, likely do not originate with the Banu Musa themselves, but are later interpolations introduced by unknown persons, and perhaps the school of the House of Wisdom with which the Banu Musa were associated, because these devices differ from the others (which are, for the most part, numerous permutations in the design of so-called “assassin’s teapots,” a phrase which the thesis uses independently). On that ground, Hill is prepared to conclude that the final quarter of the Banu Musa’s original work was lost, but that its gaping lacuna was repopulated with unoriginal devices by a later cohort of intellectuals and scribes who were interested in *hiyal*, “ingenious devices,” the Banu Musa’s subject matter. For this thesis’ purposes, this point is irrelevant. Even if Hill’s conclusion is correct, the final twenty-five devices are obviously of early or high medieval vintage, easily antedating the late Middle Ages, and are therefore germane to the thesis’ topic, whatever their provenance. Returning to the markup, this instance’s location was the municipality of Baghdad, in the principality of the ‘Abbasid Caliphate. Provided that this instance did originate with the Banu Musa, the principal patron responsible for this instance’s presence in the historical record would

³²¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, the work of Ahmad and his brothers, the sons of Musa bin Shakir together called the Banu Musa, the *Book of Ingenious Devices* in Hill’s edition, pages 214---215, which was written under the patronage of the Caliph al-Mutawakkil in Baghdad, in the Abbasid Caliphate, in the year 850. That date of composition is an approximation. The thesis’ working notes do not record any other primary or secondary sources for this instance, as it was not discussed by any other consulted authors. “Ibidem” has not been used for this instance’s primary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct physical objects.

**Kang Type 003, Instance 265 of 295, Cumulative Instance 321 of 409:
The Banu Musa's Eighty-Sixth Model.**

be the Caliph al-Mutawakkil, and it would have come into existence as a design or object as of the year 850, with that date being an approximation, and with the year 862 being a better approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 266 of 295, Cumulative Instance 322 of 409:
The Banu Musa's Eighty-Seventh Model.³²²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the large scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of a horned bull and a gazelle. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a basin. This instance’s principal designers and builders are recorded in the thesis’ working notes as Ahmad, Muhammad, and al-Hasan, the three sons of Musa bin Shakir called the Banu Musa, as their work, the *Book of Ingenious Devices*, is the treatise in which this instance appears; however, Donald R. Hill, the translator of that work into English, opines that approximately the final twenty-five of the one hundred devices which it presents, or the last quarter of its contents, likely do not originate with the Banu Musa themselves, but are later interpolations introduced by unknown persons, and perhaps the school of the House of Wisdom with which the Banu Musa were associated, because these devices differ from the others (which are, for the most part, numerous permutations in the design of so-called “assassin’s teapots,” a phrase which the thesis uses independently). On that ground, Hill is prepared to conclude that the final quarter of the Banu Musa’s original work was lost, but that its gaping lacuna was repopulated with unoriginal devices by a later cohort of intellectuals and scribes who were interested in *hiyal*, “ingenious devices,” the Banu Musa’s subject matter. For this thesis’ purposes, this point is irrelevant. Even if Hill’s conclusion is correct, the final twenty-five devices are obviously of early or high medieval vintage, easily antedating the late Middle Ages, and are therefore germane to the thesis’ topic, whatever their provenance. Returning to the markup, this instance’s location was the municipality of Baghdad, in the principality of the ‘Abbasid Caliphate. Provided that this instance did originate with the Banu Musa, the principal patron responsible for this instance’s presence in the historical record would be the Caliph al-Mutawakkil, and it would have come into existence as a design or object as of the year 850, with that date being an approximation, and with the year 862 being a better approximation. With respect to the model proposed by this thesis,

³²² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, the work of Ahmad and his brothers, the sons of Musa bin Shakir together called the Banu Musa, the *Book of Ingenious Devices* in Hill’s edition, pages 216---217, which was written under the patronage of the Caliph al-Mutawakkil in Baghdad, in the Abbasid Caliphate, in the year 850. That date of composition is an approximation. The thesis’ working notes do not record any other primary or secondary sources for this instance, as it was not discussed by any other consulted authors. “Ibidem” has not been used for this instance’s primary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct physical objects.

**Kang Type 003, Instance 266 of 295, Cumulative Instance 322 of 409:
The Banu Musa's Eighty-Seventh Model.**

which is an elaboration of Kang's typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 267 of 295, Cumulative Instance 323 of 409:
The Banu Musa's Ninety-Seventh Model.³²³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic bird. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a lamp. This instance’s principal designers and builders are recorded in the thesis’ working notes as Ahmad, Muhammad, and al-Hasan, the three sons of Musa bin Shakir called the Banu Musa, as their work, the *Book of Ingenious Devices*, is the treatise in which this instance appears; however, Donald R. Hill, the translator of that work into English, opines that approximately the final twenty-five of the one hundred devices which it presents, or the last quarter of its contents, likely do not originate with the Banu Musa themselves, but are later interpolations introduced by unknown persons, and perhaps the school of the House of Wisdom with which the Banu Musa were associated, because these devices differ from the others (which are, for the most part, numerous permutations in the design of so-called “assassin’s teapots,” a phrase which the thesis uses independently). On that ground, Hill is prepared to conclude that the final quarter of the Banu Musa’s original work was lost, but that its gaping lacuna was repopulated with unoriginal devices by a later cohort of intellectuals and scribes who were interested in *hiyal*, “ingenious devices,” the Banu Musa’s subject matter. For this thesis’ purposes, this point is irrelevant. Even if Hill’s conclusion is correct, the final twenty-five devices are obviously of early or high medieval vintage, easily antedating the late Middle Ages, and are therefore germane to the thesis’ topic, whatever their provenance. Returning to the markup, this instance’s location was the municipality of Baghdad, in the principality of the ‘Abbasid Caliphate. Provided that this instance did originate with the Banu Musa, the principal patron responsible for this instance’s presence in the historical record would be the Caliph al-Mutawakkil, and it would have come into existence as a design or object as of the year 850, with that date being an approximation, and with the year 862 being a better approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it

³²³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, the work of Ahmad and his brothers, the sons of Musa bin Shakir together called the Banu Musa, the *Book of Ingenious Devices* in Hill’s edition, pages 236---237, which was written under the patronage of the Caliph al-Mutawakkil in Baghdad, in the Abbasid Caliphate, in the year 850. That date of composition is an approximation. The thesis’ working notes do not record any other primary or secondary sources for this instance, as it was not discussed by any other consulted authors. “Ibidem” has not been used for this instance’s primary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct physical objects.

**Kang Type 003, Instance 267 of 295, Cumulative Instance 323 of 409:
The Banu Musa's Ninety-Seventh Model.**

partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 268 of 295, Cumulative Instance 324 of 409:
An Additional Model Ascribed to the Banu Musa in Manuscript *Or. 168*,
Library of Leiden University.³²⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic bird. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a basin. This instance’s principal designers and builders are recorded in the thesis’ working notes as Ahmad, Muhammad, and al-Hasan, the three sons of Musa bin Shakir called the Banu Musa, as their work, the *Book of Ingenious Devices*, is the treatise in which this instance appears. Its location was the municipality of Baghdad, in the principality of the ‘Abbasid Caliphate. Provided that this instance did originate with the Banu Musa, the principal patron responsible for this instance’s presence in the historical record would be the Caliph al-Mutawakkil, and it would have come into existence as a design or object as of the year 850, with that date being an approximation, and with the year 862 being a better approximation. As discussed by Donald R. Hill, editor and

³²⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, the work of Ahmad and his brothers, the sons of Musa bin Shakir together called the Banu Musa, the *Book of Ingenious Devices* in Hill’s edition, pages 248---249 (which are in an appendix included by Donald R. Hill, the editor and translator of the works of the Banu Musa and their likely school), which was written under the patronage of the Caliph al-Mutawakkil in Baghdad, in the Abbasid Caliphate, in the year 850. That date of composition is an approximation. The thesis’ working notes do not record any other primary or secondary sources for this instance, as it was not discussed by any other consulted authors. “Ibidem” has not been used for this instance’s primary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct physical objects. Now that this thesis’ presentation of automata from the *Book of Ingenious Devices* which were not noted by other authors has concluded, it is worth mentioning that in Hill’s assessment, approximately the final quarter or final fifth of models contained in his edition were not designed by the Banu Musa themselves, but by their followers and/or peers, either at the House of Wisdom in Baghdad, with which the Banu Musa were associated, or otherwise, and perhaps in succeeding generations. This by no means places the “high-numbered” models (the thesis’ phrase) beyond the scope of the thesis’ period of interest, and for the thesis’ purposes, this assertion by Hill is essentially irrelevant. Whether or not the Banu Musa personally designed these models, they were and remain intellectual outputs of the civilization of medieval Islam. In the thesis’ opinion, the question of whether the “high-numbered” models are later insertions to fill space left after the loss of other models original to the Banu Musa’s early treatise is akin to the debate in art-historical circles as to whether a given painting is, for example, the creation of a European old master or of his students, and since this thesis is not necessarily concerned with questions of detailed provenance for items under Kang’s third type, provided they are identifiable material-cultural objects or intellectual-historical items which unquestionably antedate January 1, 1651, concern over whether the “high-numbered” models are authentic designs by the Banu Musa has no bearing on the inclusion or exclusion of these designs in this section, for they are, in the thesis’ opinion, quite medieval.

**Kang Type 003, Instance 268 of 295, Cumulative Instance 324 of 409:
An Additional Model Ascribed to the Banu Musa in Manuscript *Or. 168*,
Library of Leiden University.**

translator of the consulted version of the Banu Musa's treatise, this instance is present in one of the manuscript copies of the *Book of Ingenious Devices* which he used to prepare his critical edition of the same (specifically, Manuscript *Or. 168*, Library of Leiden University), but its presence in that copy was inconsistent with the texts of the other copies. Accordingly, Hill included this device as an appendix in his edition to avoid omitting one of the devices identified with the Banu Musa, and by so doing, he preserved the numbering scheme for the one hundred devices presented by the treatise's main text, with this numbering scheme being the one Hill, in his learned opinion, found most correct after evaluating all the manuscript copies, which contained occasional discrepancies as the result of these manuscripts' transmission. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 269 of 295, Cumulative Instance 325 of 409:
The Swans at the Medici Villa of Pratolino.³²⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a swan of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a wall niche. This instance’s principal designer and builder was Bernardo Buontalenti. Its location was the municipality of Vaglia, in the principality of the Grand Duchy of Tuscany. The principal patron responsible for this instance’s presence in the historical record was Grand Duke Francesco I de Medici. This instance came into existence as a design or object as of the year 1581, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³²⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, page 2. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists; readers are asked to accept, as did the thesis’ author, that Filson’s identification and characterization of this instance are accurate, and are referred to her work if any information it contains was erroneously neglected. In the belief that no instance of pre-Modern or Early Modern automata located in the course of his research should be omitted from this catalog, the thesis’ author has duly included the automaton swans of Pratolino noted by Doctor Filson, a published historian who specializes in this thesis’ topic of interest.

**Kang Type 003, Instance 270 of 295, Cumulative Instance 326 of 409:
The Automata of the Apennine Colossus at the Medici Villa of Pratolino.³²⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of an ancient Greek hero, a dragon of unknown or unspecified gender, a male shepherd, and a sheep of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “hero,” “god,” and “monster” by the thesis, as at least one respectively depicted a sympathetic individual celebrated for doing good deeds, at least one depicted a divine being, and at least one depicted a fantastical creature. On review, some of these automaton figures were assigned individual character names in their source material, “Hercules” and “Ladon.” The setting in which these figures appeared was a wall niche. This instance’s principal designer and builder was Bernardo Buontalenti. Its location was the municipality of Vaglia, in the principality of the Grand Duchy of Tuscany. The principal patron responsible for this instance’s presence in the historical record was Grand Duke Francesco I de Medici. This instance came into existence as a design or object as of the year 1581, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be

³²⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, pages 6, 40, and 56. For this instance’s primary source matter, see the description of the Medici villa at Pratolino by Giovanni Guerra, which was written by Giovanni Guerra under the patronage of Pope Clement VIII in the year 1598. That date of composition is an approximation, and this source has been noted elsewhere in the present section.

**Kang Type 003, Instance 270 of 295, Cumulative Instance 326 of 409:
The Automata of the Apennine Colossus at the Medici Villa of Pratolino.**

indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 271 of 295, Cumulative Instance 327 of 409:
Aleotti's Heronic Scene.³²⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figures of an ancient Greek hero and a dragon of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “hero,” “god,” and “monster” by the thesis, as at least one respectively depicted a sympathetic individual celebrated for doing good deeds, at least one depicted a divine being, and at least one depicted a fantastical creature. On review, these automaton figures were assigned individual character names in their source material, “Hercules” and “Ladon.” The setting in which these figures appeared is not applicable, as this instance was freestanding. This instance’s principal designer was Giovan Battista Aleotti. Its location was the municipality of Ferrara, in the principality of the Duchy of Ferrara. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the year 1589, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of

³²⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, page 131. For this instance’s primary source matter, see *Delli Spiritali de Herone*, which was written by Giovan Battista Aleotti and published by Vittorio Baldini at Ferrara, in the Duchy of Ferrara, in the year 1589. That date of publication is not an approximation.

**Kang Type 003, Instance 271 of 295, Cumulative Instance 327 of 409:
Aleotti's Heronic Scene.**

Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 272 of 295, Cumulative Instance 328 of 409:
Harun al-Rashid's Blackbirds.³²⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a blackbird of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a garden. This instance’s principal designer and builder, and its location at the levels of municipality and principality, are not recorded in the thesis’ working notes. The principal patron responsible for this instance’s presence in the historical record was the Caliph Harun al-Rashid. While no specific dating information is recorded for this instance in the thesis’ working notes, the thesis is disposed to believe, based upon the contents of the considered sources, that this instance came into existence as a design or object subsequent to the year 450 and prior to the year 1651, thus antedating the chronological endpoint imposed by the thesis and having germaneness to the study of pre-Modern and Early Modern history. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³²⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, pages 158---159. While no primary source matter is recorded for this instance by the thesis’ working notes, these notes do record that this instance appeared in the Abbasid Caliphate and was created under the patronage of the Caliph Harun al-Rashid. For the specific classical technology which undergirds this instance, see Bur, “T5: Singing Birds,” pages 155—165, in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.”

**Kang Type 003, Instance 273 of 295, Cumulative Instance 329 of 409:
The Demon Formerly at the Musee de Cluny, Paris.³²⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was pneumatic. It contained the figure of a presumptively-male demon. As described in the consulted sources, this instance’s figure partook of the form termed “devil” by the thesis, as it depicted a hellish being. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as this instance was freestanding. This instance’s principal designer and builder, location at the levels of municipality and principality (apart from its historical presence in a museum collection), and patron are not recorded in the thesis’ working notes. This instance was destroyed sometime after the year 1900, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³²⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, page 171. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists; readers are asked to accept, as did the thesis’ author, that Filson’s identification and characterization of this instance are accurate, and are referred to her work if any information it contains was erroneously neglected. In the belief that no instance of pre-Modern or Early Modern automata located in the course of his research should be omitted from this catalog, the thesis’ author has duly included the automaton demon formerly of the Musee de Cluny noted by Doctor Filson, a published historian who specializes in this thesis’ topic of interest.

**Kang Type 003, Instance 274 of 295, Cumulative Instance 330 of 409:
Fontana's Fish.³³⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was rocket propulsion. It contained the figure of a generic fish of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder was Giovanni Fontana. Its location was the municipality of Venice, in the principality of the Republic of Venice. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. Like Fontana’s other automata, this instance came into existence as a design or object as of the years 1420---1430, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fourth current of thought, as its reputed or actual existence led to identifiable

³³⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, pages 171 and 211. For this instance’s primary source matter, see *Bellicorum Instrumentorum Liber* (*Book of War Machines*), Cod. Icon. 242, Folio 37 Recto, which was written by Giovanni de Fontana at Venice, in the Republic of Venice, thereabout the years 1420---1430. That range of dates for this text’s composition is an approximation. While Filson is the only consulted author to identify the fish shown in the given primary source’s illustration as an automaton, there is no reason not to believe it was a figural, jet-propelled measuring and surveying device of the same kind as the comparable instances with which it is depicted, especially given the non-technicality and artistic license evident in all the facing illustrations from Fontana’s treatise. While it would certainly have been more difficult to operate a device of this kind on open water, it would not be impossible, provided either that the fish had some sort of hulled support platform or had a hull-like, piscine underside. To account for water resistance, as opposed to air or land resistance, Fontana would have had to vary the amount of gunpowder used to fuel the fish’s above-water jet propulsion system. That would ensure uniformity for this rather eccentric means of gauging physical distances when measurements were taken on the water with the fish automaton, in the air with the bird automaton, and on land with the rabbit automaton, with each of these automata being fired with different amounts of gunpowder calibrated specifically for the physical conditions of their respective settings (barring still further variables like the unevenness or heterogenous compositions of terrain or surface water, or even wave action). Of course, Fontana, and with him the other Europeans of the fifteenth century, may not have noticed or much cared that, with the same amount of gunpowder, these three automata would not have afforded a uniform measurement of distance within the distinct settings in which each was designed to be deployed; and this nonuniformity may not even have impacted the utility of these automata, so long as their user knew the differing distances each automaton would travel in its setting when fired with the same gunpowder charge. To determine if Fontana anticipated this outcome and either acknowledged or made provisions for the same, readers are referred to the text of his work, which the thesis has only reviewed as a primary source to the degree that it has been referenced by several of the consulted secondary authors; this point lends itself to further research.

**Kang Type 003, Instance 274 of 295, Cumulative Instance 330 of 409:
Fontana's Fish.**

persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 275 of 295, Cumulative Instance 331 of 409:
The Birds of the Visconti Gardens at Pavia.³³¹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic bird of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a garden. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Pavia, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are only recorded in the thesis’ working notes as members or associates of the aristocratic House of Visconti. This instance came into existence as a design or object after the year 1359, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³³¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, page 176. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists; readers are asked to accept, as did the thesis’ author, that Filson’s identification and characterization of this instance are accurate, and are referred to her work if any information it contains was erroneously neglected. In the belief that no instance of pre-Modern or Early Modern automata located in the course of his research should be omitted from this catalog, the thesis’ author has duly included the automaton birds formerly at Pavia noted by Doctor Filson, a published historian who specializes in this thesis’ topic of interest. For the specific classical technology which undergirds this instance, see Bur, “T5: Singing Birds,” pages 155—165, in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.”

**Kang Type 003, Instance 276 of 295, Cumulative Instance 332 of 409:
The Birds of the Visconti Gardens at Milan.³³²**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic bird of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a garden. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Milan, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are only recorded in the thesis’ working notes as members or associates of the aristocratic House of Visconti. This instance came into existence as a design or object after the year 1300, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³³² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, page 176. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists; readers are asked to accept, as did the thesis’ author, that Filson’s identification and characterization of this instance are accurate, and are referred to her work if any information it contains was erroneously neglected. In the belief that no instance of pre-Modern or Early Modern automata located in the course of his research should be omitted from this catalog, the thesis’ author has duly included the automaton birds formerly at Milan noted by Doctor Filson, a published historian who specializes in this thesis’ topic of interest. For the specific classical technology which undergirds this instance, see Bur, “T5: Singing Birds,” pages 155—165, in her work, “Mechanical Miracles: Automata in Ancient Greek Religion.” “Ibidem” has not been used for this instance’s secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct physical objects.

**Kang Type 003, Instance 277 of 295, Cumulative Instance 333 of 409:
The Other Automata at Hesdin.³³³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source was hydraulic. It contained the figures of an elephant of unknown or unspecified gender, a male goat, and a stag. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a garden. This instance’s principal designer and builder are not recorded in the thesis’ working notes, but may have been one or more of the same individuals or representatives of the multi-generational families of technicians which are associated with the many prior instances of automata hereinbefore identified with the noble estate at Hesdin. Its location was the municipality of Hesdin, in the principality of the Kingdom of France. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes, but as with the designer(s) and builder(s) of this instance, these patrons may or may not have been those who caused the many other automata at Hesdin to be built, maintained, and re-built over the course of some centuries. This instance came into existence as a design or object after the year 1295, with that date being an approximation, and was destroyed before the year 1554, with that date also being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered

³³³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, page 178; Jessica Riskin’s “Machines in the Garden,” page 32; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 158, 159; and Merriam Sherwood’s “Magic and Mechanics in Medieval Fiction,” page 590. The thesis’ working notes do not record primary source matter for this instance, but its primary source matter is presumably equivalent to that elsewhere noted in this section for the numerous other instances of pre-Modern and Early Modern automata associated with the garden park at Hesdin. Readers are referred to the footnotes corresponding to these prior instances for rehearsals of the documentary sources which attest Hesdin’s automata. What have here been termed the “other” automata at Hesdin seemingly date from that park’s medieval era.

**Kang Type 003, Instance 277 of 295, Cumulative Instance 333 of 409:
The Other Automata at Hesdin.**

periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 278 of 295, Cumulative Instance 334 of 409:
Schlottheim's Second Mechanized Galleon Nef at the Kunsthistorisches
Museum, Vienna.**³³⁴

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a male musician (a drummer) and another male musician (a trumpeter). As described in the consulted sources, this instance’s figures partook of the form termed “musician” by the thesis, as they produced or appeared to produce music. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is not applicable, as it (a galleon nef) was freestanding and mobile. This instance’s principal designer and builder was Hans Schlottheim of Augsburg. Its location was the municipality of Augsburg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was the Holy Roman Emperor Rudolf II. This instance came into existence as a design or object as of the year 1585, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or

³³⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, pages 181 and 215; and Wolfram Koeppe’s essay “Clocks and Automata: The Art of Technological Development” in his edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 202, where it is obliquely referenced, and where a direct reference is made to Figure 11 on page 24 of that exhibition guide, which shows a color photograph of the nef. Due to limitations of time, money, and energy, only information from the subsection of Koeppe’s edited exhibition guide in which that essay appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. As an extant material-cultural object, this device itself constitutes primary source matter. In the collections of the Kunsthistorisches Museum in Vienna, it is accessioned or otherwise identified under the numbers “87073,” and as of this writing, its webpage may be retrieved on that institution’s website by conducting a search using that numeric identifier. It should be noted that this instance is substantially intact and in working condition, unlike the fragmentary automaton-bearing galleon at the British Museum; these two galleons have been cataloged separately in this section because, despite being frequently confused, they are distinct works by the same maker, Hans Schlottheim, and are separately housed, the one in an Austrian museum and the other in a British museum. Schlottheim created this instance, the one at the Austrian museum, at Augsburg, in the Holy Roman Empire, in the year 1585, working under the patronage of the Holy Roman Emperor Rudolf II. That date of assembly is not an approximation.

**Kang Type 003, Instance 278 of 295, Cumulative Instance 334 of 409:
Schlottheim's Second Mechanized Galleon Nef at the Kunsthistorisches
Museum, Vienna.**

conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 279 of 295, Cumulative Instance 335 of 409:
The Automata of the Imperial Fountain (*Kaiserbrunnen*) at Prague, First
Grouping, Earth.³³⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of an ancient Roman goddess. As described in the consulted sources, this instance’s figures partook of the form termed “god” by the thesis, as they depicted divine beings. On review, these automaton figures were assigned individual character names in their source material, “Cybele;” the “Naiad of the Danube;” the “Naiad of the Po;” the “Naiad of the Vistula;” and the “Naiad of the Elbe.” Note that these latter four naiads are all distinct from the deity Cybele, and that these four together represent the so-called “four rivers of Europe” (see this instance’s footnote, with its citation and explanation, for further information). The setting in which these figures appeared was a fountain. This instance’s principal designer was the Court Philologist Jacopo Strada, and its principal builders were Wenzel Jamnitzer and Johann Gregor van der Scharlt. Its location was the municipality of Prague, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record were the Holy Roman

³³⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, pages 181---182. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists; readers are asked to accept, as did the thesis’ author, that Filson’s identification and characterization of this instance are accurate, and are referred to her work if any information it contains was erroneously neglected. In the belief that no instance of pre-Modern or Early Modern automata located in the course of his research should be omitted from this catalog, the thesis’ author has duly included this instance, a subgrouping of automata from the elaborate *Kaiserbrunnen* noted by Doctor Filson, who is a published historian specializing in this thesis’ topic of interest. It should furthermore be noted that, in Filson’s work, she describes how this instance contained allegorical automaton figures representing the “four rivers of Europe;” a partial quote from the cited pages is “...an entablature with animated tableaux: Earth, presided over by Cybele with mountains, mines, a forge, a stamping-mill, flowers, metals, and the four rivers of Europe powering their own millwheels and featuring their own naiad...” Because Filson does not specify which rivers, and therefore which automaton naiads, comprise the “four rivers of Europe,” the thesis’ second reader, Doctor Katherine Clark-Walter, was asked by the author which rivers would have constituted this group, and she, in turn, posed this same question to her professional colleague, Doctor Marjorie A. Roth, a musicologist, expert in the history of music and, as of this writing, interim program director for the School of Music at Nazareth College in the environs of Rochester, New York. The author’s identifications of the naiads in the thesis’ presentation of this instance were determined after joint consultations between Doctors Clark-Walter and Roth, which Doctor Clark-Walter then relayed to the author, and which led him to select the chosen rivers as the most probable allegorical identities of the automaton naiads for his purposes. The author is very grateful to Doctors Clark-Walter and Roth for the impartation of their learned opinions with respect to the quandary of naming Filson’s “four rivers of Europe,” which is by no means a slight to Filson, the only known author to name this instance, and thus, in the thesis’ opinion, a person of equally estimable erudition.

**Kang Type 003, Instance 279 of 295, Cumulative Instance 335 of 409:
The Automata of the Imperial Fountain (*Kaiserbrunnen*) at Prague, First
Grouping, Earth.**

Emperor Maximilian II and the Holy Roman Emperor Rudolf II. This instance came into existence as a design or object as of the year 1585, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 280 of 295, Cumulative Instance 336 of 409:
The Automata of the Imperial Fountain (*Kaiserbrunnen*) at Prague, Second
Grouping, Water.**³³⁶

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of an ancient Roman god and a seahorse of unknown or unspecified gender. As described in the consulted sources, one of this instance’s figures partook of the form termed “god” by the thesis, as it depicted a divine being. On review, one of these automaton figures was assigned an individual character name in its source material, “Neptune.” The setting in which these figures appeared was a fountain. This instance’s principal designer was the Court Philologist Jacopo Strada, and its principal builders were Wenzel Jamnitzer and Johann Gregor van der Schardt. Its location was the municipality of Prague, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record were the Holy Roman Emperor Maximilian II and the Holy Roman Emperor Rudolf II. This instance came into existence as a design or object as of the year 1585, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory

³³⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, pages 181---182. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists; readers are asked to accept, as did the thesis’ author, that Filson’s identification and characterization of this instance are accurate, and are referred to her work if any information it contains was erroneously neglected. In the belief that no instance of pre-Modern or Early Modern automata located in the course of his research should be omitted from this catalog, the thesis’ author has duly included this instance, a subgrouping of automata from the elaborate *Kaiserbrunnen* noted by Doctor Filson, who is a published historian specializing in this thesis’ topic of interest. “Ibidem” has not been used for this instance’s secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct physical objects.

**Kang Type 003, Instance 280 of 295, Cumulative Instance 336 of 409:
The Automata of the Imperial Fountain (*Kaiserbrunnen*) at Prague, Second
Grouping, Water.**

association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 281 of 295, Cumulative Instance 337 of 409:
The Automata of the Imperial Fountain (*Kaiserbrunnen*) at Prague, Third
Grouping, Air.³³⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of an ancient Roman god, an angel of unknown or unspecified gender, and an eagle of unknown or unspecified gender. As described in the consulted sources, some of this instance’s figures partook of the forms termed “god” and “angel” by the thesis, as at least one depicted a divine being, and at least one depicted a heavenly being. On review, some of these automaton figures were assigned an individual character name in their source material, “Mercury,” “Boreas,” “Eurus,” “Notos,” and “Zephyrus,” with the latter four being the deities which together comprise the Four Winds. The setting in which these figures appeared was a fountain. This instance’s principal designer was the Court Philologist Jacopo Strada, and its principal builders were Wenzel Jamnitzer and Johann Gregor van der Scharidt. Its location was the municipality of Prague, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record were the Holy Roman Emperor Maximilian II and the Holy Roman Emperor Rudolf II. This instance came into existence as a design or object as of the year 1585, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to

³³⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, pages 181---182. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists; readers are asked to accept, as did the thesis’ author, that Filson’s identification and characterization of this instance are accurate, and are referred to her work if any information it contains was erroneously neglected. In the belief that no instance of pre-Modern or Early Modern automata located in the course of his research should be omitted from this catalog, the thesis’ author has duly included this instance, a subgrouping of automata from the elaborate *Kaiserbrunnen* noted by Doctor Filson, who is a published historian specializing in this thesis’ topic of interest. “Ibidem” has not been used for this instance’s secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct physical objects.

**Kang Type 003, Instance 281 of 295, Cumulative Instance 337 of 409:
The Automata of the Imperial Fountain (*Kaiserbrunnen*) at Prague, Third
Grouping, Air.**

be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 282 of 295, Cumulative Instance 338 of 409:
The Automata of the Imperial Fountain (*Kaiserbrunnen*) at Prague, Fourth
Grouping, Fire.³³⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of an ancient Roman god and an eagle of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “god” and “ruler” by the thesis, as one depicted a divine being, and the other, the eagle, is construed as a symbolic representation of the Holy Roman Empire’s dominion per the analysis offered in a consulted source (see the below footnote for further information). On review, one of these automaton figures was assigned an individual character name in its source material, “Jupiter.” The setting in which these figures appeared was a fountain. This instance’s principal designer was the Court Philologist Jacopo Strada, and its principal builders were Wenzel Jamnitzer and Johann Gregor van der Schardt. Its location was the municipality of Prague, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record were the Holy Roman Emperor Maximilian II and the Holy Roman Emperor Rudolf II. This instance came into existence as a design or object as of the year 1585, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to

³³⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, pages 181---182. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists; readers are asked to accept, as did the thesis’ author, that Filson’s identification and characterization of this instance are accurate, and are referred to her work if any information it contains was erroneously neglected. In the belief that no instance of pre-Modern or Early Modern automata located in the course of his research should be omitted from this catalog, the thesis’ author has duly included this instance, a subgrouping of automata from the elaborate *Kaiserbrunnen* noted by Doctor Filson, who is a published historian specializing in this thesis’ topic of interest. “Ibidem” has not been used for this instance’s secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct physical objects.

**Kang Type 003, Instance 282 of 295, Cumulative Instance 338 of 409:
The Automata of the Imperial Fountain (*Kaiserbrunnen*) at Prague, Fourth
Grouping, Fire.**

be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 283 of 295, Cumulative Instance 339 of 409:
The Sufflator at the Kunsthistorisches Museum, Vienna.³³⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was pneumatic. It contained the figure of a generic man per Filson; while this instance is certainly humanoid, its gender is uncertain, as the Kunsthistorisches Museum is of this opinion that it instead contains the figure of a generic woman. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, for it was fashioned in bronze, and therefore had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location is only recorded in the thesis’ working notes as one of the regions of northern Italy, which would presumably be a locale no more southernly than the city of Siena. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the years 1100---1150, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³³⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, pages 199 and 217. This instance is extant and may itself be regarded as primary source matter; the Kunsthistorisches Museum at Vienna, Austria has collected it and maintains its dedicated webpage, which is retrievable using the numeric object identifier “91709.” While physically static, this instance, one of the few figural sufflators cataloged in the course of the thesis’ research, was designed to emit steam from its mouth when placed in a fire, therefore giving it either the semblance of a reaction suggestive of discomfort or of panic (labored breathing, the discharge of air in a display of frustration), or of helpfulness to the user, which is the likelier of these options in view of its friendly and agreeable countenance. The simulated act of blowing air from the mouth also recalls a mammalian biological function, aspiration. The thesis is of the opinion that sufflators constructed with humanoid or demi-humanoid figures, and which have this specific design, may be considered automata for its purposes and in accordance with its definitions. However, humanoid sufflators designed to discharge steam from other orifices, such as ears or penises, do not match the thesis’ definitions, as gas is not naturally expelled therefrom. If any humanoid sufflators should be found which shoot steam from their nostrils or anuses, these may be deemed automata by the thesis’ definitions.

**Kang Type 003, Instance 284 of 295, Cumulative Instance 340 of 409:
Della Porta's Automaton Army.³⁴⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was magnetic. It contained the figure of a male soldier. As described in the consulted sources, this instance’s figures partook of the form termed “death” by the thesis, as they depicted individuals whose occupation entailed the enactment of violent deeds intended to extinguish human life. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is not applicable, as this instance was freestanding. This instance’s principal designer and builder was Giambattista della Porta. Its location was the municipality of Naples, in the principality of the Kingdom of Naples. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This instance came into existence as a design or object before the year 1615, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

³⁴⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, page 252. No primary source matter is recorded for this instance by the thesis’ working notes, which does not necessitate the conclusion that no such primary source matter exists; readers are asked to accept, as did the thesis’ author, that Filson’s identification and characterization of this instance are accurate, and are referred to her work if any information it contains was erroneously neglected. In the belief that no instance of pre-Modern or Early Modern automata located in the course of his research should be omitted from this catalog, the thesis’ author has duly included this instance, a miniature army of soldier automata created by a famous Renaissance intellectual and noted by Doctor Filson, who is a published historian specializing in this thesis’ topic of interest.

**Kang Type 003, Instance 285 of 295, Cumulative Instance 341 of 409:
The Dove of Peace at the Church of Santa Maria Della Carmine, Florence.**³⁴¹

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was rocket propulsion. It contained the figure of a dove of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “god” by the thesis, as it depicted a divine being (in the theological model of Christian trinitarianism, the dove is a conventionalized representation of God the Holy Spirit, one of the triune and consubstantial identities of the monotheistic God, and is called the “Dove of Peace”). On review, this automaton figure was assigned an individual character name in its source material, “God the Holy Spirit.” The setting in which it appeared was a church. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Florence, in the principality of the Republic of Florence. The principal patrons responsible for this instance’s presence in the historical record were the members of the Confraternity of Saint Agnes, whose names are not individually known to this thesis. This instance came into existence as a design or object before the year 1471, with that date being an approximation, and was destroyed as of the year 1471, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or

³⁴¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nerida Newbigin’s “Performing Heaven in Fifteenth-Century Florence” in *Medieval Theater Performance*, pages 100---101 and 102 in that volume. For this instance’s primary source matter, see *Notizie Istoriche delle Chiesa Fiorentina*, Volume IX, which was produced by Giuseppe Richa under the patronage of the Jesuit order, the Society of Jesus, and published at Florence, in the Grand Duchy of Tuscany, in the year 1761. That date of publication is not an approximation. See also, as primary source matter, *MS Piccione 78*, Folio 5 Recto --- Verso, which was written in the year 1444. That date of composition is not an approximation. In that same manuscript, *MS Piccione 78*, readers should also see Folio 44 Verso, which was written in the year 1463. Since these folios are, in effect, dated entries, the given date of composition for the contents of this later page is likewise a non-approximation.

**Kang Type 003, Instance 285 of 295, Cumulative Instance 341 of 409:
The Dove of Peace at the Church of Santa Maria Della Carmine, Florence.**

as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 286 of 295, Cumulative Instance 342 of 409:
The Religious Figures at the Church of Santa Maria Della Carmine, Florence.**³⁴²

It is likely that this real-world instance of automata was “false” by the thesis’ definition, at least in part. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source combined rocket propulsion, which was used to produce an interesting effect involving the figures’ halos, with human intervention, which produced the figures’ gesticulations in the manner of large puppets. Because the thesis’ working notes did not allow for the assignation of multiple power sources, this instance’s power source was tracked as rocket propulsion for the thesis’ purposes. It contained the figure of a male saint and a female saint. As described in the consulted sources, this instance’s figures partook of the form termed “saint” by the thesis, as they depicted individuals recognized as saints by one or more Christian denominations. On review, these automaton figures were assigned individual character names in their source material, “The Twelve Apostles” (who, like “The Planetary Deities,” but unlike the Magi, are treated as an ensemble by the thesis, and who, as such, are not individually named to avoid tedious rehearsals) and “Mary, Mother of Jesus.” The setting in which these figures appeared was a church. This instance’s principal designer was the Treasurer Domenico di Lorenzo, who is recalled by the thesis to have held the title “Treasurer” in a capacity related to the church in which this instance appeared, with this church, Santa Maria Della Carmine, figuring in the title assigned to this instance for recordkeeping purposes. Its location was the municipality of Florence, in the principality of the Republic of Florence. The principal patrons responsible for this instance’s presence in the historical record were the members of the Confraternity of Saint Agnes, whose names are not individually known to this thesis. This instance came into existence as a design or object before the year 1471, with that date being an approximation, and was destroyed as of the year 1471, with that date not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between

³⁴² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nerida Newbigin’s “Performing Heaven in Fifteenth-Century Florence” in *Medieval Theater Performance*, pages 100---101, 102, and 105 in that volume. For this instance’s primary source matter, see *Notizie Istoriche delle Chiesa Fiorentina*, Volume IX, which was produced by Giuseppe Richa under the patronage of the Jesuit order, the Society of Jesus, and published at Florence, in the Grand Duchy of Tuscany, in the year 1761. That date of publication is not an approximation. See also, as primary source matter, *MS Piccione 57*, Folio 32 Recto, which was written in the year 1428. That date of composition is not an approximation.

**Kang Type 003, Instance 286 of 295, Cumulative Instance 342 of 409:
The Religious Figures at the Church of Santa Maria Della Carmine, Florence.**

automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 287 of 295, Cumulative Instance 343 of 409:
The Swans at Hesdin.³⁴³**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a swan of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a garden. This instance’s principal designer and builder are not recorded in the thesis’ working notes, but were presumably the same individual or individuals, or their descendants in succeeding generations, who have elsewhere been noted in these capacities for instances of automata at Hesdin, a site which prominently featured pre-Modern and Early Modern automata for hundreds of years. Its location was the municipality of Hesdin, in the principality of the Kingdom of France. As with the designer(s) and builder(s) of this instance, its principal patrons are not recorded in the thesis’ working notes, but would presumably be Robert II of Artois, his daughter, who was called Mahaut, or the Burgundians, such as Philip the Good, who undertook the restoration and enhancement of the estate at Hesdin in its later period of use. Accordingly, this instance came into existence as a design or object after the year 1295, with that date being an approximation, and was destroyed before the year 1554, with that date also being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of

³⁴³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 158---159. The thesis’ working notes do not record primary source matter for this instance, but its primary source matter is presumably equivalent to that elsewhere noted in this section for the numerous other instances of pre-Modern and Early Modern automata associated with the garden park at Hesdin. Readers are referred to the footnotes corresponding to these prior instances for rehearsals of the documentary sources which attest Hesdin’s automata. The automaton swans at Hesdin would seemingly date from that park’s Renaissance era, as they are presumably comparable to the automaton swans at Pratolino, and perhaps inspired the latter, as the park at Hesdin antedates that at Pratolino. While Pratolino’s swans were emplaced in wall niches, those at Hesdin could have similarly occupied niches in their garden setting; hedge niches, or even niches in outdoor garden walls, speculatively arise as potential positions wherein the Hesdin swans could have been situated.

**Kang Type 003, Instance 287 of 295, Cumulative Instance 343 of 409:
The Swans at Hesdin.**

Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 003, Instance 288 of 295, Cumulative Instance 344 of 409:
The Ovidian Automata at Somerset House.³⁴⁴**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source was hydraulic. It contained a humanoid figure (with an unspecified mythological subject) of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “musician” by the thesis, as it played or appeared to play an unknown musical instrument. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a fountain (which was within a grotto, and a grotto that was, in turn, within a garden – in this appendix, the thesis has striven, where possible, to provide the most specific descriptor for a given instance’s location, even in cases where more than one descriptor could be said to apply, and, by this practice, has made the lowest-level indications for all these locations). This instance’s principal designers were Salomon de Caus and Constantino de Servi, and its principal builder was Salomon de Caus. Its location was the municipality of London, in the principality of the Kingdom of England. The principal patron responsible for this instance’s presence in the historical record was Queen Anne, wife of King James VI and I, who was called Anne of Denmark. This instance came into existence as a design or object as of the years 1609---1612, with that date range not being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁴⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Scott Maisano’s “Infinite Gesture: Automata and the Emotions in Descartes and Shakespeare,” page 74, and that author’s matching endnote 41, which is on page 83 of the edited anthology in which his article appears, Jessica Riskin’s *Genesis Redux: Essays in the History and Philosophy of Artificial Life*. No primary source information for this instance is recorded by the thesis’ working notes, but as evidenced by the prior citation, its historical existence and details are not disputed by the scholarly community.

**Kang Type 003, Instance 289 of 295, Cumulative Instance 345 of 409:
 “The Emperor’s Monument Clock” (Koeppes Nomenclature).³⁴⁵**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of an emperor. As described in the consulted sources, this instance’s figure partook of the forms termed “ruler” and “thing of brass” by the thesis, as it depicted a member of the feudal aristocracy and had a brazen coloration. On review, this automaton figure was assigned an individual character name in its source material, “Holy Roman Emperor Charles V.” The setting in which this figure appeared was a chamber clock. This instance’s principal designer and builder was Wenzel Jamnitzer. Its location was the municipality of Nuremberg, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record is not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the years 1570---1585, if Jamnitzer’s death is taken as the terminal date, or 1570---1600 if, following Koeppes, Jamnitzer’s workshop is credited, with those date ranges both being approximations. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or “reclamation” of classical Greek and Roman civilizational achievements; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or

³⁴⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Wolfram Koeppes edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 224. Due to limitations of time, money, and energy, only information from the subsection of Koeppes edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. As an extant material-cultural object, this instance may itself be consulted as primary source matter, and according to the thesis’ working notes, it first appeared in the cities of South Germany (Koeppes speculatively places its origins in both Nuremberg and Augsburg), in the Holy Roman Empire, thereabout the years 1570---1585 or 1570---1600. Those ranges for its dates of assembly are approximations.

**Kang Type 003, Instance 289 of 295, Cumulative Instance 345 of 409:
“The Emperor’s Monument Clock” (Koepppe’s Nomenclature.**

representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 290 of 295, Cumulative Instance 346 of 409:
 “Automaton Figure of a Servant Carrying a Glass” (Koeppé’s Nomenclature).³⁴⁶**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a generic woman. As described in the consulted sources, this instance’s figure partook of the forms termed “servant” and “thing of brass” by the thesis, as it depicted a servile and/or enslaved individual and had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which this figure appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was an unknown municipality of Germany, and most likely South Germany, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record is not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the years 1630---1640, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁴⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Wolfram Koeppé’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 234, where it is mentioned and shown with a color photograph as “Figure 103.” Due to limitations of time, money, and energy, only information from the subsection of Koeppé’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. As an extant material-cultural object, this instance may itself be consulted as primary source matter, and according to the thesis’ working notes, it first appeared in Germany, and most likely South Germany, in the Holy Roman Empire, thereabout the years 1630---1640. That range for its date of assembly is an approximation.

**Kang Type 003, Instance 291 of 295, Cumulative Instance 347 of 409:
 “Aeolipile (Steam Blower)” (Koepppe’s Nomenclature), A Sufflator with the
 Figure of a Greek Sphinx.³⁴⁷**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was pneumatic. It contained the figure of a female sphinx. As described in the consulted sources, this instance’s figure partook of the form term “monster” by the thesis, as it depicted a fantastical creature. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which this figure appeared is not applicable, as it was freestanding. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was an unknown municipality of South Germany or Bohemia, and most likely Augsburg or Prague, respectively, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record is not recorded in the thesis’ working notes. This instance came into existence as a design or object as of the years 1590---1600, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in

³⁴⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Wolfram Koepppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, pages 246---247, with the unmarked page 247 being a full-page color photograph. Due to limitations of time, money, and energy, only information from the subsection of Koepppe’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. As an extant material-cultural object, this instance may itself be consulted as primary source matter, and according to the thesis’ working notes, it first appeared in either South Germany or Bohemia, and most likely in the municipalities of either Augsburg or Prague, respectively, in the Holy Roman Empire, thereabout the years 1590---1600. That range for its date of assembly is an approximation.

**Kang Type 003, Instance 291 of 295, Cumulative Instance 347 of 409:
“Aeolipile (Steam Blower)” (Koeppé’s Nomenclature), A Sufflator with the
Figure of a Greek Sphinx.**

representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 292 of 295, Cumulative Instance 348 of 409:
Schiller's Second Urania Chamber Clock.³⁴⁸**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of an ancient Greek goddess. As described in the consulted sources, this instance’s figure partook of the forms termed “god” and “thing of brass” by the thesis, as it depicted a divine being and had a brazen coloration. On review, this automaton figure was assigned an individual character name in its source material, “Urania, Muse of Astronomy.” The setting in which it appeared was a chamber clock. This instance’s principal designer and builder was Paullus Schiller. Its location was the municipality of Nuremberg, in the principality of the Holy Roman Empire. The principal patrons responsible for this instance’s presence in the historical record are not recorded in the thesis’ working notes. This

³⁴⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see materials related to the recent exhibition *Making Marvels: Science and Splendor at the Courts of Europe*, which was staged by the Metropolitan Museum of Art in New York City. Specifically, see Wolfram Koepppe’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 252, and note five on page 253. This instance has been included because Christie’s auction-house maintains a digital facsimile of its catalogue from the sale of valuables collected by Yves Saint Laurent and Pierre Berge, which was disseminated to accompany the auction of these valuables in the year 2009, and in which this instance appeared, per Koepppe’s fifth note, as item number 721. The reviewed copy of Christie’s 2009 auction catalogue was available on Christie’s website in mid-July 2023, when it was located there by the author after he noted this instance under the cataloging entry for “Schiller’s First Urania Chamber Clock,” in Koepppe’s edited exhibition guide. Because this instance was shown with a photograph in that catalogue, where it appears as “PENDULETTE AUTOMATE” under the link <https://www.christies.com/lot/lot-5171721>, a webpage with the same impermanence as any other online resource, the author was able to corroborate its characterization by Koepppe, and is therefore comfortable discussing it here. As with many objects that were created prior to the era of mechanized mass production in and after the Industrial Revolution, such as braces (pairs) of wheellock pistols, matched pairs of sconces and candelabras, and even tableware, a casual comparison between this instance and “Schiller’s First Urania Chamber Clock,” suggests that the two are virtually identical, but have minute differences, and subtle variations, due to the realities of these two instances’ productions as art objects wrought by the processes of handcraftsmanship. For example, the decorative element on the curved surface of the base which faces the clocks’ viewers is larger in this instance than in “Schiller’s First Urania Chamber Clock,” and the feet supporting the base in this instance are larger and more elaborate than those in “Schiller’s First Urania Chamber Clock.” Of course, these differences can be explained not only by pre-industrial methods of production, but also by the differing tastes and demands of Schiller’s clientele, and in the case of the feet, the possibility (which can never be wholly excluded) that, as with any antique object, modifications have been introduced by the repair and replacement of the object’s components. Due to limitations of time, money, and energy, only information from the subsection of Koepppe’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. According to the thesis’ working notes, this instance was extant when mentioned in the named subsection of Koepppe’s exhibition guide, and if still extant, which is likely, this instance may itself be consulted as primary source matter.

**Kang Type 003, Instance 292 of 295, Cumulative Instance 348 of 409:
Schiller's Second Urania Chamber Clock.**

instance came into existence as a design or object as of the years 1620---1630, with that date range being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 293 of 295, Cumulative Instance 349 of 409:
Rudolf II's Flautist.³⁴⁹**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a generic musician of unknown or unspecified gender (a flautist). As described in the consulted sources, this instance’s figure partook of the forms termed “musician” and “bellringer” by the thesis, as it played or appeared to play a musical instrument, and as it produced a sound like the ringing of a bell (Koeppé, in translating the German primary source matter for this instance, groups it with “carillion[s] [SIC] wound like a clock,” in which quote “carillion[s]” is taken to mean “carillon[s]”). On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Prague, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was the Holy Roman Emperor Rudolf II, in whose *Kunstammer* (cabinet of wonders) this instance was collected. This instance came into existence as a design or object prior to the year 1611, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents

³⁴⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Wolfram Koeppé’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 256, and note 8 on that same page. Due to limitations of time, money, and energy, only information from the subsection of Koeppé’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. For this instance’s primary source matter, see the 1607---1611 inventory of the Holy Roman Emperor Rudolf II’s *Kunstammer*, folio 344, number 2193; Koeppé’s eighth note on page 256 provides the original German text he cites in proof of this instance’s existence. The range of years for this source’s date of composition is an approximation, and no further publication information is available for the same.

**Kang Type 003, Instance 293 of 295, Cumulative Instance 349 of 409:
Rudolf II's Flautist.**

the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 003, Instance 294 of 295, Cumulative Instance 350 of 409:
Rudolf II's *Landsknecht*.³⁵⁰**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a male *landsknecht*, a mercenary foot soldier typically originating in the Holy Roman Empire’s German-speaking lands. As described in the consulted sources, this instance’s figure partook of the forms termed “death” and “bellringer” by the thesis, as it depicted an individual whose occupation was the enactment of violent deeds, and as it produced a sound like the ringing of a bell (Koeppé, in translating the German primary source matter for this instance, groups it with “carillion[s] [SIC] wound like a clock,” in which quote “carillion[s]” is taken to mean “carillon[s]”). On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Prague, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was the Holy Roman Emperor Rudolf II, in whose *Kunstammer* (cabinet of wonders) this instance was collected. This instance came into existence as a design or object prior to the year 1611, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially

³⁵⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Wolfram Koeppé’s edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 256, and note 8 on that same page. Due to limitations of time, money, and energy, only information from the subsection of Koeppé’s edited exhibition guide in which this instance appears, which is entitled “Technological Marvels in Motion,” was reviewed during the thesis’ research. For this instance’s primary source matter, see the 1607---1611 inventory of the Holy Roman Emperor Rudolf II’s *Kunstammer*, folio 344, number 2193; Koeppé’s eighth note on page 256 provides the original German text he cites in proof of this instance’s existence. The range of years for this source’s date of composition is an approximation, and no further publication information is available for the same. “Ibidem” has not been used for this instance’s secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct physical objects.

**Kang Type 003, Instance 294 of 295, Cumulative Instance 350 of 409:
Rudolf II's *Landsknecht*.**

evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own "progress," that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or "reclamation" of classical Greek and Roman civilizational achievements; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 003, Instance 295 of 295, Cumulative Instance 351 of 409:
Rudolf II's Second Drummer.³⁵¹**

³⁵¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Minsoo Kang's *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 81; and Wolfram Koeppe's edited exhibition guide *Making Marvels: Science and Splendor at the Courts of Europe*, page 256, and note 8 on that same page. Due to limitations of time, money, and energy, only information from the subsection of Koeppe's edited exhibition guide in which this instance appears, which is entitled "Technological Marvels in Motion," was reviewed during the thesis' research. For this instance's primary source matter, see the 1607---1611 inventory of the Holy Roman Emperor Rudolf II's *Kunstammer*, folio 344, number 2194; Koeppe's eighth note on page 256 provides the original German text he cites in proof of this instance's existence. The range of years for this source's date of composition is an approximation, and no further publication information is available for the same. Further, the thesis cannot state with certainty whether the instance discussed by Kang is "Rudolf II's First Drummer" or "Rudolf II's Second Drummer," with the former having a separate entry in this appendix. For its own purposes, the thesis treats this instance (per its nomenclature) as "Rudolf II's Second Drummer," the one attested by item number 2194 in the *Kunstammer* inventory, not number 2193 in that same inventory. This is because the thesis' author encountered this instance second during his research. In the *Kunstammer* inventory, this instance has its own entry under number 2194 in the *Kunstammer* inventory, as opposed to "Rudolf II's First Drummer," which is grouped with two other automata. Of the automata in that group of three instances, the seventh current of thought is applied only to the *Landsknecht* automaton in its appendix entry, since there is uncertainty as to the military or non-military appearances of the other two automata, the first drummer and the flautist. In connection with this instance, "Rudolf II's Second Drummer," see also an account by Johannes Kepler which either describes it, or which describes "Rudolf II's First Drummer." Kang writes that "the astronomer Johannes Kepler was particularly impressed by a drum-playing automaton in the collection that suggested to him the model of the universe as a vast machine." Kepler's primary source is present in Jessica Wolfe's 2004 work *Humanism, Machinery, and Renaissance Literature*, which is cited by Kang under Endnote 96, which matches the preceding direct quotation, on page 324 of his work, *Sublime Dreams of Living Machines: The Automaton in the European Imagination*. Of the two drummers, this instance, the second drummer, may be the likelier to have impressed and inspired Kepler, for Koeppe records on page 256 that it "walk[ed] about," whereas the first drummer may only have had moving arms. Comparison between the design and dress of this instance and "Torriano's Lady Drummer" is inescapable. Separately from this instance, "Rudolf II's Second Drummer," another, final instance was deleted because, due to an oversight, its source matter was not recorded in the thesis' working notes. The thesis has reason to believe that there may have been automata at the 1468 wedding-feast held for the marriage of Philip the Good's son, Charles the Bold, to Margaret of York, a celebration held in the city of Bruges. These freestanding automata may have been false, at least at part, did not have an identifiable scale or power source, and represented generic boar(s) and goat(s). A likely primary source for these automata would be the reminiscences of the courtier Olivier de la Marche; however, that primary source is only recollected by the author, as the thesis' working notes for this possible instance are incomplete, and indeed, contain only the information offered separately and apart from the instance bearing this footnote. There are many other automata that were designed or constructed during the thesis' considered interval, including multiple untreated cathedral clocks and the Chinese south-pointing chariot, which follows a uniquely Chinese trajectory from the first to second currents of thought; but for pragmatic reasons of practicality and investments of time, money, and effort, the thesis has limited itself only to those instances specifically noted in the cited sources, as was also done for instances cataloged under Kang's first, second, and fourth types. It is sincerely hoped that the totality of this contribution, including the forthcoming delineations of instances for Kang's fourth and last type, will represent, to the community of scholars, a useful resource in furtherance of automata studies.

**Kang Type 003, Instance 295 of 295, Cumulative Instance 351 of 409:
Rudolf II's Second Drummer.**

Nothing suggests that this real-world instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a male musician (a drummer). As described in the consulted sources, this instance’s figure partook of the form termed “musician” by the thesis, as it played or appeared to play a musical instrument. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. This instance’s principal designer and builder are not recorded in the thesis’ working notes. Its location was the municipality of Prague, in the principality of the Holy Roman Empire. The principal patron responsible for this instance’s presence in the historical record was the Holy Roman Emperor Rudolf II, in whose *Kunstammer* (cabinet of wonders) this instance was collected. This instance came into existence as a design or object prior to the year 1611, with that date being an approximation. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents the recovery or “reclamation” of classical Greek and Roman civilizational achievements.

INSTANCES 04: KANG'S FOURTH TYPE.

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**Kang Type 004, Instance 001 of 058, Cumulative Instance 352 of 409:
Albertus Magnus' Brazen Android.³⁵²**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the

³⁵² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 31; Derek J. De Solla Price’s “Automata and the Origins of Mechanism and Mechanistic Philosophy,” page 19; E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 92---93; Timothy D. O’Brien’s “‘Ars-Metrik’: Science, Satire, and Chaucer’s Summoner,” pages 2, 6---7; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 9, 70---71, 72, 73, 78---79, 93, 94, 97, 98, 99---100, 101; Jessica Riskin’s “Machines in the Garden,” page 25, at Footnote 53 (Riskin erroneously calls this full-bodied automaton a “brazen head”); Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 132, 134; Lily V. Filson’s *Engineering Gods*, page 198 (Filson, like Riskin, conflates this figure with a brazen head; her primary source, a certain Delrio, is on the cited page at Footnote 316); and Elizabeth King’s “Perpetual Devotion: A Sixteenth-Century Machine that Prays,” in Jessica Riskin’s edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, page 283, which presents John Edwards’ mention of this instance in a short catalog of ancient and pre-Modern automata, and page 284, which repeats Edwards’ misidentification of this instance while drawing a comparison between it and the false talking head in *Don Quixote, Part II*. For this instance’s tracked primary source matter, see *Rosaio della Vita*, which was written by Matteo Corsini thereabout the year 1363, with that date of composition being an approximation; *Magia e Grazia*, which was written by Tomasso Campanella, and about which the thesis’ working notes record no further information; *Natural Magick*, which was written by John Baptista Porta, and which was published at New York, in the United States of America, in the year 1957, a publication date which is not an approximation, when it appeared in a translated edition published by Basic Books; the introduction to *L’Homme de Rene Descartes, et un Traite de la Formation du Foetus du Mesme Autehur*, which was written by Florentius Schuyl and published at Paris, in the Kingdom of France, in the year 1664, a date of publication which is not an approximation; *Mathematicall Magick: or The Wonders that may be Performed by Mechanical Geometry*, which was written by the Reverend John Wilkins, and which appeared in the year 1684, with the thesis’ working notes recording no further information regarding this source; *Encyclopedie, ou Dictionnaire Raisonne des Sciences, des Arts et des Metiers*, Third Edition, under the entry for “Automate,” which may be found in Volume II, and the entry for “Androide,” which may be found in Volume IV, with that encyclopedia having been published at Geneva, in whichever polity then constituted the Swiss nation, under the principal editorship of Jean-Leonard Pellet, in the year 1778, with the thesis’ working notes omitting whether or not that date of publication is an approximation; the *Vitae Illustrium Viorum*, which dates from 1549---1557, was written by Paulo Giovio, who Latinized his name as Paulus Jovius, and about which the thesis’ working notes record no further information; and *Demonstration of the Existence and Providence of God*, which was written by John Edwards and published in the year 1696, with that date not being an approximation (this last primary source erroneously terms this instance a “speaking head” rather than a full-bodied android, the mistake repeated by King in her discussion of Cervantes’ fictitious representation of a brazen head which proved, within the fiction of *Don Quixote, Part II*, to be a false automaton). The copious number of primary and secondary sources for this instance reflect its stature as one of the foremost automatons of medieval legend, and essentially, no catalog of pre-Modern or Early Modern automata would be complete without its presence.

**Kang Type 004, Instance 001 of 058, Cumulative Instance 352 of 409:
Albertus Magnus' Brazen Android.**

contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a generic man. As described in the consulted sources, this instance's figure partook of the form termed "thing of brass" by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 002 of 058, Cumulative Instance 353 of 409:
Roger Bacon's Brazen Head.³⁵³**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a talking head, a term with a specific meaning within the context of studies related to pre-Modern and Early Modern automata which, unless otherwise specified, is taken to communicate a human head with either male or androgynous features. As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass” and “divinatory intelligence” by the thesis, as it had a brazen coloration and was capable of foretelling the future. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was portable. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁵³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 31; E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 69, 70; Timothy D. O’Brien’s “‘Ars-Metrik:’ Science, Satire, and Chaucer’s Summoner,” page 7; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 134; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 9, 71---72, 73, 98; Lily V. Filson’s *Engineering Gods*, page 202; and Elizabeth King’s “Perpetual Devotion: A Sixteenth-Century Machine that Prays,” in Jessica Riskin’s edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, page 283, which presents John Edwards’ mention of this instance in a short catalog of ancient and pre-Modern automata. For this instance’s primary source matter, see *Friar Bacon and Friar Bungay*, which was written by Robert Greene and published in the year 1589, with that date of publication not being an approximation; *The Lives of the Conjurers*, which was written by Thomas Frost and published at Piccadilly, in the United Kingdom, in the year 1881 (in the edition cited by Timothy D. O’Brien), with that date of publication not being an approximation; *Mathematicall Magick: or The Wonders that may be Performed by Mechanical Geometry*, which was written by the Reverend John Wilkins and published in the year 1684, with that date of publication not being an approximation; and *Demonstration of the Existence and Providence of God*, which was written by John Edwards and published in the year 1696, with that date not being an approximation.

**Kang Type 004, Instance 003 of 058, Cumulative Instance 354 of 409:
Gerbert of Aurillac's Brazen Head.³⁵⁴**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a talking head, a term with a specific meaning within the context of studies related to pre-Modern and Early Modern automata which, unless otherwise specified, is taken to communicate a human head with either male or androgynous features. As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass” and “divinatory intelligence” by the thesis, as it had a brazen coloration and was capable of foretelling the future. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was portable. The thesis’ author would like to state, for the readers’ sake, that the above entry is a distinct instance from the prior entry, despite having identical data. The mythical construct of the “talking head,” which can also be termed a “brazen head,” is very consistent and durable in the pre-Modern and Early Modern imaginations, and it tends to recur with only limited variations; as will be seen, these chiefly include such a head’s physical material, which does not always consist of the artificial metal brass, or of other artificial metals with brazen colorations. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the

³⁵⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 31; E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 71, 72, 76; Timothy D. O’Brien’s “‘Ars-Metrik’: Science, Satire, and Chaucer’s Summoner,” page 6; E.R. Truitt’s “Celestial Divination and Arabic Science in Twelfth-Century England: The Story of Gerbert of Aurillac’s Talking Head,” pages 201, 202, 203, 204, 217, 219, 221, 222; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 9, 69, 70, 72, 73; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 127, 134; and Lily V. Filson’s *Engineering Gods*, pages 195 and 196. For this instance’s primary source matter, see *Gesta Regnum Anglorum*, which was written by William of Malmesbury under the patronage of Earl Robert Fitzroy at Wiltshire, in the Kingdom of England, in the year 1127. That date of composition is not an approximation.

**Kang Type 004, Instance 003 of 058, Cumulative Instance 354 of 409:
Gerbert of Aurillac's Brazen Head.**

British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 004 of 058, Cumulative Instance 355 of 409:
Robert Grosseteste's Brazen Head.³⁵⁵**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a talking head, a term with a specific meaning within the context of studies related to pre-Modern and Early Modern automata which, unless otherwise specified, is taken to communicate a human head with either male or androgynous features. As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass” and “divinatory intelligence” by the thesis, as it had a brazen coloration and was capable of foretelling the future. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was portable. The thesis’ author would like to state, for the readers’ sake, that the above entry is a distinct instance from the prior entry, despite having identical data. The mythical construct of the “talking head,” which can also be termed a “brazen head,” is very consistent and durable in the pre-Modern and Early Modern imaginations, and it tends to recur with only limited variations; as will be seen, these chiefly include such a head’s physical material, which does not always consist of the artificial metal brass, or of other artificial metals with brazen colorations. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁵⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 31; E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 89---91; Timothy D. O’Brien’s “‘Ars-Metrik’: Science, Satire, and Chaucer’s Summoner,” page 7; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 134; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 9, 71, 72, 73, 78; and Lily V. Filson’s *Engineering Gods*, pages 203---204. For this instance’s primary source matter, see *Confessio Amantis*, which was written by John Gower under the patronage of King Richard II of England in the year 1390. That date of composition is not an approximation. See also, as primary source matter, *The Lives of the Conjurers*, which was written by Thomas Frost and published at Piccadilly, in the United Kingdom, in the year 1881 (in the edition cited by Timothy D. O’Brien). That date of publication is not an approximation.

**Kang Type 004, Instance 005 of 058, Cumulative Instance 356 of 409:
Regiomontanus' (Muller's) Ferrous Fly.³⁵⁶**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a generic fly of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and

³⁵⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 31; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 90, 94, 98, 101, 140, 176; Jessica Riskin’s “Machines in the Garden,” page 24, at Footnote 47, and page 25, at Footnote 53; Chapuis & Droz’s *Automata: A Historical and Technological Study*, page 243; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 132, 178, 208; Lily V. Filson’s *Engineering Gods*, page 181; and Elizabeth King’s “Perpetual Devotion: A Sixteenth-Century Machine that Prays,” in Jessica Riskin’s edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, page 283, which presents John Edwards’ mention of this instance in a short catalog of ancient and pre-Modern automata. For this instance’s primary source matter, see *De Aquila et Musca Ferrea, quae Mechanico Artificio apud Norinbergenses quondem Volitasse Ferentur*, which was written by J.A. Buhel and published at Altdorf in the year 1707, with that date of publication not being an approximation; *The Mathematicall Praeface to the Elements of Geometrie of Euclid of Megara*, which was written by John Dee and published in the year 1570, with that date of publication not being an approximation; *Scholarum Mathematicarum*, which was written by Petrus Ramus and published in the year 1569, with that date of publication not being an approximation; *Magia e Grazia*, which was written by Tommaso Campanella and has been referenced elsewhere in this section; *Mathematicall Magick: or The Wonders that may be Performed by Mechanical Geometry*, which was written by the Reverend John Wilkins in the year 1684, and which has been referenced elsewhere in this section; the *Mathematical and Philosophical Dictionary*, which was written and/or edited by Charles Hutton in the year 1796, with that date of appearance presumably not being an approximation; and *Demonstration of the Existence and Providence of God*, which was written by John Edwards and published in the year 1696, with that date not being an approximation. The ubiquity of this instance is due to its inclusion in Early Modern and subsequent catalogs of automata, which is discussed by Kang. In modern scholarship, it is commonly presented by authors in a casual, almost offhand manner, and is typically accompanied by the next instance, as these two instances together comprise the two legendary and rather famous automata associated with the mathematician and intellectual figure Regiomontanus, whose true name was Johannes Muller of Konigsberg. To avoid an inconsistency, this instance, despite being called an “iron fly,” is not construed by the thesis to have been fashioned exclusively from elemental iron, but rather from worked iron subjected to the techniques of metallurgy. The thesis would also maintain that for its purposes, and those of the iron fly’s myth, this fly was not exclusively fashioned from iron, either in an elemental or worked state, but from other materials, and with a variety of components, in accords with the thesis’ definition for automata. It is likely that, just as a “brazen head” is so termed with a basis in its coloration, so also was the “iron fly” termed respective to color, so that while the “brazen head” would have a golden coloration, the “iron fly” would have a black coloration, which is, of course, the natural coloration of many living flies.

**Kang Type 004, Instance 005 of 058, Cumulative Instance 356 of 409:
Regiomontanus' (Muller's) Ferrous Fly.**

mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 006 of 058, Cumulative Instance 357 of 409:
Regiomontanus' (Muller's) Eagle.³⁵⁷**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of an eagle of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of

³⁵⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 31; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 90, 94, 97, 98, 101, 140, 176; Jessica Riskin’s “Machines in the Garden,” page 24, at Footnote 47, and page 25, at Footnote 53; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 132, 178, 208, 220, 231; Chapuis & Droz’s *Automata: A Historical and Technological Study*, page 223; Lily V. Filson’s *Engineering Gods*, page 181; and Elizabeth King’s “Perpetual Devotion: A Sixteenth-Century Machine that Prays,” in Jessica Riskin’s edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, page 283, which presents John Edwards’ mention of this instance in a short catalog of ancient and pre-Modern automata. For this instance’s primary source matter, see *De Aquila et Musca Ferrea, quae Mechanico Artificio apud Norinbergenses quondem Volitasse Ferentur*, which was written by J.A. Buhel and published at Altdorf in the year 1707, with that date of publication not being an approximation; *The Mathematicall Praeface to the Elements of Geometrie of Euclid of Megara*, which was written by John Dee and published in the year 1570, with that date of publication not being an approximation; *Scholarum Mathematicarum*, which was written by Petrus Ramus and published in the year 1569, with that date of publication not being an approximation; *Magia e Grazia*, which was written by Tommaso Campanella and has been referenced elsewhere in this section; *L’Homme de Rene Descartes, et un Traite de la Formation du Foetus du Mesme Autheur*, which was published at Paris, in the Kingdom of France, by Chez (the publishing house of) Charles Angot in the year 1664, with that date of publication presumably not being an approximation; *Mathematicall Magick: or The Wonders that may be Performed by Mechanical Geometry*, which was written by the Reverend John Wilkins and published in the year 1684, with that date of publication presumably not being an approximation; the *Mathematical and Philosophical Dictionary*, which was written and/or edited by Charles Hutton in the year 1796, with that date for this text’s appearance presumably not being an approximation; and *Demonstration of the Existence and Providence of God*, which was written by John Edwards and published in the year 1696, with that date not being an approximation.. The ubiquity of this instance is due to its inclusion in Early Modern catalogs of automata, which is discussed by Kang. In modern scholarship, it is commonly presented by authors in a casual, almost offhand manner, and is typically accompanied by the preceding instance, as these two instances together comprise the two legendary and rather famous automata associated with the mathematician and intellectual figure Regiomontanus, whose true name was Johannes Muller of Konigsberg. “Ibidem” has not been used for this instance’s primary and secondary source matter, despite the near-equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 006 of 058, Cumulative Instance 357 of 409:
Regiomontanus' (Muller's) Eagle.**

magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 007 of 058, Cumulative Instance 358 of 409:
Bishop Virgilius of Naples' (Vergil's) Brazen Fly.³⁵⁸**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a generic fly of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁵⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Silvio A. Bedini’s “The Role of Automata in the History of Technology,” page 31; E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 65, 66; Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 136, 138; and Lily V. Filson’s *Engineering Gods*, pages 181, 192, and 194. For this instance’s primary source matter, see *Otia Imperialia*, which was written by Gervase of Tilbury thereabout the year 1211, with that date of composition being an approximation; and the *Policraticus*, which was written by Bishop John of Salisbury under the patronage of Archbishop Thomas a Becket at Canterbury, in the Kingdom of England, thereabout the year 1159, with that date of composition being an approximation.

**Kang Type 004, Instance 008 of 058, Cumulative Instance 359 of 409:
The Conjectured Deer from Chaucer's "Franklin's Tale."³⁵⁹**

As conjectured by the cited author(s), nothing suggests that this legendary instance of automata was "false" by the thesis' definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a deer of unknown or unspecified gender. As described in the consulted sources, this instance's figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁵⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell's "The Magic of Machinery: A Context for Chaucer's 'Franklin's Tale,'" pages 102, 108; and Joyce Tally Lionarons' "Magic, Machines, and Deception: Technology in *The Canterbury Tales*," page 381. For this instance's primary source matter, see *The Canterbury Tales*, which was written by Geoffrey Chaucer in the Kingdom of England thereabout the year 1400, with that date of composition being an approximation.

**Kang Type 004, Instance 009 of 058, Cumulative Instance 360 of 409:
The Conjectured Hounds from Chaucer's "Franklin's Tale."³⁶⁰**

As conjectured by the cited author(s), nothing suggests that this legendary instance of automata was "false" by the thesis' definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a generic dog of unknown or unspecified gender. As described in the consulted sources, this instance's figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

³⁶⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell's "The Magic of Machinery: A Context for Chaucer's 'Franklin's Tale,'" pages 102, 108; and Joyce Tally Lionarons' "Magic, Machines, and Deception: Technology in *The Canterbury Tales*," page 381. For this instance's primary source matter, see *The Canterbury Tales*, which was written by Geoffrey Chaucer in the Kingdom of England thereabout the year 1400, with that date of composition being an approximation. "Ibidem" has not been used for this instance's primary and secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 010 of 058, Cumulative Instance 361 of 409:
The Conjectured Falconers from Chaucer's "Franklin's Tale."³⁶¹**

As conjectured by the cited author(s), nothing suggests that this legendary instance of automata was "false" by the thesis' definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a falconer of unknown or unspecified gender, a human person engaging in falconry. As described in the consulted sources, this instance's figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

³⁶¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell's "The Magic of Machinery: A Context for Chaucer's 'Franklin's Tale,'" pages 102, 108; and Joyce Tally Lionarons' "Magic, Machines, and Deception: Technology in *The Canterbury Tales*," page 381. For this instance's primary source matter, see *The Canterbury Tales*, which was written by Geoffrey Chaucer in the Kingdom of England thereabout the year 1400, with that date of composition being an approximation. "Ibidem" has not been used for this instance's primary and secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 011 of 058, Cumulative Instance 362 of 409:
The Conjectured Hawks from Chaucer's "Franklin's Tale."³⁶²**

As conjectured by the cited author(s), nothing suggests that this legendary instance of automata was "false" by the thesis' definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a hawk of unknown or unspecified gender. As described in the consulted sources, this instance's figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

³⁶² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell's "The Magic of Machinery: A Context for Chaucer's 'Franklin's Tale,'" pages 102, 108; and Joyce Tally Lionarons' "Magic, Machines, and Deception: Technology in *The Canterbury Tales*," page 381. For this instance's primary source matter, see *The Canterbury Tales*, which was written by Geoffrey Chaucer in the Kingdom of England thereabout the year 1400, with that date of composition being an approximation. "Ibidem" has not been used for this instance's primary and secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 012 of 058, Cumulative Instance 363 of 409:
The Conjectured Heron from Chaucer's "Franklin's Tale."³⁶³**

As conjectured by the cited author(s), nothing suggests that this legendary instance of automata was "false" by the thesis' definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a heron of unknown or unspecified gender. As described in the consulted sources, this instance's figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁶³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell's "The Magic of Machinery: A Context for Chaucer's 'Franklin's Tale,'" pages 102, 108; and Joyce Tally Lionarons' "Magic, Machines, and Deception: Technology in *The Canterbury Tales*," page 381. For this instance's primary source matter, see *The Canterbury Tales*, which was written by Geoffrey Chaucer in the Kingdom of England thereabout the year 1400, with that date of composition being an approximation. "Ibidem" has not been used for this instance's primary and secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 013 of 058, Cumulative Instance 364 of 409:
The Conjectured Knights from Chaucer's "Franklin's Tale."³⁶⁴**

As conjectured by the cited author(s), nothing suggests that this legendary instance of automata was "false" by the thesis' definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a presumptively-male knight. As described in the consulted sources, this instance's figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁶⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell's "The Magic of Machinery: A Context for Chaucer's 'Franklin's Tale,'" pages 102, 108; and Joyce Tally Lionarons' "Magic, Machines, and Deception: Technology in *The Canterbury Tales*," page 381. For this instance's primary source matter, see *The Canterbury Tales*, which was written by Geoffrey Chaucer in the Kingdom of England thereabout the year 1400, with that date of composition being an approximation. "Ibidem" has not been used for this instance's primary and secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 014 of 058, Cumulative Instance 365 of 409:
The Conjectured Figure of Dorigen from Chaucer's "Franklin's Tale."³⁶⁵**

As conjectured by the cited author(s), nothing suggests that this legendary instance of automata was "false" by the thesis' definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a generic woman. As described in the consulted sources, this instance's figure did not partake of the forms defined by the thesis. On review, this automaton figure was assigned an individual character name in its source material, "Dorigen." The setting in which this figure appeared was a stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁶⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell's "The Magic of Machinery: A Context for Chaucer's 'Franklin's Tale,'" pages 102, 108; and Joyce Tally Lionarons' "Magic, Machines, and Deception: Technology in *The Canterbury Tales*," page 381. For this instance's primary source matter, see *The Canterbury Tales*, which was written by Geoffrey Chaucer in the Kingdom of England thereabout the year 1400, with that date of composition being an approximation. "Ibidem" has not been used for this instance's primary and secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 015 of 058, Cumulative Instance 366 of 409:
The Conjectured Figure of Aurelius from Chaucer's "Franklin's Tale."³⁶⁶**

As conjectured by the cited author(s), nothing suggests that this legendary instance of automata was "false" by the thesis' definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a generic man. As described in the consulted sources, this instance's figure did not partake of the forms defined by the thesis. On review, this automaton figure was assigned an individual character name in its source material, "Aurelius." The setting in which this figure appeared was a stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁶⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell's "The Magic of Machinery: A Context for Chaucer's 'Franklin's Tale,'" pages 102, 108; and Joyce Tally Lionarons' "Magic, Machines, and Deception: Technology in *The Canterbury Tales*," page 381. For this instance's primary source matter, see *The Canterbury Tales*, which was written by Geoffrey Chaucer in the Kingdom of England thereabout the year 1400, with that date of composition being an approximation. "Ibidem" has not been used for this instance's primary and secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 016 of 058, Cumulative Instance 367 of 409:
da Vinci's Ornithopter.³⁶⁷**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a generic bird of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as this design, when interpreted as being a bird automaton, was for a freestanding and mobile device. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁶⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Derek J. De Solla Price’s “Automata and the Origins of Mechanism and Mechanistic Philosophy,” page 21; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 93, 101; and Jessica Riskin’s “Machines in the Garden,” page 24, at Footnote 47. For this instance’s primary source matter, see *The Notebooks of Leonardo da Vinci, Manuscript B*, Folio 74, which was created by Leonardo da Vinci, and about which the thesis’ working notes record no further information, although the thesis is of the opinion that, as with all things connected with da Vinci, the considered design’s sketches should be easily retrievable.

**Kang Type 004, Instance 017 of 058, Cumulative Instance 368 of 409:
Descartes' Magnetic Dancing Man.³⁶⁸**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was magnetic. It contained the figure of a generic man. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁶⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Derek J. De Solla Price’s “Automata and the Origins of Mechanism and Mechanistic Philosophy,” page 23; and Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 122. For this instance’s primary source matter, see the correspondence of Nicolas-Joseph Poisson, which was written by Father Nicolas-Joseph Poisson and published in the year 1619, with that date of publication being an approximation. See also *Commentaire ou Remarques sur la Methode de Rene Descartes*, which was written by the same primary author, Father Nicolas-Joseph Poisson, and published at Vandosme, in the Kingdom of France, in the year 1670, with that date of publication not being an approximation. See also, as primary source matter, *Oeuvres Inedites de Descartes* in the translation by Foucher de Careil, which was written by Rene Descartes and published at Paris, in the French Second Empire, in the year 1859. That date of publication is not an approximation.

**Kang Type 004, Instance 018 of 058, Cumulative Instance 369 of 409:
Descartes' Flying Pigeon.³⁶⁹**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a pigeon of unknown or unspecified gender. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁶⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Derek J. De Solla Price’s “Automata and the Origins of Mechanism and Mechanistic Philosophy,” page 23; and Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 122. For this instance’s primary source matter, see the correspondence of Nicolas-Joseph Poisson, which was written by Father Nicolas-Joseph Poisson and published in the year 1619, with that date of publication being an approximation. See also *Commentaire ou Remarques sur la Methode de Rene Descartes*, which was written by the same primary author, Father Nicolas-Joseph Poisson, and published at Vandosme, in the Kingdom of France, in the year 1670, with that date of publication not being an approximation. “Ibidem” has not been used for this instance’s primary and secondary source matter, despite the partial equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects. It may be the case that this instance is also attested in de Careil’s translation of *Oeuvres Inedites de Descartes*, but this is not reflected in the thesis’ working notes.

**Kang Type 004, Instance 019 of 058, Cumulative Instance 370 of 409:
Descartes's Spaniel and Pheasant.³⁷⁰**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a spaniel of unknown or unspecified gender, a type of dog, and a pheasant of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is not applicable, as they were freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁷⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Derek J. De Solla Price’s “Automata and the Origins of Mechanism and Mechanistic Philosophy,” page 23; and Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 122. For this instance’s primary source matter, see the correspondence of Nicolas-Joseph Poisson, which was written by Father Nicolas-Joseph Poisson and published in the year 1619, with that date of publication being an approximation. See also *Commentaire ou Remarques sur la Methode de Rene Descartes*, which was written by the same primary author, Father Nicolas-Joseph Poisson, and published at Vandosme, in the Kingdom of France, in the year 1670, with that date of publication not being an approximation. “Ibidem” has not been used for this instance’s primary and secondary source matter, despite the partial equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects. It may be the case that this instance is also attested in de Careil’s translation of *Oeuvres Inedites de Descartes*, but this is not reflected in the thesis’ working notes.

**Kang Type 004, Instance 020 of 058, Cumulative Instance 371 of 409:
Descartes' Automaton Figure of his daughter, Francine Descartes.³⁷¹**

³⁷¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang's typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Derek J. De Solla Price's "Automata and the Origins of Mechanism and Mechanistic Philosophy," page 23; and Minsoo Kang's *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 122---123. See also Scott Maisano's article "Infinite Gesture: Automata and the Emotions in Descartes and Shakespeare" in Jessica Riskin's edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, page 63. For this instance's primary source matter, see *Melanges d'Histoire et de Litterature*, which was written by (Brother?) Bonaventure d'Argonne, alias Vigneul-Marville, and published at Paris, in the Kingdom of France, in the year 1700, with the printing of that work known to this thesis dating from the year 1725. Neither the date of the first nor later edition is an approximation. To the thesis' recollection, this instance has an interesting mythography. The thesis' knowledge of this instance is mainly derived from the work of Kang, as De Solla Price's account initially lent the false impression, at least to the author, that the automaton Francine Descartes was a "Stepford wife," or a gynoid constructed for purposes of companionship, and possibly for intimacy, as was the case with the legendary automaton built by Solomon ibn Gabirol. However, this instance was not created for those purposes, if its legend is accepted, but as a replica of Descartes' real-life daughter, Francine, who was conceived in a tryst with a servant of Descartes' household and sadly died in early childhood. The thesis recalls Kang's speculation that Francine Descartes, this biological daughter, may have been named by Descartes after the Francini brothers, who worked on the Pratolino automata and who, in their later careers, were principal authors of the numerous automata of the noble French estate at Saint-Germain-en-Laye. These latter automata at Saint-Germain-en-Laye had some influence upon the development of Descartes' philosophy, and they were referenced by him in at least one published exposition of his Cartesian bodily model; for the Francini brothers' influence on Descartes, see Maisano's "Infinite Gesture: Automata and the Emotions in Descartes and Shakespeare," pages 73 – 74, and endnote 38 on page 82. Insofar as the legend of this instance proceeds, its narrative is somewhat woolly. In one accounting, it posits that Descartes, in a state of profound loneliness and unresolved grief, constructed the automaton Francine Descartes in the image of his daughter to console himself after the biological Francine Descartes' untimely death, while in another accounting, intended to protect Descartes' moral reputation in the milieu of seventeenth-century France, the automaton Francine Descartes altogether subsumes the identity of the biological Francine Descartes, so that (in the fiction of this myth) Descartes never fathered Francine Descartes, an illegitimate child, but merely constructed an automaton with the appearance of a small girl. By means of this second variation on the myth, allegations and innuendo regarding the real Francine Descartes could more easily be dismissed. In any event, and in the recapitulation of a common trope, a figure of authority, in this case a sea captain (or in some versions, the sailors under his command aboard ship), supposedly discovered the automaton Francine Descartes in a packing crate, where it had been stored during Descartes' travels, and, revulsed by its artificiality, threw it overboard, neatly eliminating any physical evidence which might substantiate the existence of Francine Descartes, the mythical automaton. That such a tale is attached to the historical person of Rene Descartes, as with all the automata legends of the towering intellects noted under Kang's fourth type, attests the popular perception of Descartes as an individual so tremendously endowed with intelligence as to have mastered the dividing line between natural and artificial life; and the destruction of the automaton Francine Descartes brings the trajectory of this popular perception to its typical conclusion in accords with the age-old opinion O'Brien identifies as an attitude of Chaucer, that some things are meant to remain hidden from human ingenuity. "Ibidem" has not been used for this instance's secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 020 of 058, Cumulative Instance 371 of 409:
Descartes' Automaton Figure of his daughter, Francine Descartes.**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a generic girl. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was assigned an individual character name in its source material, “Francine Descartes.” The setting in which it appeared is not applicable, as it was freestanding and mobile. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 004, Instance 021 of 058, Cumulative Instance 372 of 409:
The Conjectured Automata on the Spine of the Byzantine Hippodrome.³⁷²**

It is unclear whether or not this legendary instance of automata was “false” by the thesis’ definition; it cannot be determined if the associated figures, as they are described in this instance’s primary source, were truly automata during the distant past in which they existed according to that same (medieval) primary source, at the time when they are conjecturally described as automata by that source. In the absence of information to the contrary, its figures are interpreted to have been of various scales defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a generic man, a generic woman, a horse of unknown or unspecified gender, an ox of unknown or unspecified gender, a camel of unknown or unspecified gender, a bear of unknown or unspecified gender, and a presumptively-male lion. As described in the consulted sources, this instance’s figures partook of the form termed “thing of brass” by the thesis, as they had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a racetrack. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁷² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 26; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 96; and Lily V. Filson’s *Engineering Gods*, page 160. For this instance’s primary source matter, see *La Conquete de Constantinople*, as edited by Philippe Lauer, which contains the account of these automata composed by the knight Robert of Clari, and which was published at Paris, in interwar France, in the year 1924. That date of publication is not an approximation.

**Kang Type 004, Instance 022 of 058, Cumulative Instance 373 of 409:
Vergil's Golden Leech.³⁷³**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a generic leech of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁷³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 65. For this instance’s primary source matter, see *De Naturis Rerum*, which was written by Abbot Alexander Neckam, and which appeared in the Kingdom of England thereabout the year 1195, with that date of circulation being an approximation.

**Kang Type 004, Instance 023 of 058, Cumulative Instance 374 of 409:
Vergil's *Salvatio Romae*.³⁷⁴**

This legendary instance of automata may possibly have been “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis, but may have been kinetic. It contained the figure of the tyche, or patron female deity, which represented the city of Rome as a personification, “Roma;” a presumptively-male knight; and a horse of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “thing of brass” and “bellringer” by the thesis, as at least one had a brazen coloration, and at least one produced or appeared to produce a sound like the ringing of a bell. On review, one of these automaton figures was assigned an individual character name in its source material, “Roma, the Tyche of Rome.” The setting in which these figures appeared was a palace. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁷⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 65---66; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 136; and Lily V. Filson’s *Engineering Gods*, pages 191---192. For this instance’s primary source matter, see *De Naturis Rerum*, which was written by Abbot Alexander Neckam, and which appeared in the Kingdom of England thereabout the year 1195, with that date of circulation being an approximation. “Ibidem” has not been used for this instance’s primary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 024 of 058, Cumulative Instance 375 of 409:
Vergil's Wind-Reversing Trumpeter.³⁷⁵**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was pneumatic. It contained the figure of a male musician, a trumpeter. As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass” and “musician” by the thesis, as it had a brazen coloration, and as it produced or appeared to produce music. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was freestanding; like Vergil’s other legendary automata which may be characterized as having had a protective or defensive character, it would most likely have been emplaced in an outdoor environment, which would suggest a rooftop or courtyard if associated with a building such as a palace, or if not so associated (as in this instance), a hilltop, mound, or perhaps even open terrain. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁷⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 66; and Lily V. Filson’s *Engineering Gods*, page 192. For this instance’s primary source matter, see *Otia Imperialia*, which was written by Gervase of Tilbury, and which appeared thereabout the year 1211, with that date of circulation being an approximation. See also, as primary source matter, *Livre des Merveilles du Monde*, Acc. No. *Manuscript 461*, Folio 15 verso, which was the work of the translator Harent of Antioch, and about which the thesis’ working notes record no further information.

**Kang Type 004, Instance 025 of 058, Cumulative Instance 376 of 409:
Vergil's Volcano-Reversing Archer, the *Salvatio Neapolis*.³⁷⁶**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a presumptively-male archer. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material (while Vergil’s salvific automata are named according to the polities or locales which they protect, as in the name of this instance, the *Salvatio Neapolis*, or “Salvation of Naples,” this name is not considered a proper or given name by the thesis, which would instead be of the hypothesized pattern “Giovanni Daina, the Salvation of Naples,” or “The Salvation of Naples, Giovanni Daina” if such a name were attached to this instance). The setting in which it appeared is not applicable, as it was freestanding. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁷⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 66---67; and Nadia Ambrosetti’s *Cultural Roots of Technology*, page 137. For this instance’s primary source matter, see *Epistula Conradi Cancellarii*, in *The Virgilian Tradition*, as edited by Jan M. Ziolkowski, which was written by Chancellor Conrad of Querfurt in the year 1194, with that date of composition not being an approximation.

**Kang Type 004, Instance 026 of 058, Cumulative Instance 377 of 409:
The Automata of Octavian's Treasure-Horde According to William of
Malmesbury.³⁷⁷**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of presumptively-male knights, a king, a queen, a presumptively-male archer, and servants of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “thing of brass,” “ruler,” and “servant” by the thesis, at least one had a brazen coloration, at least one depicted a member of the feudal aristocracy, and at least one depicted an individual who labored in a servile capacity. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was an underground palace, which is not considered distinct from any other variety of palace for purposes of the thesis’ application of a controlled vocabulary. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these

³⁷⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 76, 79---80, 81---82; Penny Sullivan’s “Medieval Automata: The ‘Chambre de Beantes’ in Benoit’s *Roman de Troie*,” pages 7, 19; Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, page 69; and Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 128 and 129. For this instance’s primary source matter, see *Gesta Regnum Anglorum (The History of the Kings of England)*, which was written by William of Malmesbury under the patronage of Earl Robert Fitzroy at Wiltshire, in the Kingdom of England, in the year 1127. That date of composition is not an approximation. The thesis’ working notes also record that this instance is discussed in a primary source titled *Abrege des Histories Divines*, but offer no further information regarding that source.

**Kang Type 004, Instance 026 of 058, Cumulative Instance 377 of 409:
The Automata of Octavian's Treasure-Horde According to William of
Malmesbury.**

same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 004, Instance 027 of 058, Cumulative Instance 378 of 409:
The Automata of Octavian's Treasure-Horde According to William of
Malmesbury's Aquitanian Source.³⁷⁸**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a presumptively-male knight, a horse of unknown or unspecified gender, a peasant of unknown or unspecified gender, and a presumptively-male guard. As described in the consulted sources, this instance’s figures partook of the forms termed “thing of brass” and “gatekeeper” by the thesis, as at least one had a brazen coloration, and as at least one in some sense monitored a threshold. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was an underground palace, which is not considered distinct from any other variety of palace for purposes of the thesis’ application of a controlled vocabulary. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe,

³⁷⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, page 80; Penny Sullivan’s “Medieval Automata: The ‘Chambre de Beantes’ in Benoit’s *Roman de Troie*,” page 7; Nadia Ambrosetti’s *Cultural Roots of Technology*, page 189; and Lily V. Filson’s *Engineering Gods*, page 196, but only if Filson, who cites a work by Cohen which this thesis has not consulted, is mistaken in writing that her presentation of this instance is drawn from William of Malmesbury’s “other works,” and not the *Gesta Regnum Anglorum*, unless William of Malmesbury wrote the *Abrege des Histories Divines* noted in the preceding footnote, which this thesis does not know to be true and does not believe to be true, or unless William of Malmesbury really did write “other works” that referenced the automata of Octavian’s treasure-horde in the telling of his unnamed Aquitanian source. For this instance’s primary source matter, see *Gesta Regnum Anglorum* (*The History of the Kings of England*), which was written by William of Malmesbury under the patronage of Earl Robert Fitzroy at Wiltshire, in the Kingdom of England, in the year 1127. That date of composition is not an approximation.

**Kang Type 004, Instance 027 of 058, Cumulative Instance 378 of 409:
The Automata of Octavian's Treasure-Horde According to William of
Malmesbury's Aquitanian Source.**

which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 004, Instance 028 of 058, Cumulative Instance 379 of 409:
The Templar's Brazen Head at Cyprus.³⁷⁹**

This legendary instance of automata may possibly have been “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a talking head, a specific type of object within studies of pre-Modern and Early Modern automata that is typically represented as a disembodied head with the features of a male or an androgynous human. As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass” and “divinatory intelligence” by the thesis, as it had a brazen coloration and was capable of foretelling the future (this latter point is an important feature of talking heads, and they offer their prophecies, which are not always delivered in good faith, when subjected to interrogation in the question-and-answer style). On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was portable. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁷⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 91 and 189. For this instance’s primary source matter, see *Concilia Magnae Britanniae et Hiberniae*, which was produced by D. Wilkins and published at London, in the United Kingdom, in the year 1737. That date of publication is not an approximation.

**Kang Type 004, Instance 029 of 058, Cumulative Instance 380 of 409:
The Waxen Head of Oxford.³⁸⁰**

This legendary instance of automata may possibly have been “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a talking head, a specific type of object within studies of pre-Modern and Early Modern automata that is typically represented as a disembodied head with the features of a male or an androgynous human. As described in the consulted sources, this instance’s figure partook of the form termed “divinatory intelligence” by the thesis, as it was capable of foretelling the future (this point is an important feature of talking heads, and they offer their prophecies, which are not always delivered in good faith, when subjected to interrogation in the question-and-answer style). On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was portable. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁸⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 91 and 189. For this instance’s primary source matter, see *Chronicon Henrici Knighton* in the edition by J.R. Lumby, which was originally written by Henry Knighton and published at London, in the United Kingdom, in the year 1889. That date of publication is not an approximation. “Ibidem” has not been used for this instance’s secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 030 of 058, Cumulative Instance 381 of 409:
The Staged Figure of Death in the Cloud.³⁸¹**

It is unclear whether or not this legendary instance of automata was “false” by the thesis’ definition; it cannot be determined if its figure, as described in this instance’s primary source, was truly an automaton. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis, but may have been kinetic. It contained the figure of an allegorical personification of death, which is typically conventionalized in figural and sculptural works as a robed human skeleton of unknown or unspecified gender (but which is usually given a male characterization in dramatic works). As described in the consulted sources, this instance’s figure partook of the form termed “death” by the thesis, as it depicted an allegorical personification of death, and that allegorical personification is usually itself called “Death.” On review, this automaton figure was accordingly assigned an individual character name in its source material, “Death.” The setting in which it appeared was a specialized piece of stage equipment called a “pomegranate,” a platform decorated to have the appearance of a cloud, and from which the frightening Death-figure protruded. This “pomegranate” was designed to be lowered, presumably with ropes, into a staged dramatic scene, but as is recalled by the thesis in this case, it was lowered into the chamber of an unsuspecting nobleman in a prankish practical joke. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical

³⁸¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see E.R. Truitt’s *Medieval Robots: Mechanism, Magic, Nature, and Art*, pages 135---136. For this instance’s primary source matter, see *Cronica de Juan II*, which was written by Alvar Garcia de Santamaria under the patronage of King John II of Castile. Parsimoniously, it is more likely that the figure of Death was portrayed by a human actor, not by an automaton built for this purpose, but it is nevertheless possible that the article of theatrical equipment including that figure did feature a purpose-built automaton, which would simply have had to make some menacing motion or another, such as lurching forwards and backwards, to be convincingly frightening. Accordingly, the thesis has identified this instance as a “speculative,” or legendary automaton, an identification that will similarly be made in other cases where there is ambiguity as to whether a described scene features human actors or automatons, and where there is some chance that such scenes made use of the latter.

**Kang Type 004, Instance 030 of 058, Cumulative Instance 381 of 409:
The Staged Figure of Death in the Cloud.**

figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 004, Instance 031 of 058, Cumulative Instance 382 of 409:
The Viol Player on Jeanne d'Evreaux's Table Fountain, this Thesis'
Conjecture.**³⁸²

As conjectured by this thesis, nothing suggests that this legendary instance of automata was “false” by its own definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was most likely hydraulic. It contained the figure of a musician of unknown or unspecified gender (a viol player). As described in the consulted sources, this instance’s figure partook of the form termed “musician” by the thesis, as it produced or appeared to produce music; in this case, it may only have made the motion of a viol player manipulating this instrument’s bow, but it is possible that there may also have been a musical accompaniment with bells (c.f. the design of the Cleveland Table Fountain, in which case this instance, and not the Cleveland Table Fountain, would also partake of the form “bellringer,” although the presence of such bells in the design of this instance is not certain, and, as such, the form “bellringer” is not applied to this instance for recordkeeping purposes). On

³⁸² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Stephen N. Fliegel’s “The Cleveland Table Fountain and Gothic Automata,” page 19. For this instance’s primary source matter, see *The Last Will and Testament of Jeanne d'Evreux*, a legal instrument left by a medieval French noblewoman. The thesis, by its established definitions, does not consider the Cleveland Table Fountain to be an automaton or automaton-bearing device, as its figures do not have the semblance of intentional behavior, including responsiveness, and are merely decorative. However, in discussing that object and others which are not themselves automata, including lavers, or medieval vessels built to dispense water for handwashing, Fliegel mentioned a table fountain built with the figure of a viol player. To the thesis’ knowledge, the suggestion that this viol player may have been an automaton is its own, and it has not been advanced in other published scholarship, including in any of the works here cited. However, the thesis is willing to make a conjecture that this specific table fountain may have contained an automaton, the viol player, for the following reasons: from the earliest times, musicians have commonly and ubiquitously been representational subjects memorialized by the medium of automata as a species of art objects, which is evidenced by many of the thesis’ identified instances, and this trend has continued through the Enlightenment, the Victorian period, the twentieth century, and into the present; the only mechanical action necessary to simulate the act of playing a viol, a bowed string instrument, is a back-and-forth, “sawing” motion, which can be accomplished using very simple designs and components, and with only a few mechanical degrees of freedom; as a fountain, a hydraulic power supply is provided by the object to which the viol player was attached, preempting any question as to the source of energy required for its conjectured movement; and within the medieval European context, automata, as rare objects, were typically only owned by members of the nobility, and even the high nobility, when not permanently affixed to public clocks installed in such places as town squares and cathedrals. For these reasons, the figure of a musician on a portable table fountain owned by the French noblewoman Jeanne d'Evreux and noted in her will would seem to present the necessary preconditions for identification as an early European automaton, and this thesis is prepared to make that identification. Because this object, like all of al-Jazari’s originals and so much from the early and high Middle Ages, is now lost, there can be no evidence to rebut the thesis’ contention that this instance was an automaton, and the thesis’ claim in this regard is not falsifiable. As such, this instance has been categorized under Kang’s fourth type as a “speculative” automaton.

**Kang Type 004, Instance 031 of 058, Cumulative Instance 382 of 409:
The Viol Player on Jeanne d'Evreaux's Table Fountain, this Thesis'
Conjecture.**

review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a table fountain. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 032 of 058, Cumulative Instance 383 of 409:
Torriano's Porter.³⁸³**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis, but it may have been kinetic. It contained the figure of a generic man. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material, although it is known to history, and was perhaps contemporaneously called, “The Wooden Man.” King, in her cited work, relates that this instance lends its ascribed name, which is distinct from a proper or given name, to a thoroughfare in Spain known as “The Street of the Wooden Man.” The setting in which it appeared is not applicable, as it was freestanding and mobile (and, as such, could purportedly walk along a street). With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁸³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Elizabeth King’s “Clockwork Prayer: A Sixteenth-Century Mechanical Monk,” page 8 in the author’s copy. See also King’s later article in Jessica Riskin’s edited anthology *Genesis Redux: Essays in the History and Philosophy of Artificial Life*, “Perpetual Devotion: A Sixteenth-Century Machine that Prays,” page 272. No primary source is recorded by the thesis’ working notes for this instance, which does not necessitate the conclusion that no such primary source exists. Readers are referred to King’s cited work in the event that it contains any information regarding the origins of this instance’s legend which may have been neglected by the thesis in error. The author recalls that King noted there is a thoroughfare in modern Spain called “The Street of the Wooden Man” in direct reference to the legendary existence of this instance, so at least among the Spanish, a continuing awareness of it remained in the year when King published her work.

**Kang Type 004, Instance 033 of 058, Cumulative Instance 384 of 409:
Vergil's Talking Head.³⁸⁴**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a talking head, a specific type of object within studies of pre-Modern and Early Modern automata that is typically represented as a disembodied head with the features of a male or an androgynous human. As in all the other instances of talking heads, the thesis’ use of “disembodied” has a meaning equivalent to “severed,” and no talking head should necessarily be construed as floating in midair, despite some illustrations which would suggest this appearance, but instead be envisioned mounted on a stand in the manner of a statuary bust, and either portable without further modification, or when detached from a heavy base, such as a column. As described in the consulted sources, this instance’s figure partook of the form termed “divinatory intelligence” by the thesis, as it was capable of foretelling the future (this point is an important feature of talking heads, and they offer their prophecies, which are not always delivered in good faith, when subjected to interrogation in the question-and-answer style). On review, this automaton figure was not assigned an individual character name in its source material. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the

³⁸⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Timothy D. O’Brien’s “‘Ars-Metrik:’ Science, Satire, and Chaucer’s Summoner,” page 9. No primary source is recorded by the thesis’ working notes for this instance, which does not necessitate the conclusion that no such primary source exists. Readers are referred to O’Brien’s cited work in the event that it contains any information regarding the origins of this instance’s legend which may have been neglected by the thesis in error. As noted in this section, the ascribed creation of automata, and specifically “magical” things of brass, to intellectual figures was a common occurrence in the Middle Ages, and in the case of Virgil, Publius Virgilius Maro, an antique Roman poet whose work survived in Western Europe during the Middle Ages, the estimation of his intellect and arcane skill, owing to his status as an extant classical author and representative of the ancient world, was so inflated as to produce a situation wherein he came to assume the full trappings of a necromancer in the medieval European mind, that is, of what authors of the contemporary genre fiction known as speculative literature would broadly term a “wizard,” and not necessarily one of the villainous sort connoted by “necromancer.” A famous study was written on this conceptualization of Virgil and the corresponding representations of the poet as “wizard,” and while the author did not consult it in the course of research for this thesis, it is of interest.

**Kang Type 004, Instance 033 of 058, Cumulative Instance 384 of 409:
Vergil's Talking Head.**

association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 034 of 058, Cumulative Instance 385 of 409:
The Conjectured “Iorge” at the Church of Temple Cross, Bristol.³⁸⁵**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figures of a knight, a dragon, a king, a queen, and a princess. As described in the consulted sources, this instance’s figures partook of the forms termed “saint,” “hero,” “monster,” and “ruler” by the thesis, as at least one depicted an individual recognized as a saint by one or more Christian denominations, at least one depicted a sympathetic individual celebrated for doing good deeds, at least one depicted a fantastical creature, and at least one depicted a member of the feudal aristocracy. On review, one of these automaton figures was assigned an individual character name in its source material, “Saint George of Lydda.” The setting in which these figures appeared was a castle stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

³⁸⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Philip Butterworth’s “The Mechanycal ‘Ymage off Seynt George’ at St. Botolph’s, Billingsgate, 1474,” pages 219--220, in the cited anthology *Medieval Theater Performance*. For this instance’s primary source matter, see *Records of Early English Drama: Bristol*, which was edited by Mark C. Pilkinton, and about which the thesis’ working notes record no further information.

**Kang Type 004, Instance 035 of 058, Cumulative Instance 386 of 409:
The Brazen Head from William of Auvergne's *De Legibus* in Agrippa, Dee, et
al..³⁸⁶**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition (provided one admits the efficacy of magic). In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a talking head, a specific type of object within studies of pre-Modern and Early Modern automata that is typically represented as a disembodied head with the features of a male or an androgynous human. As in all the other instances of talking heads, the thesis’ use of “disembodied” has a meaning equivalent to “severed,” and no talking head should necessarily be construed as floating in midair, despite some illustrations which would suggest this appearance, but instead be envisioned mounted on a stand in the manner of a statuary bust, and either portable without further modification, or when detached from a heavy base, such as a column. As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass” and “divinatory intelligence” by the thesis, as it had a brazen coloration and was capable of foretelling the future (this latter point is an important feature of talking heads, and they offer their prophecies, which are not always delivered in good faith, when subjected to interrogation in the question-and-answer style). On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was portable. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; and the fifth

³⁸⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Minsoo Kang’s *Sublime Dreams of Living Machines: The Automaton in the European Imagination*, pages 86, 90, 94, and 101. For this instance’s primary source matter, see *Three Books of Occult Philosophy*, a work which was written by Henry Cornelius Agrippa of Nettesheim, and which is known to the thesis in an edition published at St. Paul, Minnesota, in the United States of America, in the year 2000, with that date of publication not being an approximation. See also, as primary source matter, *De Legibus*, which was written by Bishop William of Auvergne (or of Paris), and which circulated in Paris, in the Kingdom of France, before the year 1249, with that date of distribution being an approximation, as the point of origin for this instance; *The Mathematicall Praeface to the Elements of Geometrie of Euclid of Megara*, which was written by John Dee, and which has been noted elsewhere in this section; and *Magia e Grazia*, which was written by Tomasso Campanella, and which has also been noted elsewhere in this section.

**Kang Type 004, Instance 035 of 058, Cumulative Instance 386 of 409:
The Brazen Head from William of Auvergne's *De Legibus* in Agrippa, Dee, et al.**

current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 036 of 058, Cumulative Instance 387 of 409:
The Conjectured Automata of the Bouanania-Adjacent Clock at Fez.³⁸⁷**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was hydraulic. It contained the figure of a generic humanoid of unknown or unspecified gender. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is an extant house in the city of Fez, Morocco; the house remains, but the figures and the clock which regulated their movements do not, although it is clear to those who know the work of al-Jazari that this house originally featured an outward-facing display which presented a sequence of figures. They would emerge from doors to mark the passage of the hours in accords with the presumably-ancient mechanism evidenced in the Gaza Clock, and in the clock given to Charlemagne by Harun al-Rashid (both prior instances in this section), a mechanism which is documented with a full technical explanation by al-Jazari in his lengthy explanation of the first device presented in his *Book of Knowledge of Ingenious Mechanical Devices*, the “Castle Clock.” With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these

³⁸⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study*, page 38. For this instance’s primary source matter, some explanations are in order. Chapuis and Droz suggest that an automaton-bearing clock of the same type evidenced by al-Jazari’s castle clock, by the clock given to Charlemagne by Harun al-Rashid, and by the Gaza clock, which have all been noted as instances in this section, was emplaced in a building opposite a religious structure, the Bouanania, in Fez, Morocco, and that it was, in effect, across the street from this religious structure, but not strictly a part of that same structure. The building which is conjectured by Chapuis and Droz to have contained this automaton-bearing clock is still extant, and their conjecture is not unreasonable, as the design of that building, and the succession of empty spaces which is visible on its façade, strongly suggests it indeed housed an automaton-bearing clock; however, while the building is extant, the clock and its automata are gone, perhaps destroyed in accords with the changed tastes or religious scruples of later centuries, or simply destroyed, like so many automaton-bearing devices and automata, by the ravages of time, warfare, or the economic imperative to scrap and recycle objects made with precious or useful materials. Because the structure in which the clock and automata likely existed is a medieval edifice, it is of historical interest and, to the thesis’ knowledge, is or has been the subject of archaeological and preservation efforts. According to the thesis’ working notes, it dates from the year 1357, which is not an approximation, and owes some or all of its existence to the historical patronage of the Emir Abou Inane. Due to the present non-existence of the clock and its automata, inference of their past existence can only be “speculative,” and this instance thus falls under Kang’s fourth type, despite a good case for the validity of this inference.

**Kang Type 004, Instance 036 of 058, Cumulative Instance 387 of 409:
The Conjectured Automata of the Bouanania-Adjacent Clock at Fez.**

same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations;.

**Kang Type 004, Instance 037 of 058, Cumulative Instance 388 of 409:
The Conjectured Automata of the 1547 Valenciennes Passion Play, First
Grouping.³⁸⁸**

This legendary instance of automata may possibly have been “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of unknown scales defined for evaluative purposes. Its power source is unknown to this thesis, but may have been kinetic. It contained the figure of a generic humanoid of unknown or unspecified gender and an angel of unknown or unspecified gender. As described in the consulted sources, one of this instance’s figures partook of the form termed “angel” by the thesis, as it depicted a heavenly being. On review, one of these automaton figures was assigned an individual character name in its source material, “The Personification of Truth;” while this is not a proper or given name, it is a name which can only refer to one allegorical figure in any given setting, and, as such, it is considered a character name by the thesis. The setting in which these figures appeared was a stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly

³⁸⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study*, pages 356---357. For this instance’s primary source matter, the thesis’ working notes simply record the name “d’Outreman.” This name presumably denotes Henri d’Outreman, an Early Modern historian who wrote a major history of Valenciennes and was the father of Phillipe and Pierre d’Outreman, two Jesuit priests who were both also authors. If the thesis’ interpretation of its own notes is correct, the work of Henri d’Outreman entitled *Histoire de la ville et comte de Valenciennes*, which appeared in multiple editions, sometimes subdivided into parts and sometimes illustrated, would presumably be this instance’s primary source matter. However, based upon the very limited information afforded by the working notes for this instance, it is possible that a work by either d’Outreman son could instead contain this instance’s primary source matter. The thesis believes that Henri d’Outreman’s history of Valenciennes was written in either the sixteenth century or the very first years of the seventeenth century, antedating his death, but that it was only published posthumously at a later date in the seventeenth century, and through the involvement of Phillipe d’Outreman, Pierre d’Outreman, or these brothers in concert. The thesis admits its shortcomings with respect to the identification of this instance’s primary source matter and refers readers to Chapuis and Droz in the event that any information they provided was omitted from its working notes in error. As with other instances in this section, it is possible that the figures noted in this instance were not automata, and instead actors and/or trained animals, but this instance is included under Kang’s fourth type, the “speculative” automata, because it is also possible that these figures were instead represented with automata.

**Kang Type 004, Instance 037 of 058, Cumulative Instance 388 of 409:
The Conjectured Automata of the 1547 Valenciennes Passion Play, First
Grouping.**

responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 038 of 058, Cumulative Instance 389 of 409:
The Conjectured Automata of the 1547 Valenciennes Passion Play, Second
Grouping.³⁸⁹**

This legendary instance of automata may possibly have been “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of unknown scales defined for evaluative purposes. Its power source is unknown to this thesis, but may have been kinetic. It contained the figures of a demon of unknown or unspecified gender and a dragon of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “devil” and “monster” by the thesis, as they respectively depicted a hellish being and a fantastical creature. On review, this automaton figure was assigned an individual character name in its source material, “Satan” or “Lucifer,” with the two names having the same referent. The setting in which these figures appeared was a stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient

³⁸⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study*, pages 356---357; and Lily V. Filson’s *Engineering Gods*, page 171. For this instance’s primary source matter, the thesis’ working notes simply record the name “d’Outreman.” This name presumably denotes Henri d’Outreman, an Early Modern historian who wrote a major history of Valenciennes and was the father of Phillipe and Pierre d’Outreman, two Jesuit priests who were both also authors. If the thesis’ interpretation of its own notes is correct, the work of Henri d’Outreman entitled *Histoire de la ville et comte de Valenciennes*, which appeared in multiple editions, sometimes subdivided into parts and sometimes illustrated, would presumably be this instance’s primary source matter. However, based upon the very limited information afforded by the working notes for this instance, it is possible that a work by either d’Outreman son could instead contain this instance’s primary source matter. The thesis believes that Henri d’Outreman’s history of Valenciennes was written in either the sixteenth century or the very first years of the seventeenth century, antedating his death, but that it was only published posthumously at a later date in the seventeenth century, and through the involvement of Phillipe d’Outreman, Pierre d’Outreman, or these brothers in concert. The thesis admits its shortcomings with respect to the identification of this instance’s primary source matter and refers readers to the cited authors in the event that any information they provided was omitted from its working notes in error. As with other instances in this section, it is possible that the figures noted in this instance were not automata, and instead actors and/or trained animals, but this instance is included under Kang’s fourth type, the “speculative” automata, because it is also possible that these figures were instead represented with automata. “Ibidem” has not been used for this instance’s primary and secondary source matter, despite the near-equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 038 of 058, Cumulative Instance 389 of 409:
The Conjectured Automata of the 1547 Valenciennes Passion Play, Second
Grouping.**

Greece and Rome; the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 039 of 058, Cumulative Instance 390 of 409:
The Conjectured Automata of the 1547 Valenciennes Passion Play, Third
Grouping.³⁹⁰**

This legendary instance of automata may possibly have been “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of unknown scales defined for evaluative purposes. Its power source is unknown to this thesis, but may have been kinetic. It contained the figures of a king, a generic man, and a demon of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the forms termed “ruler,” “villain,” and “devil” by the thesis, as at least one depicted a member of the feudal aristocracy (Biblical kings and rulers were usually depicted in the pre-Modern and Early Modern costumes of kings and rulers during the thesis’ periods of interest), at least one depicted an unsympathetic individual who did bad deeds, and at least one depicted a hellish being. On review, some of these automaton figures were assigned an individual character name in their source material, “King Herod” and “Judas Iscariot.” The setting in which these figures appeared was a stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an

³⁹⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study*, pages 356---357. For this instance’s primary source matter, the thesis’ working notes simply record the name “d’Outreman.” This name presumably denotes Henri d’Outreman, an Early Modern historian who wrote a major history of Valenciennes and was the father of Phillipe and Pierre d’Outreman, two Jesuit priests who were both also authors. If the thesis’ interpretation of its own notes is correct, the work of Henri d’Outreman entitled *Histoire de la ville et comte de Valenciennes*, which appeared in multiple editions, sometimes subdivided into parts and sometimes illustrated, would presumably be this instance’s primary source matter. However, based upon the very limited information afforded by the working notes for this instance, it is possible that a work by either d’Outreman son could instead contain this instance’s primary source matter. The thesis believes that Henri d’Outreman’s history of Valenciennes was written in either the sixteenth century or the very first years of the seventeenth century, antedating his death, but that it was only published posthumously at a later date in the seventeenth century, and through the involvement of Phillipe d’Outreman, Pierre d’Outreman, or these brothers in concert. The thesis admits its shortcomings with respect to the identification of this instance’s primary source matter and refers readers to Chapuis and Droz in the event that any information they provided was omitted from its working notes in error. As with other instances in this section, it is possible that the figures noted in this instance were not automata, and instead actors and/or trained animals, but this instance is included under Kang’s fourth type, the “speculative” automata, because it is also possible that these figures were instead represented with automata. “Ibidem” has not been used for this instance’s primary and secondary source matter, despite the near-equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 039 of 058, Cumulative Instance 390 of 409:
The Conjectured Automata of the 1547 Valenciennes Passion Play, Third
Grouping.**

association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 040 of 058, Cumulative Instance 391 of 409:
The Conjectured Tarasque Automata from Medieval Spanish Theater.³⁹¹**

This legendary instance of automata may possibly have been “false” by the thesis’ definition. In the absence of information, its figures are interpreted to have been of unknown scales defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a tarasque, a specifically Spanish monster with an appearance like a six-footed, leonine-headed ankylosaur encased in a tortoise shell, and a generic woman. As described in the consulted sources, this instance’s figures partook of the forms termed “monster” and “villain” by the thesis, as they respectively depicted a fantastical creature and an unsympathetic individual reviled for doing bad deeds. On review, one of these automaton figures was assigned an individual character name in its source material, “The Whore of Babylon,” which, as in other cases involving the nomenclature of allegorical figures, is considered a character name by the thesis, despite not being a proper or given name, because it has a singular and specific referent. The setting in which these figures appeared was a stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁹¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Chapuis & Droz’s *Automata: A Historical and Technological Study*, page 357. As has been stated with respect to the cases of prior instances, and will be repeated, the monstrous appearance of the Spanish tarasque, or tarasca, would be well-suited to the accomplishment of movement via the use of actors concealed beneath its exterior, and pre-Modern and Early Modern representations of this creature on theatrical stages of those periods may not have been true automata (although, even in in this interpretation, the Whore of Babylon might well have been an automaton comparable to *Las Virgen de los Reyes*, a dark mirror of the latter). However, the thesis is not aware of definitive evidence to preclude the possibility that the tarasque and Whore of Babylon may have been represented with automata, which would be stage machinery in this context, and has accordingly included this instance, following Chapuis and Droz, under Kang’s fourth type. The thesis’ working notes record no primary source matter for this instance, which is consistent with its presentation in Chapuis and Droz’s cited work.

**Kang Type 004, Instance 041 of 058, Cumulative Instance 392 of 409:
The Lion Candle-Clock Reported by al-Jazari.³⁹²**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a presumptively-male lion; this figure is recalled to only have represented the lion’s head, but demi-animaloid figures are not tracked as a distinct category by the thesis. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a chamber clock. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁹² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see, as primary source matter, *The Book of Knowledge of Ingenious Mechanical Devices* in Hill’s edition, page 83, which was written by Ibn al-Razzaz al-Jazari under the patronage of King Nasir al-Din, whose full name is given elsewhere in this section, at Diyarbakir, a city of Diyar Bakr, al-Jazira, in the year 1206. That date of composition is not an approximation. The thesis’ working notes do not record secondary source matter for this instance, as it was not discussed by any consulted author other than al-Jazari himself; and as regards this instance, al-Jazari mentions his awareness of it incidentally. This remark in passing from al-Jazari nevertheless demonstrates that automata were more common in the medieval Islamic world than one might believe, and the thesis likewise believes that automata were more common in the European Middle Ages and Early Modern periods than is commonly accepted. The prevailing opinion is that automata were exceptionally rare, but even if the bound of rarity is somewhat reduced to simple rareness, this would likely be a more realistic assessment. Readers are reminded that some ninety percent of the Middle Ages’ literary output is thought to be lost, and the thesis would contend that this same ratio is applicable by extrapolation between truly lost and “extant” automata, whether these “extant” automata survive in material culture, designs, descriptions in non-fictional primary source matter, references and asides, or in garbled representations from fantasy and legend. Thus, it is sadly probable that ninety percent of pre-Modern and Early Modern automata are lost.

**Kang Type 004, Instance 042 of 058, Cumulative Instance 393 of 409:
Apollonius of Byzantium's Alleged Fluteplayer.³⁹³**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition. In the absence of information, its figure is interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a humanoid musician of unknown or unspecified gender (a flautist). As described in the consulted sources, this instance’s figure partook of the form termed “musician” by the thesis, as it produced or appeared to produce music. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is unknown to this thesis. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁹³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 77; and Donald R. Hill’s introduction to his edition of the Banu Musa’s *Book of Ingenious Devices*, page 13. For this instance’s primary source matter, see Indo-Spencer Pers. MS. 2 *Risala-I Hakim Muhammad Yasin*, which is housed in the collections of the New York Public Library. The thesis recalls that this instance is only attested by late sources and was supposedly described in an original treatise by Apollonius of Byzantium entitled *On the Fluteplayer*, although the thesis is not aware of an existent technical description for this instance.

**Kang Type 004, Instance 043 of 058, Cumulative Instance 394 of 409:
al-Masudi's Cock on the Column.³⁹⁴**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a cock, a male chicken. As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass,” “gatekeeper,” and “death” by the thesis, as it had a brazen coloration, in some sense monitored a threshold, and was activated to signal the enactment of deadly violence upon human persons. While this instance does not itself appear to have been directly responsible for the loss of human life as an automaton figure, it was an element of a deliberately weaponized system design, and as such, it strongly registers the seventh current. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a tomb. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which

³⁹⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, page 105. For this instance’s primary source matter, see *The Meadows of Gold and Mines of Gems*, which was written by al-Masudi at Baghdad, in the Abbasid Caliphate, in the year 947. That date of composition is an approximation. The legend in which this instance appears, as recorded by al-Masudi, is truly fascinating. The thesis recalls that it related how, during a medieval Islamic assay of ancient Egyptian ruins, a vertical shaft was opened with a spiral staircase and central column. The cock, a thing of brass, sat atop the column, and when the excavators descended the staircase, it began to crow. The booby-trapped staircase then collapsed upon itself by design, killing its investigators, which prompted the abandonment of their enterprise and burial *in situ* with the re-sealing of the shaft. Ambrosetti writes how, despite the seemingly fantastical nature of this incredible countermeasure, it could have been realistically realized with pre-Modern technology, as on analysis, this responsive system was triggered by the investigators’ weight upon the stairsteps. Despite the unfortunateness of the recorded outcome, this remarkable construct, automaton and all, would not be out of place in a modern adventure film. Like Virgil’s legendary automata, it has been included in the thesis’ catalog, despite being associated with the ancient world, because its legend arose during the pre-Modern or Early Modern periods, and this legend does not necessarily have any basis in the historical reality of ancient Egyptian civilization, much as the pre-Modern and Early Modern legends of the Virgilian automata did not originate with the biographical life of Publius Virgilius Maro within ancient Roman civilization.

**Kang Type 004, Instance 043 of 058, Cumulative Instance 394 of 409:
al-Masudi's Cock on the Column.**

this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 004, Instance 044 of 058, Cumulative Instance 395 of 409:
Virgil's Perpetual Brazier and Archer.³⁹⁵**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a male archer. As described in the consulted sources, this instance’s figure partook of the form termed “thing of brass” by the thesis, as it had a brazen coloration. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which this instance appeared is not applicable, as it was freestanding. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it

³⁹⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 136, 137, and 145---146. For this instance’s primary source matter, see the *Cleomades*, which was written by Adenet Le Roi, and which has been extensively referenced elsewhere in this section, specifically under the presentation of instances for Kang’s second type. While this instance does appear in a work of fiction, and might therefore seem more appropriate for designation under Kang’s second type, the attribution of this instance to Virgil, a historic figure, renders it a legendary automaton inasmuch as it partakes of Virgil’s medieval legend; and for this same reason, the thesis suspects, but is not prepared to substantiate (except by citing Ambrosetti), that this instance, like the many other Virgilian automata hereinbefore presented, may have existed independently from the *Cleomades* within the broader group of legends surrounding Virgil in the Middle Ages, circulating as a separate myth, and that under this interpretation, Adenet Le Roi, the so-called little king of the jesters of his day and the *Cleomades*’ author, may have incorporated this example of the legendary Virgilian automata tradition into his work, rather than wholly inventing it from his own imaginings. Aside from this point, it is of particular interest to the thesis that this instance evidences direct descent from a real-world automaton of the classical tradition. Heron of Alexandria, whose legacy in the history of pre-Modern and Early Modern automata is hugely apparent, designed an automaton archer of the same type as that described by Adenet in the *Cleomades*; see Minsoo Kang’s *Sublime Dreams of Living Machines*, page 99. An archer with this same Heronic design from a different work of pre-Modern fiction, *Le Roman de Eneas*, was noted under the presentation of instances categorized under Kang’s second type, and in that work, it appeared in the tomb of Camille, the Amazon. Both the present instance and that in *Le Roman de Eneas* are not simply automaton archers, but according to their descriptions in both texts, are discernably Heronic in presentation, functionality, and purpose. What both the *Eneas*-author and Adenet seem to be telling us, then, is that they are aware of a Heronic design, but to them, it is either fictitious or mythical, either being associated with an imaginary character, Camille, who is nevertheless an Amazon, and therefore from the ancient world, or with an imagined version of an actual person, Virgil, also from the same ancient world. How either author became aware of this Heronic design is, to the thesis, an open question; for if they knew it as one of Heron’s very real automata, even as a design and not an object, they must have known that it would be possible to recreate it, and that, as such, it was not really a fictive or mythical construct. The representation of Heron’s archer in unrealistic terms and settings in these works may bespeak a disbelief that it could be reproduced, which might have been due to only a notional awareness of the design, lack of the manufacturing techniques and skilled craftspeople to reproduce it, or to some combination of these or other reasons. Of course, these are only guesses made in view of the evidence that Heron’s archer was known to post-classical, pre-Modern Western Europeans.

**Kang Type 004, Instance 044 of 058, Cumulative Instance 395 of 409:
Vergil's Perpetual Brazier and Archer.**

partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 045 of 058, Cumulative Instance 396 of 409:
Virgil's Seasonal Calendar.³⁹⁶**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the large scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a generic humanoid. As described in the consulted sources, this instance’s figures partook of the form termed “thing of brass” by the thesis, as they had brazened colorations. On review, these automaton figures were assigned individual character names in their source material,

³⁹⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nadia Ambrosetti’s *Cultural Roots of Technology*, pages 136---137. For this instance’s primary source matter, see the *Cleomades*, which was written by Adenet Le Roi, and which has been extensively referenced elsewhere in this section, specifically under the presentation of instances for Kang’s second type. While this instance does appear in a work of fiction, and might therefore seem more appropriate for designation under Kang’s second type, the attribution of this instance to Virgil, a historic figure, renders it a legendary automaton inasmuch as it partakes of Virgil’s medieval legend; and for this same reason, the thesis suspects, but is not prepared to substantiate (except by citing Ambrosetti), that this instance, like the many other Virgilian automata hereinbefore presented, may have existed independently from the *Cleomades* within the broader group of legends surrounding Virgil in the Middle Ages, circulating as a separate myth, and that under this interpretation, Adenet Le Roi, the so-called little king of the jesters of his day and the *Cleomades*’ author, may have incorporated this example of the legendary Virgilian automata tradition into his work, rather than wholly inventing it from his own imaginings. To the thesis’ recollection, this instance comprised four large figures arranged in a circle, with each figure representing a season of the calendar year by personification, and upon the solstices and equinoxes, the figure of the year’s closing season would throw a ball to the adjacent figure of the year’s opening season, thus marking the passage of the same. It is possible, especially with large figures that have limited degrees of freedom, and which only perform one single movement annually, to imagine that this system could actually be realized, but what makes it truly “legendary,” or less than realistic, is the prodigious amount of water, sand, clockwork spring tension (which would potentially be anachronistic), or other time-delayed motive force necessary to make each figure perform its action once a year, and on a specific day of each year determined by the time-delay factor. Absent the necessity of fixing the time at which the ball would be thrown by each figure to the dates of the annual solstices and equinoxes, the thesis is of the opinion that it would be possible to construct this model, especially in miniature; and even, granted a monumental below-ground waterworks, for the sake of argument, to make it operate at the scale and with the time-delay described by the source text. The precision necessary for actuation of the throws, which would entail design work to uniformly arrange each statue’s limbs in a passive stance when “catching” the ball, but in a stance that would also throw the ball upon each figure’s activation, and the effectuation of precise timing for these activations, would be considerable challenges if a reproduction at the original scale of this legendary construct was to be created using technologies contemporaneous with its appearance in the *Cleomades*. Perhaps ironically, given that this configuration was not used for pre-Modern or Early Modern automata to the thesis’ knowledge, a system involving massive subterranean hourglasses beneath each figure would be most appropriate, with the “throws” being triggered by a simple mechanism upon the draining of each upper chamber. “Ibidem” has not been used for this instance’s primary and secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 045 of 058, Cumulative Instance 396 of 409:
Vergil's Seasonal Calendar.**

“The Personification of Winter,” “The Personification of Spring,” “The Personification of Summer,” and “The Personification of Autumn.” The setting in which these figures appeared was a city wall, and would have ideally have been a perfectly circular wall of that type, with the figures positioned at the points of the four cardinal directions, and with the fronts of their bodies facing inwards, towards the city enclosed by the wall. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 046 of 058, Cumulative Instance 397 of 409:
Ferdinando de Medici's Castle Tableau.³⁹⁷**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a presumptively-male soldier and a presumptively-male hunter. As described in the consulted sources, this instance’s figures partook of the form termed “death” by the thesis, as they exclusively represent individuals whose occupation, whether as vocation or avocation, was concerned with the extinguishment of human or animal life. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared was a stage set, and perhaps a diorama-like castle stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence

³⁹⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, pages 20---21. The thesis’ working notes do not record primary source matter for this instance, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Filson’s work in the event it contains any information that was omitted by the thesis in error. The absence of primary source matter may be explained by the thesis’ belief that this instance is no longer extant, if it was ever extant and contained automata; and without any primary source matter, it cannot be persuasively shown that this tableau, which the author envisions rather like a scenic model-train layout, did contain automata, which is why it has been placed under Kang’s “speculative” fourth type. However, the existence of the reigning Medici households in late-Renaissance Italy, and the legacy of his brother’s automata at Pratolino, would suggest to the thesis that, much as he may have disliked the occult ramifications of Francesco I’s automata as identified by Filson in her interpretations of the Pratolino instances, it is not inconceivable that Ferdinando would still patronize the creation of automata which, to him, lacked the occult dimension inferred by Filson, and in this case, automata that depicted scenes of warfare and hunting. Recall that, in accords with Filson’s arguments, it would easily be possible for Ferdinando’s craftsman-technicians to create non-occultic automata by simply omitting the ritualistic and occultic operations she (in an argument that cannot be falsified) contends were performed upon each of the Pratolino automata as they were built to invest, or perhaps “charge,” these automata with the hidden, “magical” properties of Hermetic *telestike*, godmaking.

**Kang Type 004, Instance 046 of 058, Cumulative Instance 397 of 409:
Ferdinando de Medici's Castle Tableau.**

upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 004, Instance 047 of 058, Cumulative Instance 398 of 409:
 Legendary Indian Automata.³⁹⁸**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information, its figures are interpreted to have been of unknown scales defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a male dancer, an elephant of unknown or unspecified gender, a fish of unknown or unspecified gender, and a female prostitute. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is unknown to this thesis. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

³⁹⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, page 162. The thesis’ working notes do not record primary source matter for this instance, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Filson’s work in the event it contains any information that was omitted by the thesis in error. It may be fruitful to compare this instance to the Indian automata included by Truitt in *Medieval Robots* at the suggestion of a colleague, which have been previously categorized in this section under Kang’s third type, for while Truitt notes similar female automata in India, Filson takes the additional step of identifying these automata as representations of prostitutes, while also indicating they are legendary and were not historical designs or objects. Separately from the question of the discrepant interpretations of Indian automata with the figures of women, the thesis makes two other points, which are as follows: the motion of the Indian women-automata, grasping in an embrace, is similar to the action of Leonardo da Vinci’s automaton knight, which did likewise as a gesture of hostility, and not of affection; and more broadly, the idea of prostitute-automata, proto-gynoids perhaps operated by users for a fee, may be of interest to feminist scholars, given the emergence of sex-doll brothels (which may have pseudo-gynoids) in the twenty-first century, and that the very idea cries out for analyses based in objectification of the body. “Ibidem” has not been used for this instance’s secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 048 of 058, Cumulative Instance 399 of 409:
The Eucharistic Dove at the Metropolitan Museum of Art.³⁹⁹**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a dove of unknown or unspecified gender. As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass” and “god” by the thesis, as it had a brazen coloration (and, in this case, materials, even if the bronze is highly worked and tarnished with age), and as it can be construed as a representation of the Dove of Peace, a Biblical conventionalization for God the Holy Spirit, one of the three persons of the unitary God in the theological model of Christian Trinitarianism. On review, this automaton figure was accordingly assigned an individual character name in its source material, “God the Holy Spirit.” The setting in which it appeared was a church. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical

³⁹⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, page 169. This instance is extant and may itself be consulted as primary source matter. As of this writing, it is on display in Room 304 at The Met Fifth Avenue, as it is a holding of the Metropolitan Museum of Art in New York City. While Filson believes it represents an example of the Dove of Peace automata which appeared in many cathedrals and Western European religious sites in the pre-Modern and Early Modern eras, it has been classed under Kang’s fourth type because it does not, as it presently appears, seem to have any moving parts other than the receptacle for the Eucharistic host, which has a hinged lid. The dove stands on a base in a seemingly stationary posture, and four prongs extend upwards and outwards from this base. Filson is recalled to believe, or to have at least led the author to believe, that these prongs may indicate the dove was “flown” by suspending it from wires or strings attached to the prongs’ ends, but these prongs could instead be present for the simple purpose of preventing the dove from tipping over if brushed while sitting on a flat surface. The dove’s wings appear to be separate metal plates, suggesting that they may have moved or been fixed in a different position at some point, but there is little in the dove’s present appearance to present the illusion of flight, even if it was to be “flown” along a slanted trajectory or lowered vertically from a position above an altar by attachment of strings or wires to the prongs. With minor modifications, the thesis would be prepared to accept it as a preserved automaton and recategorize it under Kang’s third type, even if it did not have any moving parts, since extended wings, even with the presence of the base, would create the illusion of intentional motion if the base’s prongs were to be combined with a stringing and spooling system. However, the totality of the dove’s present appearance, including its closed wings, is not indicative of motion, and as such, the thesis has mainly included it in this catalog on the possibility that it may have had a different appearance in the pre-Modern period, one which has subsequently been modified by, for instance, the soldering of the wings to the dove’s body. Of course, the thesis has also included it in deference to Filson’s authority on this topic.

**Kang Type 004, Instance 048 of 058, Cumulative Instance 399 of 409:
The Eucharistic Dove at the Metropolitan Museum of Art.**

civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 049 of 058, Cumulative Instance 400 of 409:
da Vinci's Large Orrery.⁴⁰⁰**

This legendary instance of automata may possibly have been “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of the planetary deities, which are considered a single group by this thesis. As described in the consulted sources, this instance’s figures partook of the form termed “god” by the thesis, as they depicted divine beings. On review, these automaton figures were assigned individual character names in their source material, the names of “The Planetary Deities,” which are not listed by the thesis in this or other entries. The setting in which these figures appeared is unknown to this thesis, but they were part of a large orrery, a mechanism that demonstrated the movements of the planets. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the sixth current of thought, as it partakes in the celebratory association of automata with the technological achievement of a given civilization, an association potentially evidenced by the restoration, improvement, collection, conservation, dramatization, and praise of automata in ways comparable to analogous celebrations of other technological achievements also identified by a civilization to be indicative of its own “progress,” that is, to be the indices of civilizational advancement, or as, in the case of Renaissance European civilizations, it represents

⁴⁰⁰ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, page 183. The thesis’ working notes do not record primary source matter for this instance, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Filson’s work if any primary source matter it contains was omitted from the thesis’ working notes in error. Leonardo da Vinci, as evidenced by the primary source matter presented in Rosheim’s cited book, did design automata, but here, as in prior instances, there is insufficient evidence to establish that the figures of this orrery were true automata, with costumed actors being a more pragmatic alternative. In the absence of definitive evidence against the identification of these figures as automata, the thesis has placed this instance under Kang’s fourth type.

**Kang Type 004, Instance 049 of 058, Cumulative Instance 400 of 409:
da Vinci's Large Orrery.**

the recovery or "reclamation" of classical Greek and Roman civilizational achievements.

**Kang Type 004, Instance 050 of 058, Cumulative Instance 401 of 409:
Albertus Magnus' Attendants.⁴⁰¹**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition, provided that one admits the existence of constructs such as those identified in this instance. In the absence of information to the contrary, its figures are interpreted to have been of the medium scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a generic humanoid of unknown or unspecified gender. As described in the consulted sources, this instance’s figures likely partook of the form termed “thing of brass” by the thesis, as they most likely had a brazen coloration. On review, these automaton figures were not assigned individual character names in their source material. The setting in which they appeared is not applicable, as they were freestanding. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

⁴⁰¹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, page 200. The thesis’ working notes do not record primary source matter for this instance, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Filson’s work if any primary source matter it contains was omitted from the thesis’ working notes in error. The representation of the brazen, full-bodied automata in this legendary instance likely postdates the textual appearance of Albertus Magnus’ brazen, full-bodied android, a comparably legendary instance previously noted in this section, since the thesis apprehends that this instance is a pluralization and generalization of Albertus’ existing legend, an extrapolation which multiplies the figure of the android into an entire group of automaton servants. Strangely, this instance’s legend does not approach the popularity of that surrounding the single android, which is a famous and oft-repeated tale. “Ibidem” has not been used for this instance’s secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 051 of 058, Cumulative Instance 402 of 409:
Arnold of Villanova's Brazen Head.⁴⁰²**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition, provided that one admits the existence of constructs such as that identified in this instance. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source was chemical, a rare means of powering automata in the considered periods. It contained the figure of a talking head, a specific type of object within studies of pre-Modern and Early Modern automata that is typically represented as a disembodied head with the features of a male or an androgynous human. As in all the other instances of talking heads, the thesis’ use of “disembodied” has a meaning equivalent to “severed,” and no talking head should necessarily be construed as floating in midair, despite some illustrations which would suggest this appearance, but instead be envisioned mounted on a stand in the manner of a statuary bust, and either portable without further modification, or when detached from a heavy base, such as a column. As described in the consulted sources, this instance’s figure partook of the forms termed “thing of brass” and “divinatory intelligence” by the thesis, as it had a brazen coloration and was capable of foretelling the future (this latter point is an important feature of talking heads, and they offer their prophecies, which are not always delivered in good faith, when subjected to interrogation in the question-and-answer style). On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared is not applicable, as it was portable. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both

⁴⁰² For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, page 204. The thesis’ working notes do not record primary source matter for this instance, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Filson’s work if it contains any source information omitted from the thesis’ working notes in error. To the thesis’ knowledge and recollection, Arnold of Villanova was a medical doctor and practitioner of alchemy, with his status as a public intellectual, which followed from his vocation, and with his learned avocation, resulting in the unsurprising attachment of a brazen-head legend to his biographical record. Like Roger Bacon, Robert Grosseteste, and Gerbert of Aurillac, Arnold of Villanova was, at one time, a living person, and the legendary instance associated with him has therefore been placed under Kang’s fourth type. “Ibidem” has not been used for this instance’s secondary source matter, despite the equivalence of the same with that recorded for the preceding instance, because these two instances correspond to distinct legendary objects.

**Kang Type 004, Instance 051 of 058, Cumulative Instance 402 of 409:
Arnold of Villanova's Brazen Head.**

non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 052 of 058, Cumulative Instance 403 of 409:
Solomon Ibn Gabirol's Wife-Automaton.⁴⁰³**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figure is interpreted to have been of the medium scale defined for evaluative purposes. Its power source was kinetic. It contained the figure of a generic woman. As described in the consulted sources, this instance’s figure partook of the form termed “servant” by the thesis, as it performed tasks that were of a broadly servile nature. On review, this automaton figure was not assigned an individual character name in its source

⁴⁰³ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Lily V. Filson’s *Engineering Gods*, page 262. This instance is also mentioned in Sarah Pessin’s entry for ibn Gabirol in the online edition of the *Stanford Encyclopedia of Philosophy*. Interestingly, ibn Gabirol’s entry in the *Stanford Encyclopedia of Philosophy* is the only one, among those for the many exponents of philosophy who are reputed to have built automata in the pre-Modern and Early Modern worlds, and who have been noted by this catalog, which mentions an automaton legend, at least in the thesis’ recollection. The thesis’ working notes do not record primary source matter for this instance, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Filson’s work if it contains any source information omitted from the thesis’ working notes in error. There is a tremendous opportunity here, when reviewing this instance, for critical scholarship, as ibn Gabirol legendarily produced what can be approximated, many centuries before the conceptualization of gynoids in modern science fiction and the applied fields of interactive robotics, as a “Stepford wife,” a construct he is credited with creating for the purposes of companionship, and potentially intimacy, in the absence of a biological spouse, although the thesis’ understanding of this instance suggests it supposedly functioned more like a housemaid than like a sex doll. Pessin relates that the legend of this automaton wife may have origins in ibn Gabirol’s personality as much as his intellect, as he was apparently what is contemporaneously and delicately termed a difficult person, and he tended to alienate his peers, the Iberian Jewish community of his day. Apart from being an artificial wife, and therefore of clear interest to feminist interpreters, this instance is the sole automaton associated with a Jewish maker in the thesis’ catalog, which should make it a good subject of analysis for specialists in the intellectual history of the Jewish people. As regards ibn Gabirol’s Jewish identity, this instance is fascinating in the thesis’ perspective because, according to its legend, the automaton wife of Solomon ibn Gabirol was mistaken for a golem, causing ibn Gabirol to be summoned before the authorities of his realm to account for its existence. At this inquest, ibn Gabirol sought to disprove the allegation he had animated a golem by partially disassembling the wife-automaton, thus demonstrating that he did not engage in the ritualistic and “magical” procedures prerequisite to the bestowal of a golem’s vital energy, but had instead built an artificial, moving, humanoid device with the figure of a woman, an automaton. Thus, the exclusion of golems from consideration by this thesis as examples of automata can be justified by examining the only case known to the thesis in which the conflation of golems, figures fashioned homogeneously from mud, with automata, figures comprised of heterogenous materials and components, and therefore artificial constructs, was dismissed in the formal setting of open court by the Jewish builder of a legendary instance of pre-Modern or Early Modern automata himself, Solomon ibn Gabirol, in the narrative of the legend which describes and surrounds the automaton he himself is reputed to have built. Solomon ibn Gabirol, separately from the proceedings of this legendary trial, was a real person, and the author of certain texts used in traditional Jewish prayers, and as such, the legendary instance of pre-Modern or Early Modern automata ascribed to him has been placed under Kang’s fourth type.

**Kang Type 004, Instance 052 of 058, Cumulative Instance 403 of 409:
Solomon Ibn Gabirol's Wife-Automaton.**

material. The setting in which it appeared is not applicable, as it was freestanding. With respect to the model proposed by this thesis, which is an elaboration of Kang's typological system, this instance at least registers the second current of thought, as it partakes in the technology and/or culture of Asian and North African/Moorish civilizations, which this thesis has found to be exclusively secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; the fourth current of thought, as its reputed or actual existence led to identifiable persecution of the person or persons supposedly responsible for its creation, or fear of the same, whether in the fictitious, historical, or legendary presentation(s) of this instance that date from the considered periods; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 053 of 058, Cumulative Instance 404 of 409:
The Angels in *Discarded Knowledge*.⁴⁰⁴**

As interpreted by this thesis, nothing suggests that this legendary instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was most likely kinetic, and is identified as kinetic for the thesis’ purposes. It contained the figure of an angel of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “angel” by the thesis, as they depicted heavenly beings. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical

⁴⁰⁴ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Bart Ramakers’ “Walk, Talk, Sit, Quit,” pages 45---46, in *Medieval Theater Performance*. For this instance’s primary source matter, see “Discarded Knowledge,” 10B8, Volume II (1993), Folios 103 (Recto) --- 118 (Verso) in the edition by W.N.M. Husken, a work published at Assen, in The Netherlands, which originally appeared under patronage from the mayor and aldermen of the city of Haarlem in the year 1601, with that date not being an approximation. The thesis recalls that this instance may have merely been designed as flat wooden cutouts with the figures and painted images of angels, and that it was to be raised and lowered by stage machinery in the course of delivering the theatrical performance noted as primary source matter. It is likely that the use of actors may have been preferable to these cutouts from the perspectives of both the thespians and audience; but it is nevertheless possible, for various circumstantial reasons of expense and/or casting considerations, that the artificial angels would have instead been used, and, of course, in the author’s opinion, this would by no means detract from the interest or effectiveness of the play. Because these artificial angels, which are here construed as being two-dimensional, by contrast to fully-sculpted automaton figures, or even automaton figures in relief, would be raised and lowered within open three-dimensional space, they are still considered automata by the thesis, despite the thesis’ interpretation that they may only have had planar, and thus two-dimensional surfaces, rather than the three-dimensional modeling more typical (and, in the thesis’ definitional bounds, more correct) for pre-Modern and Early Modern automata.

Kang Type 004, Instance 053 of 058, Cumulative Instance 404 of 409:
The Angels in *Discarded Knowledge*.

condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers, through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 004, Instance 054 of 058, Cumulative Instance 405 of 409:
The Angels of the Stella at Santa Maria del Carmine, Florence, Assuming
Rotation.**⁴⁰⁵

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition. In the absence of information to the contrary, its figures are interpreted to have been of the small scale defined for evaluative purposes. Its power source was most likely kinetic, and is identified as kinetic for the thesis’ purposes. It contained the figure of an angel of unknown or unspecified gender. As described in the consulted sources, this instance’s figures partook of the form termed “angel” by the thesis, as they depicted heavenly beings. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared was a church. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and

⁴⁰⁵ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Nerida Newbigin’s “Performing Heaven in Fifteenth-Century Florence,” pages 97 and 99, in *Medieval Theater Performance*. The thesis’ working notes, to the author’s surprise, do not provide primary source matter for this instance, which does not necessitate the conclusion that no such primary source matter exists. Readers are referred to Newbigin’s work, which likely states this instance’s primary source matter. What was of interest to the thesis in noting this instance is that its status as an automaton-bearing device depends upon a matter of interpretation, which is namely the thesis’ own conjecture that the “stella” described in Newbigin’s work was made to spin. The thesis recalls, from reading Newbigin, that this “stella” was a kind of massive, brightly-lit chandelier with the rustic design of a spoked wheel, and that it was suspended from the church’s roof to hang horizontally, so that the edge of the wheel faced outward. To this edge were affixed stuffed, three-dimensional leather dolls representing angels, together with various sacred and secular symbols. If this was the extent of the design used for the “stella,” the thesis would not consider its angels automata, as both they and this chandelier as a whole would be stationary. However, the thesis believes it is not infeasible or unrealistic to suggest that the stella rotated in a slow progression about its central axis. This would allow the spectators below to see the entirety of its featured symbology and various angels, which may have either been uniform in their doll-like appearances or, perhaps more strikingly, a diverse ensemble of angelic personages. Rotation of the described type could be achieved by extremely simple technologies, such as a crank affixed to a vertical rod passing through the church’s ceiling, or perhaps a lantern gear connecting the vertical rod to a horizontal rod and crank. The latter arrangement would not be unlike the configuration of a mill’s machinery, and was certainly within the grasp of fifteenth-century Florentines. So long as the person, or small team of people, tasked with turning the crank set up for the “stella” were kept out of sight, and in a loft or other space above the church’s ceiling, including the rooftop, the motive force producing the rotation of the “stella” would not be immediately apparent, and the effect, while modest, would still have made the display livelier and more enjoyable. The cupid automaton at Pratolino, which was previously noted in this catalog, is considered an automaton both by this thesis and by Filson, and its principal movement was also simple rotation about an axis. Because the identification of this instance as an automaton-bearing object is contingent upon acceptance of the thesis’ conjecture regarding its rotation per the thesis’ own definitions, it has been placed under Kang’s fourth type in the absence of any conclusive evidence known to the thesis that the “stella” indeed rotated.

**Kang Type 004, Instance 054 of 058, Cumulative Instance 405 of 409:
The Angels of the Stella at Santa Maria del Carmine, Florence, Assuming
Rotation.**

potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 055 of 058, Cumulative Instance 406 of 409:
The Saints and Kings of the Cheapside Pageant for Henry VIII and Charles V's
1522 Entry into London.⁴⁰⁶**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figures are interpreted to have been of unknown scales defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of an angel of unknown or unspecified gender, a male saint, a king, and Mary, the mother of Jesus, who is a female saint. As described in the consulted sources, this instance’s figures partook of the forms termed “angel,” “saint,” and “ruler” by the thesis, as they respectively depicted a heavenly being, an individual recognized as a saint by one or more Christian denominations, and a member of the feudal aristocracy. On review, these automaton figures were assigned individual character names in their source material, “The Twelve Apostles,” who are counted by the thesis as a group, and not individually, “Saint George of Lydda,” “Saint John the Baptist,” “Saint Edmund the Martyr,” “Saint Edward the Confessor,” “King Henry VI of England,” “Saint Dunstan,” “Saint Thomas [Becket] of Canterbury,” “Saint Earconwald,” and “Mary, the mother of Jesus.” The setting in which these figures appeared was a stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has

⁴⁰⁶ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see David Klausner’s “Drama Without Text, Drama Without Action,” pages 112---113, in *Medieval Theater Performance*. For this instance’s primary source matter, see *Manuscript 298*, Corpus Christi College Cambridge, as presented in *English Pageantry: An Historical Outline*, which was written by Robert Withington and published at Cambridge, in the United States of America, in the year 1913. That date of publication is not an approximation. As with prior instances cataloged under Kang’s fourth type, it is possible that this instance’s figures were human actors, not automata; but it is also possible that these figures, in whole or in part, or to some degree, were automata, and, as such, they have been duly noted. The author is inclined to believe, from his own argumentative position, and given the popularity of pre-Modern and Early Modern automata on parade floats, as part of civic spectacles, and as features of courtly estates, as evidenced by the contents of this catalog, that at least some of the many figures identifiable as specific characters in this instance’s elaborate grouping were automata. However, since this is a point which, like so many others for the cases under Kang’s fourth type, cannot be definitively established by this thesis, or perhaps at all, the many potential automata of this instance are “speculative.”

**Kang Type 004, Instance 055 of 058, Cumulative Instance 406 of 409:
The Saints and Kings of the Cheapside Pageant for Henry VIII and Charles V's
1522 Entry into London.**

found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 056 of 058, Cumulative Instance 407 of 409:
The Steed (of Brass?) in *The Flea Trapper* (*De Vloivanger*).⁴⁰⁷**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition, provided that the existence of constructs such as the one under consideration is admitted. In the absence of information to the contrary, its figure is interpreted to have been of the large scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figure of a horse. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis, but as discussed in its footnote, the author easily envisioned it as a “thing of brass,” and would recommend that this appearance be adopted in any future staging of *De Vloivanger*. On review, this automaton figure was not assigned an individual character name in its source material. The setting in which it appeared was a stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the third current of thought, as it

⁴⁰⁷ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Femke Kramer’s “Horsemanship in Rhetorician’s Farce,” pages 175---177, in *Medieval Theater Performance*. For this instance’s primary source matter, see *Trou Moet Blijcken: Bronnenuitgave van de Boeken der Haarlemse Rederijkerskamer "De Pelicaniste" VII* (1997), Folios 25 Verso---27 Recto, which was edited by W.N.M. Husken and published at Assen, in The Netherlands. This instance is quite interesting to the thesis, as it affords another opportunity for an independent interpretation of the evidence presented by Kramer. Within the fiction of the pre-Modern or Early Modern play *The Flea Trapper* (*De Vloivanger*), the protagonist is beset by an infestation of fleas upon his person and seeks remedies for the same. By happenstance, he encounters a huntsman, whom he convinces to give him a piece of hunting accoutrement, a “horse,” with the intention to use this “horse” to remove his fleas. Kramer relates how, by linguistic and usage cues, it is evident from the source matter that the “horse” in question is seemingly not a conventional, biological horse, but rather something else, which she conjectures to be a handheld implement also sometimes termed a “horse.” However, the thesis is of the opinion that the “horse” can be identified as a steed of brass, which has elsewhere been encountered, for instance, within *The Canterbury Tales*, and in the other works of medieval literature containing this fictitious article of material culture noted by the thesis under Kang’s second type. The thesis has identified the “horse” as a steed of brass because, within its comedic source matter, its contrived presence would probably be quite hilarious to a pre-Modern audience, and even strikes the author as a witty and amusing turn. After securing the “horse,” Kramer describes how the narrative continues with the return of the protagonist to his home, where he is berated over his acquisition of the “horse” by his wife. If, instead of a specialized hand tool, the “horse” is construed as a steed of brass, especially a bucking, rearing, fiery-eyed mount of shining metal representative of the demoniacal “thing of brass” tradition in pre-Modern fiction, the ironic juxtaposition of the flea-trapper’s incongruous plan to deploy the “horse” in the resolution of his minor problem, the annoyance of fleas, becomes funny, especially with the reaction of his wife to the introduction of the “horse” under these circumstances. The eeriness of the scene in which the “horse” passes from the huntsman to the flea-trapper, which the thesis recalls from Kramer as a nocturnal meeting wherein the huntsman has an inscrutable and intimidating demeanor, befits the introduction of a demonic steed of brass. The author’s conjecture that the “horse” was written to be a steed of brass is, of course, his own, and there is no conclusive, falsifiable evidence to support it. However, the author is very satisfied with the argumentative strength of his contention in this case, and not least for the given reason that the sudden, unexpected insertion of a steed of brass into the primary source matter’s plot would make it a more effective, farcical farce.

**Kang Type 004, Instance 056 of 058, Cumulative Instance 407 of 409:
The Steed (of Brass?) in *The Flea Trapper* (*De Vloivanger*).**

partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods (provided that the interpretation offered by the thesis' author in this instance's footnote is accepted by the reader); the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and the seventh current of thought, as it partakes in the physical condition and/or conceptualization and/or representation of death, whether through subject matter which depicts violence or the implication of violence, such as representations of hunters and soldiers (or, in this case, an implement used by a hunter), through subject matter which depicts personifications of Death, who is then an allegorical figure, or automata which, regardless of subject matter, and especially by their designs, enact deeds of violence upon humans, regardless of whether this violence is enacted in a purely symbolic fashion, like a pantomime, or its enactment is the actual cause of human injuries and/or fatalities.

**Kang Type 004, Instance 057 of 058, Cumulative Instance 408 of 409:
Jack Snacker of Wytney.⁴⁰⁸**

Whether this legendary instance of automata was “false” by the thesis’ definition is unknown, and perhaps unknowable. In the absence of information to the contrary, its figure is interpreted to have been of the small scale defined for evaluative purposes. Its power source is unknown to this thesis; if this instance was “false,” human intervention would exclusively have provided its motive power, probably after the manner of a puppet; if it was not “false,” it would have contained some kind of integral kinetic mechanism; and, in what the thesis finds most probable, it could have had an internal mechanism, but nonetheless performed movements that were, to a greater or lesser degree, still produced by its operators, who were human puppeteers. In the lattermost case, the thesis would opine that the presence of a mechanism, however simple, would still mean that this instance was not a “false” automaton, but since it has not survived, these lines of argumentation are academic. It contained the figure of a male guard. As described in the consulted sources, this instance’s figure did not partake of the forms defined by the thesis, although it is certainly possible to imagine this instance as a “thing of brass,” and therefore as a representation of the

⁴⁰⁸ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Jessica Riskin’s “Machines in the Garden,” page 19, at Footnote 13. For this instance’s primary source matter, see *Dictionarium Angliae Topographicum & Historicum*, which was written by William Lambarde and published at London, in Great Britain, in the year 1730, with that date of publication not being an approximation; and *The Every-Day Book and Table Book*, at the entry for September 5, 1825 entitled “Visit to Bartholomew Fair,” which was written by William Hone and published at London, in the United Kingdom of Great Britain and Ireland, in the years 1825–27, with those dates of publication not being approximated. The basis of this instance’s “speculative” inclusion under Kang’s fourth type is that its use in performance as a puppet was supposedly accompanied by a constant, simultaneous clacking sound, giving rise to its name, “Jack Snacker.” While such a sound could simply be attributed to the concurrent use of a percussive instrument whenever Jack Snacker was visible to the audience, Riskin extrapolates this recorded attribute of the puppet to suggest that the noise it emitted could indicate the presence of a clockwork gearing system integrated into the puppet for the complete or partial provision of motive force. Of course, if the use of a percussive instrument to achieve the clacking was a deliberate choice to give audiences the impression that Jack Snacker was an automaton, which would invite speculation on the conjectured application of other elements to give this impression by Jack Snacker’s appearance, such as the use of gold paint, Jack Snacker would be a false automaton according to the thesis’ definitions, which would be remarkable; an artificial object would wholly replace a person in a suit, or concealed place, as a false automaton, while still having the artificiality of a true automaton. While automata which “walked and talked” (Chapuis and Droz’s phrase), or were reputed to so, postdate the bounds of the thesis’ period of inquiry, it is possible that Jack Snacker may have contained a mechanism to independently effect some motion or another in addition to those directly produced by its puppeteers, rendering it what Philip Butterworth, in *Medieval Theater Performance*, terms a demi-automaton. The degree to which Jack Snacker could be termed an automaton by this thesis’ definitions, granted that it did contain a motive mechanism of some kind, varies with the involvement of Snacker’s puppeteers; the less these puppeteers were responsible for producing its movements, the more it can be called an automaton. Since the evidence for this instance is too weak to admit of anything more than conjecture, it has been placed under Kang’s fourth type.

**Kang Type 004, Instance 057 of 058, Cumulative Instance 408 of 409:
Jack Snacker of Wytney.**

“magical” automaton in the medium of a practical automaton, as discussed in the footnote. On review, this automaton figure was assigned an individual character name in its source material, “Jack Snacker of Wytney” (“Snacker” refers to the mechanical noises which it emitted, not an individual who casually consumes food). The setting in which it appeared was a stage set, and given this instance’s costuming, it could have been a castle stage set. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the first current of thought, as it partakes in the technology and/or culture of classical civilizations, principally including those of ancient Greece and Rome, and potentially including the mythological faith traditions associated with the same, or as it partakes in representations of the technology and/or culture of these same classical civilizations, or as it more broadly partakes of an association between automata and religious subjects and rituals, which was the normative condition for the automata of ancient Greece and Rome; the third current of thought, as it partakes in the association of automata with the practice of magic, which the thesis has found to principally be a phenomenon observable in the cultural zones of continental Europe and the British Isles during the considered periods (provided that the interpretation offered by the thesis’ author in this instance’s footnote is accepted by the reader); and the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations.

**Kang Type 004, Instance 058 of 058, Cumulative Instance 409 of 409:
Tudor Floral Figures.⁴⁰⁹**

Nothing suggests that this legendary instance of automata was “false” by the thesis’ definition, provided that this instance is an illustrative representation of a pre-Modern or Early Modern automaton, as contended by the cited author. In the absence of information, its figures are interpreted to have been of an unknown scale defined for evaluative purposes. Its power source is unknown to this thesis. It contained the figures of a generic man and a generic woman. As described in the consulted sources, this instance’s figures did not partake of the forms defined by the thesis. On review, these automaton figures were not assigned individual character names in their source material. The setting in which these figures appeared is unknown to this thesis. With respect to the model proposed by this thesis, which is an elaboration of Kang’s typological system, this instance at least registers the fifth current of thought, as it partakes in the technology and/or culture of European civilizations, principally including those of Western Europe, including the British Isles, and Central Europe, which this thesis has found to be both non-secular and secular with respect to automata in the considered periods, or as it partakes in representations of the technology and/or culture of these same civilizations; and absent any further information regarding this instance, only the fifth current may be identified.

⁴⁰⁹ For this instance of pre-Modern or Early Modern automata, which has been systematically cataloged and situated within an elaboration of Kang’s typology as a novel and meaningful contribution to the scholarship of the named historical periods, see Mary Flowers Braswell’s “The Magic of Machinery: A Context for Chaucer’s ‘Franklin’s Tale,’” page 105; and Lily V. Filson’s *Engineering Gods*, page 177. For this instance’s primary source matter, see *B.M. MS Cot. Vesp. II*, Folios 9 and 9B, about which the thesis’ working notes record no further information. This instance is an illustration of humanoid figures emerging from flowers in the specified primary source matter, a manuscript, and was conjecturally identified as a representation of automata by Braswell, with Filson later including Braswell’s conjecture in her work. The thesis has likewise included this conjecture and placed it under Kang’s fourth type, the “speculative” automata, as there is no discrete and falsifiable evidence to support the conclusion that the depicted figures are automata, or at least any evidence other than Braswell’s identification of these figures as the same. This instance, and its footnote, conclude the non-exhaustive catalog of pre-Modern and Early Modern automata assembled by the thesis as an aid to fellow scholars who specialize or are interested in the thesis’ subject, and it is the author’s hope that the existence of this catalog will ease future study of these automata, furthering knowledge of their presence in the intellectual histories of the Old World’s fiction, reality, and legend.

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VITA.

Christopher Patrick Pursel was born in Rochester, New York and has lived most of his life in Le Roy, New York, where he graduated from Le Roy Junior/Senior High School in the year 2008, earning an Advanced Regents Diploma with Honors. He attended the State University of New York College at Geneseo from the years 2008 to 2012, earning a Bachelor of Arts degree in History with documented English, Medieval Studies, and Philosophy minors in the year 2012. From the years 2013 to 2015, he completed coursework for a dual matriculation in the combined Master of Science in Information Science and Master of Arts in History program offered by the University at Albany, State University of New York, earning the former degree in the year 2015, with an Information Systems and Technology Concentration, after interning at the Rochester, New York offices of Paychex, Inc. He resumed work on his Master of Arts degree at the State University of New York College at Brockport in the year 2018, completing a second internship at the Western Monroe Historical Society's interpretative site, the Morgan-Manning House, in the year 2020. He is an Eagle Scout, a Roman Catholic, and enjoys musical and visual culture.



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