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# *The Edgar Wind Journal*

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# ***Stupore*: The Early Modern Automaton Between Art and Nature**

Luke Morgan

## **Abstract**

The 1666 catalogue of the Wunderkammer assembled by Lodovico and Manfredo Settala in Milan contains a description of a ‘beautiful statue of bronze’ that could walk across a garden. According to the author of the catalogue, Pietro Francesco Scarabelli, ‘because of the stupor [*stupore*] that such a motion occasions, whoever begins to observe it is rendered immobile.’ Scarabelli is clearly describing an automaton, the uncanny lifelikeness of which has the paradoxical effect of rooting the viewer to the spot, temporarily incapable of movement or agency. Historians have paid little attention to the automata of the early modern garden. When automata are discussed, they are usually dismissed as inconsequential *giochi* or *scherzi* (games or tricks). This essay makes a case for taking the automata of the garden seriously, with a particular focus on Francesco de’ Vieri’s comments about those of the Villa Medici (now Demidoff) at Pratolino in his guide of 1587. There are two main trajectories of argument: first, that the lifelike, self-moving automaton should be understood in relation to the theory of mimesis in art; and second, that the condition of *stupore* that Scarabelli and Vieri both claim is elicited by the inexplicability of mechanical movement is primarily an aesthetic experience. The essay concludes with the suggestion that the liminal status of the automaton – between nature and culture – extends to the garden itself.

## **Keywords**

Automata, early modern gardens, Francesco de’ Vieri, mimesis, artificial grottoes

The 1666 catalogue of the Wunderkammer assembled by Lodovico and Manfredo Settala in Milan contains a description of a ‘beautiful statue of bronze’ that could walk across a garden. According to the author of the catalogue, the physician Pietro Francesco Scarabelli, ‘because of the stupor [*stupore*] that such a motion occasions, whoever begins to observe it

is rendered immobile.<sup>1</sup> Scarabelli is clearly describing an automaton, the uncanny lifelikeness of which has the paradoxical effect of rooting the viewer to the spot, temporarily incapable of movement or agency.

The Platonist philosopher Francesco de' Vieri uses the same terms in his 1587 guide to the garden of the Villa Medici (now Demidoff) at Pratolino near Florence: *Delle meravigliose opere di Pratolino*. According to him, both the figure of Galatea, which rotates around a rocky island inside a grotto, and the statue of Fame, which plays a trumpet and flaps its wings, 'stupefy' (*fa stupire*) the beholder.<sup>2</sup> For Vieri, the automata of Pratolino are stupefying because their causes are inexplicable: 'in Pratolino to make statues move, turn, play musical instruments and spill water there are many hidden marvelous technologies that if seen all together would create ecstasy in the viewer.'<sup>3</sup>

Landscape historians have paid little attention to these 'marvelous technologies.'<sup>4</sup> There is, for example, no dedicated study of the automated figures and tableaux of the early modern garden. When automata are discussed, they are usually dismissed as inconsequential and even as rather puerile *giochi* or *scherzi* (games or tricks). Yet this assumption ignores both the philosophical and aesthetic implications of automata in the late sixteenth and early seventeenth centuries, and the recurring language that contemporary writers like Scarabelli and Vieri use to describe their effects. In contrast, this essay makes a case for taking the automata of the garden seriously, with a particular focus on Vieri's guide to Pratolino. There are two main trajectories of argument: first, that the lifelike, self-moving automaton should be understood in relation to the theory of mimesis in art; and second, that the condition of *stupore* that Scarabelli and Vieri both claim is elicited by the inexplicability of mechanical movement is primarily an aesthetic experience. The essay concludes with the suggestion that the liminal status of the automaton – between nature and culture – extends to the garden itself.

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Dedication: For Jaynie Anderson.

<sup>1</sup> Quoted in Zakiya Hanafi, *The Monster in the Machine: Magic, Medicine, and the Marvelous in the Time of the Scientific Revolution* (Durham and London: Duke University Press, 2000), 76. The catalogue was translated from Paolo Maria Terzagio's original Latin text of 1664 – *Musaeum septalianum* – by Pietro Francesco Scarabelli and published as *Museo, ò Galeria, adunata dal sapere e dallo studio del sig. canonico Manfredo Settala nobile milanese* (Tortona: Per li figliuoli del qd. Eliseo Viola, 1666). See pp. 36-37, for the description of the 'bellissima statua di bronzo.'

<sup>2</sup> See Francesco de'Vieri, *Discorsi di M. Francesco de' Vieri, detto il Verino Secondo, Cittadino Fiorentino. Delle Maravigliose Opere di Pratolino, & dell'Amore*. Florence: Giorgio Marescotti Maravigliose opere, 1587), 61 for Galatea, and 62, for the personification of Fame.

<sup>3</sup> '[I]n Pratolino, perche quelle statue si voltino, suonino, gettino acqua, sono tanti, & tanti artifizii stupendi in luoghi occulti, che chi gli vedessi tutti insieme, se n'andrebbe in estasi.' Vieri, *Maravigliose opere*, 64-5.

<sup>4</sup> Although, so far as I know, Edgar Wind never turned his attention to early modern automata, he was deeply interested in the relationship between art and mechanization. See his 1960 Reith Lectures, one of which dealt with 'The Mechanization of Art.' The lectures were published as *Art and Anarchy* (London: Faber & Faber, 1963).



## 1. Mimesis

David Summers has argued that, ‘from the very beginning, imitation and mechanism have been inextricably interrelated.’<sup>5</sup> He draws attention to the integral relationship between Homer’s ekphrastic description of the shield that Hephaestus (Vulcan) forged for Achilles in *The Iliad*, which was decorated with a comprehensive image of the world and the heavens, and his account of the ‘waiting-women [who] hurried along to help their master [Hephaestus]. They were made of gold, but looked like real girls and could not only speak and use their limbs but were also endowed with intelligence and had learned their skills from the immortal gods.’<sup>6</sup> Both creations, the one pictorial and the other mechanical, are celebrated by Homer for their equally convincing imitation of nature.

Hephaestus’s mechanical maidens are the earliest examples of an automaton type that could be found in some of the most celebrated early modern gardens: the artificial servant. There was one in the garden at Pratolino, for example. In a drawing of 1601, the Modenese artist Giovanni Guerra depicted a ‘stone man’ (*huomo di pietra*), as Vieri describes him, in a grotto of the ground floor of the Villa, perpetually pouring water from a pitcher (Fig. 1).<sup>7</sup> Vieri adds that a wheel brought food from the kitchen to Francesco I de’ Medici when he did not want to be served by human attendants.<sup>8</sup> Another example, of two mechanical servants (one of which is based on the Pratolino figure), appears in the French architect and engineer Salomon de Caus’s design for a grotto (1620) for the Hortus Palatinus in Heidelberg.<sup>9</sup>

If the artificial servants at Pratolino and Heidelberg are direct descendants of the golden waiting-women of *The Iliad*, the mechanical birds that were also frequently encountered in late medieval and early modern gardens recall another fundamental account of mimesis in art: Pliny the Elder’s description of the competition between the Greek

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<sup>5</sup> David Summers, ‘Pandora’s Crown: On Wonder, Imitation, and Mechanism in Western Art,’ in *Wonders, Marvels, and Monsters in Early Modern Culture*, ed. Peter G. Platt (Newark: University of Delaware Press, 1999), 45.

<sup>6</sup> Homer, *The Iliad*, trans. E. V. Rieu, rev. ed. Peter Jones and D. C. H. Rieu (London: Penguin, 2003), 330.

<sup>7</sup> The drawing, executed by Guerra in 1604, is in the Albertina, Vienna. Its inventory number is 37214.

<sup>8</sup> ‘Accanto v’è un huomo di pietra, che da l’acqua alle mani a uso di Scalco. Nel muro della stanza v’è una ruota da monache, per la quale vengono la vivande, quando il Principe vuol mangiare, e non vuole esser servito, se non da un solo.’ Vieri, *Maravigliose Opere*, 37. Lily Filson, ‘Magical and Mechanical Evidence: The late-Renaissance Automata of Francesco I de’ Medici,’ in *Evidence in the Age of the New Sciences*, eds. James A. T. Lancaster and Richard Raiswell (Cham: Springer International Publishing, 2018), 199, points out the similarity between the figure at Pratolino and Al Jazari’s Mechanical Serving Girl in *The Book of Knowledge of Ingenious Devices* (1206).

<sup>9</sup> See Salomon de Caus, *Le Jardin Palatin*. Hortus Palatinus (Paris: Éditions du Moniteur, 1981), 26. De Caus’s description of the two figures is as follows: ‘Il y a aussi deux figures de pierres grades, comme le naturel: l’une representant vn Jeune homme, qui verse de l’eau pour lauer la main quand l’on voudra manger dans ladite grote: & l’autre est vn qui tient comme vn panier plat, pour mettre des verres’.

artists Zeuxis and Parrhasios.<sup>10</sup> As is well known, Zeuxis's painting of grapes was so convincing that birds attempted to eat them.<sup>11</sup> However, Zeuxis himself was subsequently deceived when he asked that the curtains concealing Parrhasios's painting be drawn aside. The curtains turned out to be painted, prompting Zeuxis to admit: 'I took in the sparrows, but you took me in.'

At the famous park in Hesdin (Artois), which was initially laid out at the end of the thirteenth century and which was notable for containing the first automata of the post-classical era in Europe, mechanical birds mingled with real, captive songbirds in a *gloriette*.<sup>12</sup> The same juxtaposition of real and artificial birds occurs in the medieval romance, *Le Conte de Floire et Blancheflor* (ca. 1150–1170), which helps to recreate the effect of the no longer extant automata at Hesdin. At one point in the story of the love affair between the Muslim Floire and the Christian Blancheflor, the latter is imprisoned in the garden of the emir of Babylon, which contained numerous bronze birds:

When the wind blew stronger the birds sang even more sweetly. And so in good weather the birds sang beautifully there – the fake ones and the real birds. Thus the blackbirds, skylarks, jaybirds, starlings, nightingales, finches, orioles and others which flocked to the park in high spirits, on hearing the beautiful birdsong, were quite unhappy if they did not find their partner!<sup>13</sup>

In Pliny's account of Zeuxis's *trompe l'oeil* painting and the garden of the emir in the story of Floire and Blancheflor, living birds are deceived by works of art, whether they are painted grapes or bronze machines.

The *topos* persists into the Renaissance. In his 1576 description of the Fountain of the Owl in the garden of the Villa d'Este in Tivoli (Fig. 2), for example, Nicolas Audebert writes that there

are four large branches of an olive tree (imitation, of course, being merely of painted iron) on which are [perched] as many as twenty bronze birds reproduced in the natural size and each painted with its proper colours, each of which sings differently, reproducing its actual call in such a melodious fashion that there seems to be no difference between this artifice and the natural [birdsong]<sup>14</sup>

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<sup>10</sup> Hervé Brunon makes a similar point in 'Pratolino: Art des jardins et imaginaire de la nature dans l'Italie de la seconde moitié du XVI<sup>e</sup> siècle,' rev. ed. Ph.D. diss., Université Paris I Panthéon-Sorbonne, 2008): 620.

<sup>11</sup> Pliny the Elder, *Natural History: A Selection*, trans. John F. Healy (London: Penguin Books, 2004), 330.

<sup>12</sup> E. R. Truitt, *Medieval Robots: Mechanism, Magic, Nature, and Art* (Philadelphia: University of Pennsylvania Press, 2015), 124.

<sup>13</sup> Truitt, *Medieval Robots*, 126.

<sup>14</sup> Quoted in Patrizio Barbieri, *Hydraulic Musical Automata in Italian Villas and Other Ingenia, 1400–2000* (Rome: Gangemi Editore, 2020), 163.

Like those of Hesdin, the avian automata at Tivoli have literary equivalents. In *The Unfortunate Traveller* (1594), for example, the Elizabethan writer Thomas Nashe describes the garden of an Italian merchant in which artificial birds – ‘bodies without souls’ – occupy the boughs of a ‘conspiracy of pine trees’. The mechanical illusion is so convincing, he claims, that ‘every man there present renounced conjectures of art and said it was done by enchantment.’<sup>15</sup> Here the verisimilitude of the birds seems to exceed the mimetic capabilities of art.

The relationship between the artificial servants and mechanical birds of the early modern garden to, respectively, Homer and Pliny’s paradigmatic texts suggests that one of the ways in which the automaton should be understood is as an exploration of the limits of mimesis. As the translator of the Greek mathematician Hero of Alexandria’s *Automata* into Italian, Bernardino Baldi, stated in 1589, with reference to the construction of automata: ‘How could one not marvel to see that art, which is an extrinsic principle, confers on inanimate things an intrinsic movement similar to that which nature itself gives to things?’<sup>16</sup> The lifelikeness of the automaton thus involves more than a superficial imitation of appearances. Philippe Morel has made this point succinctly: ‘Mimesis slips here from matter to that which organises it, from form to that which inhabits and animates it.’<sup>17</sup> In short, the automaton mimics the creative processes of nature, and not just its appearances: *natura naturans* rather than *natura naturata*.

## 2. *Maraviglie*

The language used in early modern discussions of automata consolidates these points about the relationship between the automaton in the garden and the theory of mimesis in art. The term *stupore*, which Scarabelli and Vieri both use to describe the condition that the lifelike actions of walking and music-playing automata induces in their beholders, and the closely related concept of *maraviglia* (or *meraviglia*) are primarily aesthetic terms. In sixteenth-century writings on art, they are most closely associated with Michelangelo. Benedetto Varchi’s oration at Michelangelo’s funeral provides an example. He describes the artist as: ‘so new, so unusual, so unheard of (*inudita*) in all centuries, in all countries ... that I for myself ... not just admire, not just am stupefied (*stupisco*), not just am astonished and amazed, and almost reborn; but my pulse trembles, all my blood turns to ice, all my spirits are shocked, my scalp tingles with a most sacred and never before felt horror to think of

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<sup>15</sup> Thomas Nashe, *The Unfortunate Traveller (1594)*, in *An Anthology of Elizabethan Prose Fiction*, ed. Paul Salzman (Oxford: Oxford University Press, 2008), 272.

<sup>16</sup> ‘& in vero, come non ha da porgere marauiglia il veder che l’arte, la quale è principio estrinseco, dia à le cose inanimate vn moto intrinseco, e simile a quello, che à le cose naturali da la natura medesima?’ Bernardino Baldi, ‘Discorso di qui traduce sopra le machine se mouenti,’ in Hero of Alexandria, *De Herone Alessandrino de gli automati ouero machine se mouenti*, ed. and trans. Bernardino Baldi, 2nd ed. (Venice, 1601), fol. 10r.

<sup>17</sup> Philippe Morel, *Les grottes maniéristes en Italie au XVIe siècle* (Paris: Éditions Macula, 1998), 114.

him.<sup>18</sup> *Stupore*, in Varchi's praise of Michelangelo, is an embodied aesthetic response to extraordinary works of art, or *maraviglie*.

Vieri makes a similar point in his guide to the automata of the garden at Pratolino: 'Artworks are marvelous and stupendous [*di maraviglia, et di stupore*]...because they are created with such virtue that they surpass their common use.'<sup>19</sup> Like Varchi, therefore, for Vieri the terms *maraviglia* and *stupore* are associated with prodigious artistic achievement. But Vieri adds another dimension, drawing on Aristotle's theory of wonder. In the *Mechanics* (attributed to, though probably not by, Aristotle) the philosopher gives the example of 'metal wheels dedicated as offerings in temples,' which are marvellous because they 'create an effect the causes of which are concealed.'<sup>20</sup> This idea of concealed causes is crucial to Aristotle's definition of wonder (*thaumazein*), the condition with which – as he states in his *Metaphysics* – philosophy begins.<sup>21</sup>

Likewise, according to Vieri: 'splendid and marvellous are those things for which it is difficult to give an explanation.'<sup>22</sup> He includes in this category the automata of Daedalus, which were 'self-moving and never stood still,' the mirrors that Archimedes ('that great mathematician') reputedly used to magnify the rays of the sun and singlehandedly defeat an entire enemy navy, techniques of agricultural irrigation, the mechanical clock, and the healing 'art of the physicians.' His last two examples are 'the works of those painters which are flat and immobile while displaying movement and perspective' – specifically the *Triumph of Death* (c. 1350) in the Camposanto Monumentale at Pisa by Buffalmacco – and the inventions of engineers that are designed to lift great weights, or are used by physicians, or for military purposes.<sup>23</sup> This may seem an eclectic list, but what unites each of Vieri's 'marvels' is the fact that their 'causes' are concealed. For him there is, consequently, no qualitative difference between the naturalistic illusion of Buffalmacco's fresco painting and the lifelikeness of the automata at Pratolino.

Two key ideas emerge from this brief summary of Vieri's text. First: he deliberately uses the language of art criticism and theory – *stupore* and *maraviglia* – to describe the automata of the Medici garden and their effects on beholders. His choice of these terms indicates that for him automata are self-evidently works of art, rather than childish diversions or practical jokes. Second: following Aristotle, Vieri emphasises that something

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<sup>18</sup> Translated in David Summers, *Michelangelo and the Language of Art* (Princeton: Princeton University Press, 1981), 172.

<sup>19</sup> 'L'opere artificiose sono di maraviglia, et di stupore nel primo modo, perche non subito se ne ritrova la causa, et perche sono fatte con tanta virtù, che supera il comune uso.' Vieri, *Maravigliose Opere*, 57.

<sup>20</sup> Summers, 'Pandora's Crown,' 51. See also Brunon, 'Pratolino,' 622ff.

<sup>21</sup> Summers, 'Pandora's Crown,' 52.

<sup>22</sup> According to him: 'Per ispeditione del primo punto, dico, che mirabili, & stupende son tutto quelle cose, delle quali no si fanno le cagioni, & questo può essere, ò perche sul principio ci sono sempre incognite, ò vero perche le cagioni ci sono sempre occulte per mentre che viviamo in questo mondo.' Vieri, *Maravigliose Opere*, 56.

<sup>23</sup> See Vieri, *Maravigliose Opere*, 57-60.

is marvelous and stupefying when its causes are inexplicable. The *maraviglia* of the automaton derives from its convincing simulation of life, but crucial to this effect is the absence of any indication of how – through techniques, technologies, or even ‘enchantment,’ as Nashe thought – that simulation is achieved. The automaton-maker, or more precisely the princely patron (Francesco I de’ Medici in the case of Pratolino), becomes demiurge.<sup>24</sup>

### 3. Grottoes

Versions of Baldi’s statement that, to reiterate, ‘art, which is an extrinsic principle, confers on inanimate things an intrinsic movement similar to that which nature itself gives to things,’ also appear, *mutatis mutandis*, in contemporaneous accounts of gardens. In a letter of 26 July 1543, for example, the philologist Claudio Tolomei described a fountain in the garden of Agapito Bellomo, near the Trevi Fountain in Rome. He writes enthusiastically of:

The ingenious skill, newly rediscovered to make fountains, such as used to be found in Rome, where art was so blended with nature that one could not discern whether the fountains were the product of the former or the latter. Thus some appeared to be a naturalistic artifice while others seemed an artifice of nature. In these times they endeavor to make a fountain appear made by nature itself, not by accident, but with a masterful artistry.<sup>25</sup>

Writing two years earlier (1541), the humanist Jacopo Bonfadio could not even decide what a garden was – a work of nature, a work of art, or a work of both: ‘nature incorporated with art is made an artificer, and the connatural of art; and from both of them is made a third nature [*terza natura*], which I would not know how to name.’<sup>26</sup>

Tolomei and Bonfadio’s comments imply that the blurring of the distinction between the binary categories of art and nature that is epitomised by the figure of the artificial

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<sup>24</sup> See Morel, *Les grottes*, 118. Brunon, ‘Pratolino,’ 627, makes the point that: ‘Car si l’automate est apparu au cours de l’histoire comme la pierre de touche de la pensée technique, il engage aussi, au travers de la notion de technè, l’idée même de l’art en l’exaltant jusqu’à en révéler certains principes: c’est-à-dire, en poussant l’imitation de la nature dans ses derniers retranchements, là où vacille la limite entre l’art et le vivant. Apparaît alors leurs arrière-plan commun, une certaine conception de leur dynamique, qui ouvre la voie à une forme de célébration du pouvoir démiurgique du prince.’

<sup>25</sup> Translated in Elisabeth Blair MacDougall, *Fountains, Statues, and Flowers: Studies in Italian Gardens of the Sixteenth and Seventeenth Centuries* (Washington, D.C.: Dumbarton Oaks Research Library and Collection, 1994), 57.

<sup>26</sup> See Thomas E. Beck’s discussion of Bonfadio in Bartolomeo Taegio, *La Villa*, trans. Thomas E. Beck (Philadelphia: University of Pennsylvania Press, 2011), 58.

servant or the mechanical bird is a general characteristic of the early modern garden.<sup>27</sup> As Linda M. Strauss has argued:

The sites in which automata have historically been located – tombs, temples, theaters, magician’s stages, fairs, gardens, laboratories, and labyrinths – are all liminal, not simply because they exist at the margins of everyday existence, but also because they exist at the boundaries between two or more worlds or states of being. Tombs and labyrinths, for instance, occupy the boundary between life and death, and along with temples and theaters, mark the place where the divine and the secular meet. Gardens and laboratories lie at the boundary between the natural and the artificial, or between what is wild or free, and what is controlled. Theaters, magician’s stages, and fairs also exist at the junctions of order and disorder, as well as on the line between illusion and reality.<sup>28</sup>

In early modern gardens, this quality of liminality is most obvious perhaps in the artificial grottoes in which automata were typically installed. Designed to mimic naturally occurring caves, their interiors sometimes explicitly represented the processes of nature, deep in the bowels of the earth. The various states of the subterranean generation, growth, and metamorphosis of forms from the inchoate to completed figures and landscapes, as hypothesised by natural historians of the period, can still be contemplated inside Bernardo Buontalenti’s Grotta Grande in the Boboli Gardens, Florence, for example (Fig. 3).<sup>29</sup>

The French ceramicist and grotto-designer Bernard Palissy went further than most in this regard. The grotto that he designed for Anne de Montmorency at Écouen was made to resemble a natural cavern as closely as possible. Although only fragments survive, Palissy described the grotto in detail in his dialogue *Architecture et ordonnance de la grotte rustique* (1563). Early on, Palissy himself is mentioned as having designed a grotto of rustic figurines, which seemed to be a dream or a vision owing to the ‘monstrosity’ of the building.<sup>30</sup> The first speaker’s interlocutor then describes the structure: it is forty feet long, twenty feet wide and seventeen feet high. Terms adorn the façade of the grotto ‘so close to the human form that there is no man who is not astonished to see them.’ He discusses one

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<sup>27</sup> See Alessandro Rinaldi’s reading of automata as the final stage of ‘the search for the third nature’ in sixteenth-century gardens (‘La ricerca della “terza natura”: artificialia e naturalia nel giardino Toscano del ’500,’ in *Natura e artificio: L’ordine rustico, le fontane, gli automi nella cultura del Manierismo europeo*, ed Marcello Fagiolo (Rome: Officina, 1979), 168-72) and Brunon’s discussion in ‘Pratolino,’ 621.

<sup>28</sup> Linda M. Strauss, ‘Reflections in a Mechanical Mirror: Automata as Doubles and as Tools,’ *Knowledge and Society: Studies in the Sociology of Culture Past and Present* 10 (1996): 194. See also Horst Bredekamp’s comments on the location of automata in grottoes: ‘These constructions found a special place in grottoes and gardens, where they satisfied expectations on a larger scale. Here was a perfect location in which to manifest the transition of apparently untouched yet structured nature to art in the style of antiquity and finally to automatons brought to life, since the grottoes were viewed as anthropomorphic “wombs” where metals became more highly developed, as though in an underground laboratory.’ Horst Bredekamp, *The Lure of Antiquity and the Cult of the Machine: The Kunstkammer and the Evolution of Nature, Art and Technology*, trans. Allison Brown (Princeton: Marcus Wiener Publishers, 1995), 49.

<sup>29</sup> The best study of the Italian Renaissance grotto remains Morel, *Les grottes*.

<sup>30</sup> For a transcription of Palissy’s dialogue, see Leonard N. Amico, *Bernard Palissy: In Search of Earthly Paradise* (Paris and New York: Flammarion, 1996), 220-24.

that is made of shells, wearing cloth that is so realistic that the ‘threads and weaving’ were visible. Some visitors are even convinced that the terms are natural rather than artificial. Inside the grotto, at the opposite end to the entrance portal is a pit containing various species of fish along with ‘pebbles, mosses, corals, grasses, and strange stones,’ which ‘imitate the natural as closely as said fish.’ All these elements were cast directly from life.<sup>31</sup> Above the cornice and frieze that runs around the room, there are irregular windows made with ‘great blows of a hammer,’ the shutters of which are hung on the exterior of the structure rather than the interior ‘so as to better imitate the natural, & so that it better resembles a natural rock.’ Other notable features of the grotto interior include seats that barely resemble seats owing to their ‘contours, or lines, [which] have nothing to do with the art of representation, and they are therefore imaginings or strange Ideas of such seats.’ There were also casts of ‘rooks, crows, pigeons, stone martens, owls, & other such species that commonly haunt crags & ancient ruins’ installed on the cornice of the second level of the grotto.

Throughout his description, Palissy repeatedly emphasizes the naturalism of the grotto’s structure and ornaments. He strove to eliminate any hint of human intervention to the extent that even architectural elements such as windows and seats were denied. As Ernst Kris has argued: ‘Palissy consistently pursues the path he has set, one that leads from the *travesty of architecture to its negation*.’<sup>32</sup> In another of his treatises, the *Recette véritable* (1563), Palissy is explicit about this objective. He states that there should be nothing in a grotto that bears any ‘resemblance to either the form of sculptural art or to the work of human hands.’<sup>33</sup> The life casts of flora and fauna, characterized by Patricia Falguières as *archiropoietic* images (unmediated and untouched by human hand), that were installed in the penumbral interiors of grottoes were self-evidently intended to achieve this objective (Fig. 4).<sup>34</sup>

Palissy pushes the tendency that Tolomei noticed in Italian fountain and grotto design – ‘to assemble a fountain that appears to be made by nature, not by accident but with masterful art’ – to its logical extreme. Life casts collapse the distinction between representation and reality: the distance between image and object is as minimal as it could possibly be. Architecture is effaced altogether in favour of irregular rupestral structures seemingly generated entirely by nature. Natural materials further erode the threshold between art and nature. Whereas in Buontalenti’s Grotta Grande and elsewhere, actual stalactites were reanimated through the application of water, real shells were used to depict other naturally occurring phenomena, adding an extra level of complexity to the

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<sup>31</sup> An extant example of a life cast revealing the warp and weft of fabric, though not made of shells, is in the Musée Carnavalet in Paris. For an illustration, see Amico, *Palissy*, fig. 45.

<sup>32</sup> Ernst Kris, *The Rustic Style*, trans. Linda B. Parshall (Washington, D.C.: Dumbarton Oaks, Trustees for Harvard University, 2023), 130. Kris’s emphasis.

<sup>33</sup> Kris, *Rustic Style*, 130.

<sup>34</sup> Patricia Falguières, ‘Especies infimes, generation spontanée et pensée du type dans la culture du XVIe siècle,’ in Ernst Kris, *Le Style rustique*, trans. Christophe Jouanlanne (Paris: Macula, 2005), 210.

relationship and exchange between art and nature.<sup>35</sup> Palissy enhanced the illusion still further by planting on the exterior of the grotto ‘numerous species of fruits that are good for birds to eat, together with certain plants, the seeds of which are much loved [by birds], in such wise to accustom birds to rest here a while and sing their songs within the shrubs and bushes.’<sup>36</sup> Once again, birds are the arbiters of the persuasiveness of the illusion.

### Conclusion

To conclude: this essay has proposed that the automata of the early modern garden should be understood in relation to the artistic theory of mimesis. Indeed, their duplication of the creative processes rather than the mere appearances of nature – of *natura naturans* rather than *natura naturata* – presses mimesis to the limit. The status of automata as legitimate works of art rather than mere games or tricks is further attested by the aesthetic terms that sixteenth and seventeenth-century writers used to describe them, especially *stupore* and *maraviglia*. Finally, lying at the boundary between the natural and the artificial, the automaton can be understood as an epitome of the liminality, not only of the grottoes in which they were installed, but of the garden itself.

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<sup>35</sup> Giorgio Vasari commented on this practice: ‘Others make smoother and more polished grottoes of stucco, in which are mingled both stones and stucco, and while the stucco is fresh they insert, in bands and compartments, knobs or bosses, cockle shells, sea snails, tortoise shells, shells large and small, some showing the outside and some the reverse: and of these they make flower vases and festoons, in which the cockle shells represent the leaves, and other varieties of shells the fruit...’ Giorgio Vasari, *Vasari on Technique*, trans. Louisa S. Maclehorse (New York: Dover Publications, Inc., 1960), 89.

<sup>36</sup> Malgorzata Szafranska, ‘The Philosophy of Nature and the Grotto in the Renaissance Garden,’ *Journal of Garden History* 9: 2 (1989): 77.



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Figure 1. Giovanni Guerra, Mechanical Servant, Villa Medici, Pratolino (now Demidoff), 1604, Albertina, Vienna. (Creative Commons License)



Figure 2. G. F. Venturini, Fountain of the Owl, Villa d'Este, Tivoli, 1691. From G. B. Falda, *Le fontane di Roma*. (Courtesy of Dumbarton Oaks, Research Library and Collection, Washington, D.C.)



Figure 3. Bernardo Buontalenti, Detail of the interior of the Grotta Grande, Boboli Gardens, Florence. (Photo: Luke Morgan)



Figure 4. Bernard Palissy and Atelier, Life-Cast Eel from the Grotte des Tuileries, before 1567. Paris, Musée du Louvre (OA 2490, 2491, 2492). (© 2008 RMN-Grand Palais (musée du Louvre) / Jean-Gilles Berizzi)