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ROBOT SAINTS

Christopher Swift

ABSTRACT

In the Middle Ages, articulating religious figures like wooden Deposition crucifixes and ambulatory saints were tools for devotion, techno-mythological objects that distilled the wonders of engineering and holiness. Robots are gestures toward immortality, created in the face of the undeniable fact and experience of the ongoing decay of our fleshly bodies. Both like and unlike human beings, robots and androids occupy a nebulous perceptual realm between life and death, animation and inanimation. Masahiro Mori called this in-between space the "uncanny valley." In this essay I argue that unlike a modern person apprehending an android (the uncanny humanlike object that resides in the space between what is essentially human and what is essentially not human), the physical animation of late medieval devotional objects fulfilled the expectations of their puppeteers and audiences to move. Glittering precious metals and stones, liturgical music, and other environmental properties of the sanctuary materially inferred the presence and action of saints on earth, greatly enhancing the affective lives of devotees. I focus on later medieval Spanish statues of the Virgin in order to transcend their familiar aesthetic and religious interpretations of anthropomorphic statues, and explore instead their functional aspects and performative relationships between ritual objects and their users.

KEYWORDS

automata; articulated sculpture; uncanny; performance; Virgin Mary

In 1248, King Fernando III entered the defeated Islamic city of Seville, carrying in his triumphal procession the wooden Virgen de los Reyes, an ensemble of the articulating statues of Virgin and Child that is perhaps the earliest extant humanoid automata in western Europe. Subsequently owned by Fernando’s son, King Alfonso X “the Wise,” the statues articulated at the shoulders, elbows, hips, knees, and necks. Sometime during the Baroque era their heads were anchored to their torsos with metal clasps, and the now-static mechanized figures have resided since behind the altar of the capilla real of the Seville cathedral (Fig. 1).
Firsts in anything are remarkable, but my interest in this particular performance object was piqued when I stumbled on archival photographs showing the holes in the back of the two automata (Fig. 2). Before recognizing the technological distinctiveness of the objects, I experienced something much more visceral: an acute sense of the uncanny set off by simultaneous feelings of shame (for gazing at a sacred statue in a state of undress) and revulsion caused by the sight of the disembodied, emptied midsections of the wooden figures. Freud wrote that dismembered limbs and feet that danced by themselves possessed an uncanny presence, or induced an uncanny response, especially when articulating body parts are perceived to be capable of independent activity. "Autonomous" androids—robots—occupy a nebulous perceptual realm between life and death, animation and stillness; Japanese roboticist Masahiro Mori called this between space the "uncanny valley" that conditions our responses especially to anthropomorphic automata. My uncanny response to the Virgen de los Reyes resulted from the dissonant simultaneity of vitality and bloodlessness, a technological fantasy that inferred and disclosed the machine beneath my own skin.

It seems unlikely, however, that the design concept behind animated devotional objects in the late medieval period would be to produce a sense of
uncanny revulsion. Perhaps there is something radically different in the way modern spectators experience androids and medieval devotees responded to Virgin Mary robots. This essay presents three analytical models for thinking about this difference. Applying recent work in developmental neuroscience to the concept of the uncanny suggests that, far from violating ontological differences, sanctioned disruptions of intuitive domains in religious settings may produce a sense of spiritual excitement. Second, in order to dispel the overwhelming and immediate skepticism about manifestations and incarnations of religious figures and signs, it will be important to understand premodern response to sensually enigmatic objects. All types of matter were fertile and agentive in premodernity. If we frame the sacred robots within the specific devotional experience of materiality in late medieval Europe, a different interpretation emerges: due to the absence of scientific or ontological certitude about technological and biological differences in the medieval period, beholders may not have perceived the moving statues as in any way uncanny. Finally, I theorize the phenomenology of the object within the microcosmic theatrical world of the royal chapels of Castilian monarchs. By foregrounding mechanical choreography and labor I show how medieval androids were employed to accomplish

FIGS. 2A–B La Virgen de los Reyes. Rear view of internal mechanism. From José Hernández Díaz, Iconografía Medieval de la Madre de Dios en el Antiguo Reino de Sevilla (Seville: Real Academia de Bellas Artes de San Fernando, 1971), plate II.
tasks, and in this way the objects performed theatrically and efficaciously. As defined by Jon McKenzie, “technological performances” straddle ludic and productive realms where both work and play are measured in terms of efficacy and efficiency. Humanoid performance objects—including puppets, robots, and dolls—can act in predictably human ways, and around the rough edges that delineate humans from dolls (joint/hinge, limb/prosthetic, coronary artery/pneumatic valve) the suggestion of life lingers. It is in this setting that technological and devotional pleasures merge in the presence of the robot saint.

Automata are capable of independent movement; their locomotion derives from steam, water, or the latent energy held in a winding mechanism like a clock or the tongue-and-groove ratchet system of the Virgen de los Reyes androids. They function differently from puppets, and are therefore perceived and experienced differently as well. A few medieval examples are illustrative. Deposition crucifixes—explored, along with other articulating figures of Christ, by Kamil Kopania in his contribution to this volume—are essentially puppets. Jointed wooden Christ figures hung from the cross, and were removed and carried to a sepulcher during the Holy Friday liturgy. The puppeteers, the agents of movement, were visible to the audience: priests or laypeople reenacted scenes from the Bible, performing the roles Joseph of Arimathea and Nicodemus in the Deposition of Christ. The thirteenth-century El Cristo de los Gascones (Fig. 3), preserved in the Church of San Justo in Segovia, articulates at the elbows, shoulders, and hips, and is the oldest extant Deposition crucifix on the Iberian

![Fig. 3 El Cristo de los Gascones, thirteenth century. Painted wood. Segovia. Photo: Christopher Swift.](image-url)
Peninsula. A palimpsest of approximately eight hundred years of performance history, the figure’s current appearance is the result of multiple restorations made necessary by continuous ceremonial use.9

The gauge of the automaton’s attention-grabbing power lies in its ability to labor independently while mimicking biological realism, often catching the beholder’s interest by an unsettling resemblance to humans. We are used to thinking about the eighteenth century as the golden age of the automata, when clock-makers, engineers, toy-makers, and inventors devised “sublime toys” that could talk, sing, write, and play chess.10 Mechanized human figures were of particular interest to avant-garde artists of the early twentieth century as well, sparked by a double reaction of fascination and shock about the industrialized body of workers. Indeed, the word “robot” comes from robota (the Czech word for “work”), used by the playwright Karel Čapek in his Rostrom’s Universal Robots that describes automatons fighting humans for world domination.11 In Čapek’s times, the artificial robot and concept of the body/machine met the challenge of industrial automation with a utopian incarnation of something more perfect than a human—a vision of a person. Yet, before robots became high-performance machines of mass production, automated statues in medieval Christian life were devotional tools, the distillation of technical processes and sacredness. Although St. Augustine’s writings on the dangers of sight and dramatic mimesis to corrupt faith are layered with images of corrupted bodies,12 and, to quote Caroline Walker Bynum, “anxiety about the threat of mutatio” of matter and bodies was regularly expressed in late medieval literature, Gothic saints’ statues were eminently effective in drawing pilgrims, devotees, and celebrants to shrines and processions.13 A robot analysis thus fulfills Bynum’s call for “modern critical notions of response and framing to identify a medieval ‘fantastic.’”14

The anatomical details of the Virgen de los Reyes show the care the artisans took in crafting the figures and the degree to which they attempted to produce the perception of liveness. The shoulder joints of both life-sized figures are composed of oak, which is resistant to abrasion and wear, and can support the weight and movement of the whole arm.15 A dense post with a channel-shaped incision around the edge extends from the arm into the torso, where a pin fits through the shoulder to allow rotation. Both robots’ wrists, elbows, and shoulders share a complex joint system constructed of multiple holes and pins that allow for flexion and rotation of limbs and hands. The statues can perform an almost endless number of human gestures and choreographies. Like the
torsos, the arms are made of a softer, lighter wood—probably larch wood—that is ideal for performance because of its waterproof qualities and relative lightness. To simulate human flesh, white kidskin was stretched across the surface of the Virgin's head, torso, and arms. The thin lamb's hide that had once covered the arms of the Mary figure has disappeared almost entirely, apart from a few remnants around the elbows, shoulders, and right forearm. A skein of gold thread, bound together in groups of three or four strands by silk, is plugged into capillary-sized holes in the scalp of the Mary figure with tiny wooden nails. The hands, which, along with the heads, are the only parts of the Jesus and Mary statues that are painted, are finely carved and expressive. Although the Virgen de los Reyes has undergone three restorations in the twentieth century, the wooden limbs, heads, torsos, joints, and internal machines of the Mary and Jesus automata, as well as the gold hair strands and animal hide on the Mary figure, are original.

In each figure, the slender conical neck inserted into the torso is capped at the end with a spherical fixture that allows the leather straps attached to the inner mechanism of the torso to communicate with the hollow inner top of the head. Radiographic images taken during anatomical restoration conducted by D. Joaquín Arquillo Torres in 1979 reveal a metal piece that secures the end of the leather strap, providing a pivot point for side-to-side and forward-and-back movement of the head. The gear system that controls the rotation and flexion of the head is set within a rectangular hole in the scapular area of the back of both the Jesus and Mary dolls, and this portal is concealed by a set of functional doors (see Fig. 2). The mechanisms are designed with wheel axles that turn and tighten leather straps running between the inner hollow of the dolls' heads and torsos. The ratcheted wheels allow the heads of the dolls to be held in place and assume a variety of positions in stillness. When the wooden tongues are lifted and tension released, the heads of the dolls move autonomously. Arquillo's categorization of the Mary and Jesus figures as mannequins—like the many Gothic wooden Marian statues that populated Christian Andalusia from the beginning of the thirteenth century (discussed below)—is technically inaccurate. The arms and legs of the Seville figures do not maintain a fixed position; they swing freely. Most important, the head and neck terminuses controlled by the inner gears are designed to allow movement of the head in any direction, a unique feature. Because the internal clocklike mechanisms are hidden from view of the spectator and parts of the statues have the capacity to move independently, the articulating Mary and Jesus are automata—early manifestations of the modern robot.
Our senses of liveness and objectness may be learned in childhood. Developmental psychologist Pascal Boyer argues that “the content and developmental schedule of ontological categories and domain-specific principles [of the brain] seem to be the outcome of maturational programmes triggered, but not shaped, by experiential input.” In other words, ontological categories (the state of liveness, for example) contain domain-specific principles (living things move autonomously, for example). When a domain-specific object or natural principle is removed from an ontological category, a unique, evocative neurological response occurs. For instance, if a human face is a universal domain that is perceived to have basic, natural features, then one of these domain-specific features might be the perception of skin texture from the existence of pores. If we remove the pores from the human face but leave the remaining domain-specific information that has been established experientially (dilating eye pupils, hair follicles, epidermal placidity, etc.), our brains detect a severance or abstraction of elements that threatens the ontological status of the entire face.

Further, evolutionary psychologists and neuroscientists have found abundant evidence that responses to facial attraction and revulsion may also be hard-wired into the human nervous system, “shaped,” as David Hanson writes, “by evolutionary pressures into neural-templates that filter distinctly for ill health and danger.” Initial findings suggest that aesthetic opinions about beauty and visual disquiet are consistent across many cultures and rely on predictable patterns of facial construction and symmetry. What humans find unsettling about a face that does not fall within certain criteria (such as asymmetry, discoloration, and disfiguration) is the same source of an uncanny response to automatons that deviate in even minor ways from what visually marks a figure as healthy and living.

Violations of the laws of “domain-specificity,” according to Boyer, are common in religious practice, ritual, and representation. Most religious systems make claims that breach intuitive expectations about the natural world—animate and inanimate—granting counterintuitive expectations to certain entities. In both medieval and modern forms of Christianity these include the transubstantiation of bread, the power of the Holy Ghost to heal sickness, and penitential practices that guarantee life after death. Faith functions by way of transfer: the transfer of a certain set of expectations (such as “God is listening”) into a category that does not intuitively apply to that category (“a carved piece of wood is listening”). Intuitive ontology is not based on explicit theories of the nature and truth of things, on justifications, on reasoned explanations—rather they are ambiguous, have independent properties, and can become routinized.
For Boyer, the “fact that religious assumptions are perceived as counter-intuitive and construed as actually true is probably an important factor in explaining why they trigger significant cognitive investment on the part of the people concerned.” For this reason, a “religious exception” to the developmental and biological laws of domain-specificity, especially in the context of medieval faith that was intricately woven into the daily lives of people, could shield the spectator of an enigmatic devotional android from the sense of the uncanny.

Additionally, our contemporary understanding of religious representation has been necessarily shaped by cultural attitudes inherited from a series of iconoclasm movements in the West, the most potent and lasting of which occurred during the Protestant Reformation. The mechanical Rood of Grace of the Boxley Abbey in England was one of the most reviled objects of sixteenth-century iconoclasts, which, according to some witnesses, had articulating hands and feet, rolled its eyes, moved its lips, and could turn its head. It is probable that the sixteenth-century reports by William Lambarde and others—considered briefly by Sarah Salih in her article here—were embellishments based on the powerful legends and stories about the Rood that circulated in Reformation England, and fueled by Reformers’ desire to provide incontrovertible evidence for what they understood to be the fraudulent practices of the Catholic Church. It is this same attitude that permeates modern distrust and repulsion of discourses of miraculous animation of matter. For instance, upon seeing a sixteenth-century automaton of a monk (see Fig. 1 of Asa Mittman’s article that concludes this journal issue), Carlene E. Stephens, curator at the Smithsonian Institution, stated, “The first time I saw this figure I was drawn to it and then repelled.” I would argue that the radical and often uncanny sense of difference described by modern critics when confronted with medieval materiality (realistic images of blood in art, relics comprising human flesh and hair, and other compelling and/or revolting images of the broken body) might be held at bay, or at least better understood, by examining the substantive, productive, and playful elements of devotional objects that are particular to premodern perception and practice. These elements predicate the medieval response to robot saints, marrying pre-Enlightenment “religious exceptions” and attitudes toward the mutable nature of matter.

Indeed, the protestations of anti-papist reformers aside, earlier evidence suggests that medieval Christians may have appreciated moveable sacred statues not for their miraculous qualities but for their mechanical, technological, and ultimately theatrical capacities. In the ancient world, writings on automatic machines with anthropomorphic qualities were concentrated in Hellenistic
Alexandria, and much of this mathematical and engineering knowledge was translated and preserved in medieval Arabic libraries. In his *Didascalicon*, the twelfth-century Parisian canon Hugh of St. Victor developed a concept of the *science of entertainment* by organizing “theatrics” (*theatrica*) within a broader rubric of mechanical arts necessary for human survival, including medicine, tool-making, and agriculture. Although Hugh appeared to be borrowing his definition of *theatrica* from Roman usage (via Isidore of Seville), his examples included a range of entertainments that were commonly performed for audiences in the twelfth century: procession, puppetry, chant, instrumentation, song, and epic poetry. Hugh’s widely disseminated encyclopedia demonstrates that theater could have positive affective attributes to “stimulate” the body and refresh the mind. Additionally, not only were diverse performance forms (ludic, devotional, profane, athletic, musical) understood by Hugh’s contemporaries as generically indistinct, but graphic, performative, and plastic arts were also categorized under the same broad heading with the sciences of engineering, medicine, and the like. Hugh includes *theatrica* in a larger scheme of mechanical arts because “it is concerned with the artificer’s product, which borrows its form from Nature,” a distinction that situates mechanical and performance arts in a coextensive relationship with the natural world, including animals and plants. In the avant-garde theater movements of the early twentieth century, the robot was understood in a similar way: a useful object that held the interest of spectators because of its capacity to blur boundaries between manufactured and biological things.

A number of medieval wooden crucifixes and statues contain discreet internal mechanisms for movement of limbs and spurting blood from the wounds of Jesus, which implies efforts by craftsmen to convince audiences they are witnessing miraculous transformations. However, it is not clear if such an affective response is not historically conditioned, and scholars generally believe it unlikely that religious automatons deceived pilgrims and other devotees. Religious catechisms established for the faithful a doctrinal standard that accepted representations as a means to contemplation, rather than of direct worship of an idol. Just as late medieval theatrical and liturgical machinery created wonderment without suggesting supernatural presence on earth, articulating statues of saints performed mechanical tasks to the same effect. As Kara Reilly observes, Catholic audiences were conditioned by the presence of theatrical miracle machines in cycle plays for generations.

Automatons’ distinction from immobile objects of devotion is not clear-cut, since the latter also suggested and simulated animation and spectacle. Jean-Claude Schmitt suggests that devotional “objects do not consist only of the
representation in them; their materiality—the wood, the stone, the gold—is as important as the meaning assigned explicitly to images . . . their ‘thingness’ the desire of men to make them mean ‘something’ . . . the image is supposed to come to life, move, speak, weep, bleed.” Glittering precious metals and stones, liturgical music, and other environmental properties of the sanctuary materially inferred the presence and action of saints on earth, greatly enhancing the affective devotional lives of adherents. Religious representations—paintings, pax, statues, shrines, reliquaries—rely on a host of intuitive assumptions about the behavior of worldly objects to serve as a common vocabulary against which counterintuitive claims accrue their specialness. If medieval laypeople were not deceived by technologies of the sacred, then a reason for disguising the means of their animation may have been to increase the entertainment value of objects, to create devotionally evocative spectacle.

With these things in mind, let us turn our attention to spectacular machines in the context of Iberian performance culture, and in particular the popular miracle tales and plays of the same periods. On the level of public performance in churches and court settings, mechanized saints attested to the skills, artistry, and engineering brilliance of Christian artisans and monarchs. In more local settings, the caretakers of mechanized saints enjoyed intimate interactions at the level of touch while dressing Virgin Mary dolls and adorning them with jewels. In public spaces and in private chambers, these performances gave audiences a sense of material transformability and functionality that was informed by ritual practices. It is in this way that the consecrated Virgin and Child automata functioned in imaginative play-spaces between humanity and divinity, and helped encourage faith in the potential for miraculous healing, protection, and conversion by appealing to the affective and sensory lives of audiences.

Although Spanish evidence for miracle plays similar in form to those of France and England does not exist, troubadours and jongleurs on the Iberian Peninsula commonly performed songs and stories about the intercessory powers of the Virgin Mary, and the popularity of the French miracle play may well have been known to the Castilian royal relatives of French monarchs. In fact, Castilian monarch Alfonso X—who venerated the Virgen de los Reyes—based many compositions in his Cantigas the Santa Maria (hereafter CSM) on French stories. Alfonso’s vast collection of cantigas de miragre (miracle songs) and cantigas de loor (songs of praise) is written in Galician–Portuguese, and although the Iberian songs—which are related to popular Iberian forms such as the cantigas d’amor, damigo, and d’escarño e maldizer—were formally distinct from imported Provençal styles,
the two traditions were contemporaneous in a number of generations of Castilian courts populated by both French and Iberian troubadours. Textual and iconographic evidence of a historical musician from Alfonso’s court exists in the Escorial manuscript of the CSM, depicting the minstrel Pedro de Sigrad performing songs for a statue of the Virgin Mary. As theater scholar Carol Symes argues, the highly dramatic arts of medieval jongleurs “informed the production of the very evidence [written drama] on which we rely for our knowledge of the past.” Alfonso X himself is an omnipresent character in the narratives of the CSM, as the Virgin Mary’s devotee and personal trovador; the illumination to Prologue B in the Escorial manuscripts depicts Alfonso at the center of the frame, between groups of musicians and scribes, directing the creation and performance of the CSM. At least seven cantigas de miragre include Alfonso and his father in the narrative, and a number of scholars have concluded that the sustained proximity of the Wise King to the Virgin Mary in the cantigas de loor helped establish an identity that was equal parts king and performance artist. The music of the CSM was played on instruments common to medieval European jongleur tradition and documented in the illuminations to three of the four CSM manuscripts—zithers, shawms, harps, fiddles, portative organs, pipes and tabors, and bagpipes—as well as the al-ūd, rabāb, qāṭār, al-daff, and al-bandāder, which were introduced to the continent by way of Seville, the center of Arabic musical culture in the High Middle Ages. Among the various potential physical responses to the music, including mime and gesture, male and female dancers would have moved in a circle, hands clasped, as was traditional in thirteenth-century court culture. Significantly, as I have argued elsewhere, Marian statues played the protagonists’ role in the performance culture of the CSM.

As with Gautier de Coinci’s Les Miracles de Notre-Dame (1218–27)—a probable source for Alfonso’s team of poets, musicians, and illustrators—the stories of the CSM are populated by mobile sculptures of the Virgin Mary. Like jongleursque theater, Marian shrine statues were embedded into the performance of miracle stories. The protagonists of Gautier’s and Alfonso’s songs prayed to statues of the Virgin Mary for the alleviation of pains from sickness and misfortune just as the songs’ human contemporaries prayed to saints’ images and statues requesting divine intervention into worldly matters. Anna Rusakoff has argued that double images of the Virgin Mary in the BMB 551 manuscript of Les Miracles de Notre-Dame “both ‘stand for’ and ‘act for’ the Virgin herself; a convergence of representational categories that also occurs in live theater.” In her analysis of Gautier’s stories, Peggy McCracken makes a similar point about the Virgin’s intercessory presence that nonetheless draws attention to “the miraculous manifestation of the material body itself: the statue that raises a leg
to block an arrow, the portrait that lactates.”

Alfonso X and other composers provided graphic and textual instances where physical statues performed in the stead of the mother of God, a theatrical substitution that removed the miraculous act an additional step away from God’s presence. I have counted twenty-three miracle and praise songs in the CSM that convey stories about agentive statues producing miraculous healings, conversions, and destruction of enemies to Christianity; a number of these songs are set in known shrines and communities of the Christian Iberian kingdoms. In CSM 4, a statue of Mary miraculously comes to life and gives communion to a curious Jewish boy; CSM 59 is about a crucifix that strikes a disobedient nun, leaving a trace of the nail from the hand of Jesus on her ear. The statue Nuestra Señora Santa María de la Arrixaca defends a church in Murcia from Moorish armies in CSM 169; and in CSM 297 a friar accuses a king of idol worship, claiming “there was no power in carved wood.” King Alfonso responds in the verses: “this friar is very bold and foolish and I believe he is damned.” The friar does suffer and the song goes on to explain that God has given power to his saints and the images of saints to heal those who believe, “[f]or just as breath gives strength to a living thing, so also the image of which it is a representation.”

It is likely that songs about statues that extend an arm to offer communion or articulate at the shoulder to strike a nun reminded spectators of actual articulating statues, like El Cristo de los Gascones and the Virgen de los Reyes. Articulating statues of Christ, Mary, and saints were of particular interest to the monarchs Alfonso X, and his father, Fernando III, especially those with powers to heal. During the most active periods of Christian conquest of territory from Muslim states Castilian rulers had a distinct enthusiasm for mechanical engineering in the theatrical and religious arts. Weight-driven clocks were built in Muslim Spain as early as the eleventh century, two hundred and fifty years before they appeared in Christian Europe. Geared astronomical instruments, similar to the cog-and-wheel gears in the torsos of the Virgen de los Reyes figures, are described in Arabic literature on the Peninsula, such as astronomical geared mechanisms by Al-Biruni, in the tenth century.

From the time of Christian conquest of the city of Seville in 1248 to the mid-fifteenth century, the Virgen de los Reyes was transported in indoor cathedral processions during the Feast of the Assumption, the festival of San Clemente, and rogation ceremonies. The question of whether the CSM were performed during Alfonso’s lifetime—and spaces in which they were performed—is still debated; however, marginalia in the Toledo manuscript point to live performance of cantigas de feste in the cathedral. It is generally thought that composition of the CSM was conducted in the Alcazars of Toledo and Seville by court juglares and
Like his father, King Fernando III, Alfonso fostered a vibrant musical culture at court. Miniatures in the CSM manuscripts and lyrics of the songs suggest potential staging opportunities before and after Alfonso’s death, staging that would include the presence of Marian statues. In CSM 324, a beautiful statue from the cathedral of Seville known for working many miracles is brought from the chapel of Alfonso X and carried through the streets in procession. Consequently, a mute man is cured of his affliction.

The capilla real of the Seville cathedral, completed around 1261, was the ritual performance space for the celebration of the Assumption—the most important Marian feast of the Christian calendar—by the monarch and his retinue. The chapel occupied 440 square meters in the middle, eastern half of the original haram of the mosque (Fig. 4). The royal chapel was provisioned with three sepulchers, an altar, three life-sized funereal monuments, and at least four tabernacles. Rising upward before the audience were the sepulchers of Fernando III (inscribed with dedications in Hebrew, Arabic, Latin, and Arabic) and Beatriz of Swabia (queen of Castile and León, 1219–35), the main altar with life-like cenotaphs of the monarchs, and, at the apex of the tableau, the Virgen de los Reyes. Framed by stone baldachins, the cenotaphs of Fernando and Beatriz were situated above their own remains and to the left of the central altarpiece. Verisimilitude and theatricality appear to have been on the minds of the designers and craftsmen of the royal simulacra: the figures were dressed with clothing from their actual lives, wore crowns of gold and precious stones, and, rather than being fixed on a pedestal, sat on majestic, silver-coated chairs. Sometime shortly before or after Alfonso’s death, the sword carried by Fernando during the conquest of Seville was placed in the statue’s right hand; this moment is recalled in CSM 292. As María Laguna Paúl describes it, “These statues were not mere post-mortem presences, but rather formed part of the ceremonial [performances] of the royal family and received the same protocols as the [living] sovereigns.”

The audience was shown a spectacle of riches and magisterial and religious symbols, during which the principal actors of the drama, the costumed Mary and Jesus automata, could walk, gesture, and gaze about the chapel. “This spatial organization symbolically and ritually linked monarchs living and dead with the Virgin.”

The Virgen de los Reyes automata belonged to a collection of wooden articulating Madonnas called “el ciclo de imágenes fernandinas” (the cycle of Fernando’s statues). Legless and fashioned with permanent skeletal hoop skirts to support outer garments, these smaller companion statues served as mannequins for the display of clothing. The thirteenth-century La Virgen del Castillo (Fig. 5) and La Virgen del Valle (Fig. 6), equipped with articulating elbow joints (presumably to allow them to cradle the Christ Child in Nativity scenes, and
at other times to appear without Jesus in celebrations of the Annunciation and Assumption) are examples of this type. After the Virgen de los Reyes, Nuestra Señora de las Aguas is the oldest surviving wooden articulating Mary figure, from the second half of the thirteenth century. The nearly two-meter-long mannequin has a Gothic-style head and has been attributed to the influence of master craftsmen at Chartres. However, a number of unique features of the Virgen de los Reyes suggest a far more expansive set of practices. The craftsmen took care to create lifelike physical features that could be beheld when the dolls were in states of undress, such as the kidskin laminate on the torso and

**FIG. 5** *La Virgen del Castillo*, thirteenth century. Painted wood. Lebrija (Seville). Hernández Díaz, plate VII.

**FIG. 6** *La Virgen del Valle*, thirteenth century. Painted wood. Ecija (Seville). Hernández Díaz, plate IX.
arms and articulating knee joints. The mechanisms set into the dolls’ backs and dual-hinged joints appear to have been built for performative capacities: namely, contiguous movement and simultaneous choreography of body parts.54

Like the majority of medieval Deposition crucifixes from Andalusia and Castile, the shoulders of the mannequins were outfitted with galleta (“cookie”) type joints—round disc at the arm terminus inserted and bolted between two flanges extending from the torso—which provide minimal abrasion and wear to moving wooden parts.55 The shoulder and hands of the eighteenth-century La Virgen de la Convento de Trinitario—possibly a replica of La Virgen del Valle—are also equipped with galleta joints, apparent in the photograph of the disassembled doll reproduced here (Figs. 7a–c). A plastered burlap skirt provides a light-weight cover to hide the missing lower half of the doll's body, making it ideal for transportation in processions and costuming. What is striking about the articulating statues of the Fernando cycle is the contrast between the purely functional, block-like arms and realistic, polychromatic, finely carved facial features of each figure. This suggests that the sculptor anticipated a costume change, and underscores the figures' distinctive value as objects for functional use.56

To the same category belong the so-called vírgenes abrideras, Virgin Mary statues with openable bodies and decorated interiors. Popular throughout Europe, they were also crafted and used in devotional settings on the Iberian Peninsula from the thirteenth century. Carved of wood or ivory, or both, vírgenes abrideras were often affixed with pieces of gold and precious stone for decorating the eyes and crowns of the figures. The twelve-inch ivory Virgen abridera de Allariz was likely produced for the court of Alfonso X at a Castilian–Leonese workshop around mid-century (Fig. 8). The miniature carvings of the Virgen abridera de

Figs. 7a–c  La Virgen de la Convento de Trinitario, eighteenth century. Painted wood, plaster, hemp. Seville. Photo: Christopher Swift.
Allariz depicts scenes and stories related to the life of the Virgin. The history of the object has traditionally been linked to the Royal Monastery of Santa Clara, founded by Queen Doña Violante. The fact that it is carved from rare, expensive materials indicates royal pedigree. Like articulating mannequins, vírgenes abrideras were mobile statues that encouraged direct, personal interface with sacred representation. The user of these performing objects participated in the disembodiment of the figure by parting the hinged panels to expose a hollowed body.

Although it has been argued that the voided interiors of vírgenes abrideras may have aligned with doctrinal standards of the period that would “distance the Virgin’s body from base anatomical aspects . . . and elevate the spiritual,” late medieval viewers would likely have appreciated the corporeal aspects of the articulating statues enhanced by the kinetic and sensual suggestions of liveliness. Disclosure of the inner vignettes of vírgenes abrideras recalls dressing and undressing of the Virgen de los Reyes: such performative interaction ignited for the actor a sense of private revelation and mystery, and a new theater of Christian narrative and hagiography was divulged. As Gerhard Lutz suggests in his contribution to this volume, the sense of touch was a crucial aspect of private devotional practices and prayer in the Middle Ages, and the soft envelope of

**FIG. 8 Virgen abridera de Allariz, thirteenth century. Ivory. Royal Monastery of Santa Clara, Allariz (Orense). Photo: Christopher Swift.**
skin that covered the Virgen de los Reyes and constituted the delicate pages of prayer books and song manuscripts enlivened the devotional performer’s haptic experience of sacred materiality. The only original piece of clothing that has survived the centuries is the Virgin Mary doll’s silk slippers. The word “Amor” and a fleur-de-lis (a symbol with Marian connotations of purity and divinity) are stitched into each of Mary’s slippers, suggesting a French origin of the doll, perhaps a gift from Fernando’s cousin King Louis IX of France.59 In the received belief in the Middle Ages, the Virgin was assumed into heaven wholly, leaving no bodily relics on earth. Consequently, the majority of relics of the Virgin Mary were in the form of textiles, which included pieces of maphorium—the distinctive protective mantle, a standard element of Marian iconography. The incorporation of textile garments in late medieval statues of the Virgin Mother—in contrast to the naked corporeality of the crucified Christ figure—would have echoed the sacrality of Marian relics, and a strong sense of verisimilitude and live presence was conferred in careful and painstaking embroidery in the clothing and magnificence of the costly adornments.

The conversion of Mary from inanimate matter to fleshly person in the illuminations and songs of the CSM manuscripts implies that material and symbolic forms of the Virgin—painted, sculpted, and textual—may occupy the same space at the same time. Michael Camille wrote that the lifelike qualities attributed by medieval observers to images do not mean they looked like the real thing, but that images seemed to come to life.60 In this respect, it was the work of the audience in the chapel theater—their gaze on the animated Mary and the sense of imaginative faith in the proceedings—that gave life to the songs and to the figural simulations that populated the altar.61 The images from the CSM and the humanoid robots of the Virgen de los Reyes were hypertexts to one another. The experience of viewing a statue miraculously moving on a shrine in the manuscripts informed the experience of watching the Marian robot, perhaps preparing the reader/audience for an experience of transcendence in her presence. The images of the Virgin as a person and as a statue in the manuscripts of the CSM and the articulating automaton of the royal chapel are not representational, but rather metonymic. Just as each particular incarnation of Mary was citationally bound to universal Marian worship, so, too, did the CSM manuscripts link to the cohesive cult of heterogeneous representations of Mary.

Communication between audiences and both living and inorganic actors relies on repertories of motor schema that are shared, recognizable, and compelling to the senses. Simon Shepherd describes the phenomenological experience
of staged objects in a spatiotemporal mode where the "limits of body and the possibilities of its enlargement—hallowed, united with the ground, decentered—are explored by placing the body within an external mechanical, and discursive, framework that takes it over."62 For Shepherd and other performance theorists, theater metonymically reorients the body, opens it up to multiple stimuli, and tests its limits. Signs in performance cannot always be explained with language; they must be felt. The wonder of the android saint is its ability to resist death and to commit actions with perfect repeatability. Robots are good performers because they project a palpable presence, despite, and because of, formal artificiality. Perhaps a way of coming to a historical understanding of the objects I have discussed here is to appreciate their practical applications: objects that demonstrated the wonder and genius of god in the works of men.

NOTES

I would like to express my gratitude to Elina Gertsman for championing my work on Marian statues and to the anonymous readers for their careful readings and valuable feedback.


2. Diego Ortiz de Zúñiga, Anales Eclesiásticos y Seculares de la muy Noble y muy Leal Ciudad de Sevilla, Tomo I (Seville: Imprenta de E. Rasco, Bustos Taver, 1887), 48–49.


7. "The term ‘marionette’ was first associated with string puppets in sixteenth-century Europe. The origin of the word may be traceable to the Virgin Mary, often the principal character of puppet play during the 1500s, either as a diminutive of ‘Maria’ or in its literal translation ‘little Marys,’ from the French reference to the Virgin." Ming Chen et al., "Marionette: From Traditional Manipulation to Robotic Manipulation," in *International Symposium on History of Machines and Mechanisms*, ed. Marco Ceccarelli (New York: Kluwer Academic, 2004), 120.


11. The theme was often explored by covering particular facial features of live performers with masks or fabric, as in the first production of Čapek’s play. See also the costumes designed for Oskar Schlemmer’s *Triadic Ballet* and Pablo Picasso’s designs for *Parade*, both from the same era. Different from the spring-wound toys and articulating objects with internal clock-like mechanisms that were popular in the eighteenth and nineteenth centuries, "the object itself," as Jean-Claude Beaune writes, "was no longer the most important thing, at least from the technical point of view (although it continued to fascinate artists and engineers more than ever); rather, it was how the machines worked that mattered, their function, machines working en masse in industry and later in computing." Jean-Claude Beaune, "The Classical Age of Automata: An Impressionistic Survey from the Sixteenth to the Nineteenth Century," in *Fragments for a History of the Human Body, Part One*, ed. Michel Feher, Ramona Naddaff, and Nadia Tazi (New York: Zone Books, 1989), 431.

12. "... the more my tears were set to flowing, the more pleasure did I get from the drama and the more powerfully did it hold me ... what wonder that I became infected with a foul disease? That is why I loved those sorrows—not that I wanted them to bite too deep (for I had no wish to suffer the sorrows I loved to look upon), but simply to scratch the surface of my heart as I saw them on the stage: yet, as if they had been fingernails, their scratching was followed by swelling and inflammation and sores with pus flowing." Book III, 2. St. Augustine, *The Confessions of Saint Augustine*, 4th ed., trans. and ed. F. J. Sheed (London: Sheed & Ward, 1984), 32.


17. Restorative work was done in 1924 (Archivo General del Arzobispado y Archivo de la Catedral de Sevilla, *Capilla Real Fábrica, Cuentas obras*, Legajo 35, exp. 7), 1946 (José Hernández Díaz, *La Virgen de los Reyes, Patrona de Sevilla y de la Archidiócesis: Estudio Iconográfico* [Seville: Imprenta Suárez, 1947]), and 1979. Arquillo Torres completed the most recent restoration commissioned by the Archdiocese of Seville. Arquillo Torres’s physiognomic study of 1989 is based on this restoration (Arquillo Torres, “Aspectos socio-religiosos en la conservación de las representaciones escultóricas marianas”).


21. Ibid., 93.


23. Philip Butterworth’s etymological analysis of the word “puppetry” reveals that in the sixteenth century *popetry* was “a play on popery,” and “applied to idolatrous or superstitious observance.” *Magic on the Early English Stage* (Cambridge: Cambridge University Press, 2005), 126–27.


25. As cultural historians have observed, in the early modern era bodily division became anathema to good health and reason; the postmedieval body is hermetic, elementally divorced from surrounding matter and biology. In its aloofness to materiality, David Morgan writes, modernity “reasserts patristic aniconism and regards the image of the divine as ‘defunct and superstitious,’” as something to “foster notions of sublimity that stress the inadequacy of any signifier to an invisible, infinite Other.” *The Sacred Gaze: Religious Visual Culture in Theory and Practice* (Berkeley: University of California Press, 2005), 146.


31. “The medieval theatre used iconic mechanical apparatuses for special effects: to animate the serpent winding around the tree in Eden, for audacious devils and in the mechanical jaws of hell mouths. Audiences were also familiar with mechanical devices prevalent in courtly theatrical spectacle.” Kara Reilly, *Automata and Mimesis on the Stage of Theatre History* (Basingstoke: Palgrave, 2011), 21. Leanne Groeneveld points out that the Rood’s movements were a secondary attraction to pilgrims and “the Rood was acknowledged, even advertised, to be a mechanical marvel.” “A Theatrical Miracle: The Boxley Rood of Grace as Puppet,” *Early Theatre* 10, no. 2 (2007): 11.

32. “Ces objets ne consistent pas seulement en de la representation; leur matérialité—le bois, la pierre lor—importe tout autant que les sens assignés explicitement aux images, […] leur, choseit à la volonté des hommes de les faire signifier, quelque chose. […] l’image est censée prendre vie, se mouvoir, parler, pleurer, saigner.” Jean-Claude Schmitt, “Introduction,” in *Les images dans les sociétés médiévales: Pour une histoire comparée: Actes du colloque international organisé par l’Institut Historique Belge de Rome en collaboration avec l’Ecole Française de Rome et l’Université Libre de Bruxelles* (Rome: Academia Belgica, 1998), ed. Jean-Marie Sanserre and Jean-Claude Schmitt (Brussels: Institut Historique Belge de Rome, 1999), 13. See also Schmitt, *Le Corps des images: Essais sur la culture visuelle au Moyen Age* (Paris: Gallimard, 2002); and Bissera Pentcheva, *The Sensual Icon: Space, Ritual, and the Senses in Byzantium* (University Park: Pennsylvania State University Press, 2010). About the theatrical status of devotional objects, Sarah Guérin writes, “It was one role of the visual arts in the medieval West to help articulate and mediate the special ontological status of these traces of the divine on earth; visual signposts were needed to guide viewers away from sacrilege and toward proper veneration. […] Artists and theologians alike struggled, as Camille aptly phrased it, to mount sufficiently ‘meaningful spectacles’ to appropriately frame the presence of the divine on earth.” “Meaningful Spectacles,” 54.


43. Francisco Cornejo Vega also argues that the tradition of moving religious statues was documented graphically in the miniatures of the Cantigas de Santa María: “La Escultura Animada en el Arte Español: Evolución y Funciones,” Laboratorio de Arte 9 (1996): 239–61.


45. In the sixteenth century, King Filipe II commissioned the court mechanician Juanelo Turriano to construct a wind-up penitent homunculus to sit by the bedside of his dying son (Farrell, “Meet Monkbot”).


47. Juan Ruiz Jiménez has shown that the Assumption procession occurred inside the mosque–cathedral of Seville from the time of Fernando III through the middle of the
fifteenth century. “Seville Cathedral in Its Urban Context: Creation and Continuity of its Renaissance Repertory,” Sounding Communities: Music and the Three Religions in Medieval Iberia, A Conference of the University Seminar of Medieval Studies, Columbia University, New York, February 26, 2014. “… como en estaciones de penitencia o rogativas para pedir las necesarias aguas, terminación de la sequía o hambre, pestilencia, así como dar gracias cuando estas calamidades han cesado. En estas procesiones extraordinarias la comitiva ha recorrido no solo la estación tradicional de las Gradas, sino que ha cruzado Sevilla de punta a punta y hasta ha salido fuera de su recinto amurallado, y ha pasado el Guadalquivir para acudir al templo de Señora Santa Ana.” Carrero Rodríguez, Nuestra Señora de los Reyes y su historia, 81–82.

48. An excerpt from Second Testament of Alfonso X (Seville, 10 January 1284) suggests that the cantigas de loor from the CSM were sung in the cathedral directly after Alfonso’s death: “We also command that all the books of songs, miracles, and praises of Holy Mary should be kept in that church where our body will be interred, and that they should cause them to be sung on the feasts of Holy Mary and our Lord Jesus Christ. And if the one who is our rightful heir wishes to have these books of songs of Holy Mary, we command him to make some benefaction to the church whence he takes them, so he may have them freely and without sin.” Georges Daumet, “Les testaments d’Alphonse X le Savant, roi de Castille,” Bibliothèque de l’école des chartes 67 (1906): 91 (my translation). Other scholars argue for using the CSM illuminations as evidence for performances in the cathedral: Gonzalo Menéndez Pidal, La España del siglo XIII leída en imagenes (Madrid: Real Academia de la Historia, 1986), 239; and Pedro López Elum, Interpretando la música medieval: Las Cantigas de Santa María (Valencia: PUV Publications, Universitat de València, 2010), 80. Martha E. Schaffer conducts a careful analysis of performance notes in the margins of the Toledo Manuscript in “Marginal Notes in the Toledo Manuscript of Alfonso El Sabio’s Cantigas de Santa María: Observations on Composition, Correction, Compilation, and Performance,” Cantigueiros 7 (1995): 65–84.

49. Higinio Anglés, Alfonso X, and Hans Spanke, La música de las Cantigas de Santa María del Rey Alfonso el Sabio (Barcelona: Diputación Provincial de Barcelona: 1958), 120.

50. Jesús Montoya Martínez and Aurora Juárez Blanquer conclude that La Virgen de la Sede (thirteenth century, wood and silver plate) is likely the statue referred to in CSM 324: Historia y anécdotas de Andalucía en las Cantigas de Santa María de Alfonso X (Granada: Universidad de Granada, 1988), 34. However, I leave open the possibility that CSM 324 refers to the articulating Virgen de las Reyes since “the Virgin of the Kings” would undoubtedly have been seated within the retablos of royal chapels, as she remains to this day. Additional textual and visual evidence of Marian statues carried in procession exist in CSM 2, 24, 128, 208, and 345.

51. “Estos simulacros reales no eran únicamente una mera presencia post mortem sino que formaban parte del ceremonial de la realeza y recibieron el mismo protocol que los soberanos.” María T. Laguna Paúl, “La Capilla de los Reyes de la Primitiva Catedral de Santa María de Sevilla y las Relaciones de la Corona Castellana en el Cabildo Hispalense en su Etapa Fundacional (1248–1285)” in Maravillas de la España Medieval, vol. 1, ed. Tesoro Sagrado y Monarquía (Valladolid: Junta de Castilla y León, 2001), 244. The royal simulacra corresponded to the realist style that was in vogue during the reign of Federico II Hofenstaufen (Alfonso’s grandfather). This realism was achieved scenographically by positioning the figures under stone arches and dressing them in mudéjar clothing.


58. See Gertsman, Worlds Within, especially chaps. 2 and 3, on corporeality of such statues, on their performance potential, and their haptic and visual appeal. Elizabeth Harvey argues that touch was central to medieval and early modern religious representation because of its ability to signify the “dialectic between materiality and resurrection, between physical and spiritual contamination and cure.” More than any other sense, continues Harvey, touch is “a mediator—between the body and what transcends it.” Harvey, 1–2, 21. The quote is from Melissa R. Katz, “The Non-gendered Appeal of Vierge ouvrante Sculpture: Audience, Patronage, and