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Posthuman Priests: Exploring the ‘New Visibility of Religion’ in Robotic Re(-)presentations of Religious Rituals

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Abstract: In 2017, visitors to a church in Wittenberg were given the opportunity to receive blessings from a robot. The so-called ‘robot priest’, named ‘BlessU-2’, poses a lot of questions and possibilities. One of these is about the ways that robots might mediate and represent religious teachings, beliefs, and experiences, which is the focus of this paper. Taking Hoelzl and Ward’s ‘new visibility of religion’ hypothesis, the paper asks about what kind of visibility BlessU-2—and similar robots in religious contexts—represents: is it whimsical; novel; authentic; secular? By locating the robot in historical and theological frameworks, the nuances of what it represents and how it might be seen to mediate religiosity in some way are revealed and discussed.

Keywords: religion and robots; theomorphism; religion and media; theology and technology; meditation; reformation; new visibility of religion; secularisation

1. BlessU-2: Questions from and about the Posthuman Priest

In 2017, visitors to a church in Wittenberg were given the opportunity to receive blessings from a robot. The so-called ‘robot priest’, named ‘BlessU-2’, features a touchscreen enclosed in the robot’s main body, which allows people interacting with it to select the type of blessing that they seek (‘traditional’, ‘companionship’, ‘encouragement’, or ‘renewal’), as well as the language and even gender of the robot’s voice that reads aloud the blessing. While giving the blessing, the robot raises its two arms and opens its robotic palms, each of which have lights at their centre that turn on; meanwhile, its face has eyebrows that move and a mouth on a basic LCD screen that is animated to imitate speech. Finally, the visitor is then offered the opportunity to receive a printout souvenir of the robot’s blessing, which is produced by a small printer contained within an automatically opening drawer beneath the screen on the robot’s torso.¹

The robot poses a lot of questions and possibilities. Aside from questions that might be raised about the functional use value of the robot (Is it more efficient to administer blessings via robots? In any sense is this more desirable?) (Balle and Ess 2020, pp. 587–88), BlessU-2 also raises deeper questions about robots and religion. Can a robot be a priest? Can a robot even be considered ‘religious’? Does the use of a robot in a ritual observance suggest the mechanical nature of religious blessings and other practices; in which case, what is the role of *humans* in such expressions and examples of religiosity? Can the sacrality of a blessing be communicated by the mechanised ritualistic observances of a robot that features some motors, lights, and speakers? Is the robot able to encourage and even sustain religious belief and expression, particularly for mainstream Christianity?

To be sure, BlessU-2 was designed to raise questions: its creators write that “the idea is to stimulate debate and thinking about the future of the church in a world full of electronic devices—all that with a twinkle in our eye” (LichtKirche 2017). The robot commemorates 500 years since the Reformation that was prompted by Martin Luther, which “capitalise[d] on the technology and industries of printing to construct an alternative Christianity that addressed the social momentum of the time” (Horsfield and Teusner 2007, p. 279). Just as



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the Gutenberg printing press transformed how people accessed Christian teachings, so too does BlessU-2 seek to explore how developments in robotics and AI may continue to impact Christianity. Rev. Fabian Vogt, spokesperson for the Protestant Church of Hesse and Nassau that hosts the LichtKirche as well as the BlessU-2 projects, claimed in an interview that “it’s really an experience—an installation to make people talk about it, and that’s what happens” (Miller 2017). Pastor Michael Brück of the LichtKirche similarly discusses how BlessU-2 “always triggers a reaction. He [sic] brings people into conversation about blessings, life, faith, the church” (LichtKirche 2017).² These conversations, which are part of BlessU-2’s designers’ aims to engage people in reflections on ecclesiology and theology (Sherwood 2017), are framed by developments that took place around the Reformation. Reading the robot in this light offers a way to understand its aims, to analyse its significance, and to consider the wide variety of responses to it—and to explore what all of these might say about the relationship between robots and religion, as well as the future of that relationship.

In this paper, I locate BlessU-2 amidst other robots in religious settings, considering historical trends and different attitudes—including those marked by the Reformation that BlessU-2 commemorates—in order to better understand the significance and symbolism of the relationship between the robotic and the religious. One particular tension that persistently reappears throughout discussions of this relationship is that between religiosity and secularity, and I consider and critique it here in order to make concluding comments about how robots such as BlessU-2 necessarily *mediate* between the two concepts (religiosity and secularity) through complex patterns of *representation*.³ I develop such aesthetic arguments by reference to religion and media theory, which I then follow with a deeper consideration of the affective dimension of technological media and what might be considered to be their religious impacts for recipients, before placing these ideas in broader theological and metaphysical schemas. In so doing, I do not seek to be prescriptive about the ability of robots to participate in religious contexts, but rather to suggest ways of being attentive to the contours of what underwrites peoples’ perceptions of such participation, which may aid reflections on religion and robots and their relationship vis-à-vis the relationship between religiosity and secularity.⁴ I begin this emphasis on contextualising robots, specifically BlessU-2, in the next section by looking at what light the Reformation context casts on the role of technological media in religion.

2. Mediat(is)ing Religion: A Methodology for Approaching Technology and Secularity

Luther’s radical departure from mainstream Christianity was rooted in his advocacy of the ‘common priesthood’ of all Christians, in contradistinction from Catholicism which restricted the mediation of Christian teachings to a smaller group of ministers (Cocksworth and Brown 2006, p. 30). That is not to say that the priestly mediation of Christian teachings and the church context wasn’t significant for Luther—in fact, to the contrary—but his widening of access to religious teachings, facilitated by the increasing availability of Scripture owing to technological advances, changed people’s relationship with God and their faith. In one sense, the mediation of religious reflection through objects was nothing new: Catholic representations of religion through paintings and sculptures were already commonplace. And so, while the mass availability of Scripture marked a shift from an image-centred to a more logocentric religious culture, the important role of media across Christian traditions is to be noted. More broadly, as religion and media scholars such as Meyer argue, “media are understood as intrinsic, rather than opposed, to religion, playing a role in broader practices of religious mediation that link humans with the divine, spiritual or transcendental” (Meyer 2011, p. 23). We cannot, in other words, escape the continuities of media and religion, nor the role of mediation in religion. Yet, in another sense, Luther’s Reformation marked a shift in the power and authority of individuals alongside and through a shift, facilitated by new technologies, in the power and authority of mediative objects. The usurping of some priestly power that this process brought about resurfaces in an interesting way with BlessU-2, which, in its rudimentary humanoid form,

is a robotic imitation of a priest. But is this an example of pastiche or parody? One Catholic commentator writes, “the robot priest is perhaps a warning. So much of life has now been mechanised, [. . .] but in the Church, as from the beginning, the role of the human cannot be replaced” (Lucie-Smith 2017). While BlessU-2 can be seen to illustrate the importance of the priestly role, particularly in religious rituals, as Lucie-Smith’s concerns suggest, it also arguably embodies the technological substitutability of a human in that role. In yet another reading, one more directly inspired by Lutheran ideas, the robot ministers to the common priesthood by giving a somewhat customised blessing that links God and the recipient, rendering the robot as a mediative tool for expressing that relationship (Bruck 2017; Ferber 2017). For example, one woman commented that “there must be a bigger thing behind that (i.e., the mechanical and computational functioning of the robot)” given how moving the experience was for her, and how relevant the blessing that the robot administered to her was (Miller 2017; cf. Bruck 2017). Power and authority more notably shift to the individual recipient in the hermeneutic expressed here, but what of the power and authority of the mediator—does it usurp that of the priest? Again, what is the relationship—and equivalence—of human and robot in religious contexts?

Reflecting on the role of priests in the Church of England, David Holgate of Manchester Cathedral states,

Priests are ordained to ‘bless the people in God’s name’; it is always a special privilege to tell people personally that God is for them. The BlessU-2 bot is a playful way of reminding us of this truth, even though the words are not given personally. (Manchester Cathedral 2017)

That some people found interacting with BlessU-2 a moving experience even though the words are not given ‘personally’ by the robot speaks to two important and related points: one about the personhood of robots (what constitutes a personal—perhaps contra a personalized—communication or relationship?); and the other about their affectivity (what makes this a moving experience for some people?). On the first point, the designers of BlessU-2 reiterate that it is “a machine that reads blessings” (Miller 2017) rather than a person or in any way equivalent to a human, which is a notion that I shall return to in a later section, but which also demonstrates that the personhood of the robot is not at the forefront of its design. In this framing, BlessU-2 has more in common with devices such as ‘Instant Church’ (Schott et al. 2019), which mechanises the Eucharist ritual, than with other anthropomorphic or personified devices.⁵ The robotisation of the blessing ritual, indicative for many of a mechanisation of theological practice, is a commonly voiced concern (Samuel 2020). Underwriting this concern is an association of the mechanical and technological with the rational and the secular, which draws on trends noted by Charles Taylor—who described one measure of secularity as the shift from ‘religious’ to ‘rational’ thinking (Taylor 2007, pp. 1–3)—and is associated with early sociologists such as Max Weber and Auguste Comte—who anticipated the demise of religion, respectively, through a process of disenchantment, and a trend towards scientific, ‘positivist’, thinking that champions calculability and rationalisation (Musiał 2019, pp. 116–17). One way of approaching robots such as BlessU-2 (and indeed machines such as Instant Church) is as the product—indeed, the apotheosis—of this mode of thought, which King-Ho Leung describes, drawing on Taylor’s work with Hubert Dreyfus, as “a technological picture of thinking which ‘holds us captive’ to modern secularity” (Leung 2019, p. 465). For Leung, who is referring specifically to artificial intelligence (AI) as something that underwrites developments in robotics and other current technological developments, “AI is a way of thinking that is, at least *formally* speaking, incapable of ‘thinking God’ or ‘thinking about God’—insofar as God is formally understood as ‘Life itself’” (2019, p. 466, original emphasis). What is significant about Leung’s argument is that he prioritises cognition, taking guidance from the emphasis on ‘intelligence’ in the term ‘AI’ (Leung 2019, p. 458). This lends itself to comparisons between living and non-living, sentient and non-sentient, and human and non-human beings or things rather than a more nuanced attentiveness to the ways that objects or devices can

mediate religious experiences. In other words, Leung seems to critique AI as a thinking entity—a person—rather than as an affective object or device.

If Leung's suppositions are correct, then robots (which are commonly associated with trends in AI) are incompatible with religion, and the aims of the BlessU-2 experiment to prompt theological reflection are futile. And yet, as Habib Ahmed and Manh La show, "robots and automata have long been used in religious settings to enliven the spirit and religious teachings in the hearts and minds of followers, especially at important religious ceremonies and festivals" (Ahmed and Manh La 2020). This observation brings us to the second point raised above about the affective dimensions of human-robot interactions. When robots are taken as technological mediators much like mass-printed Bibles or automotive mechanical devices—rather than as modelled more narrowly on humanlike intelligence or considered as potentially persons in their own right, particularly on the basis of their alleged intelligence—then there is scope to ask not metaphysical or ontological questions about their status, but rather *aesthetic* questions about what they mediate and what they represent, which is the approach that I take here.⁶ The design of BlessU-2 in particular lends itself to such an approach given that it does not contain sophisticated AI; it is perhaps more akin to what Noel Sharkey terms a 'showbot', which is a robot that conveys to visitors that it may have capacities—here, religious or spiritual capacities—beyond its immediate or logical computational abilities (Sharkey 2018).⁷ The absence of advanced AI (at least, according to the definitions of it as presented here)⁸ also link BlessU-2 closely with the religiously significant history of mechanical automata, whose name etymologically originates from the Greek 'αὐτόματον' (*automaton*, singular of 'automata'), meaning a device acting of one's own will. Automata, which are often seen as a precursor to robots given their mechanical movements and their association with artificiality, were historically made to actively participate in the dissemination and efficacy of religious teachings because they gave the illusion of being alive, and this liveliness 'amazed' and 'delighted' visitors who saw vitality as a sign of God's creative work in the world (Trovato et al. 2019b, p. 542). Indeed, according to Jessica Riskin, "the culture of lifelike machinery surrounding these devices projected no antithesis between machinery and either divinity or vitality. On the contrary, the automata represented spirit in every corporeal guise available, and life at its very liveliest" (Riskin 2010, p. 40).⁹ This perception of the religiously significant vitality of automata might be somewhat surprising, particularly when we consider how the clunky and mechanical motions of BlessU-2, as described at the opening of this article, may have been perceived as off-putting by some visitors, which indicates that the robot—which is far more limited in its programming, its movements, and its sophistication than its human priestly counterparts—was only able to imitate or parody (rather than mediate) a religious blessing.¹⁰ Again, we find evidence that straightforward human-robot comparisons are limiting and will tend to find us wanting, or at least deeply critical of the robotic in some way. Furthermore, it seems that notions of (religious) vitality, particularly in the context of automata, are also not straightforward and will require further nuancing.

Reading BlessU-2 in the historical and analytical contexts of religion and media, then, several possibilities emerge. One of the possibilities that is more open to a relationship between religion and media would emphasise how the technological (robotic, mechanical, digital) medium is conducive to religious practice, in that "fundamental characteristics of mediated religion (that is, of religion mediated by the modern 'media' of communication) have not substantially changed, but have been instantiated in new ways in an era where the logics of the digital have come to the fore" (Hoover and Kim 2016, p. 126). Yet when the medium becomes the message (cf. McLuhan [1964] 2001) and the logics of the digital are seen to supplant or be at odds with those of the religious, as Leung indicates of AI in particular "despite the many recognisable religious motifs in the cultural narratives of AI" (Leung 2019, p. 458), we may find that in fact "the nature of religion and spirituality itself is fundamentally changed" (Lundby 2013, p. 230). Here, theorists refer to a process of 'mediatisation' in distinction from 'mediation' (Hoover 2009; Hjarvard 2012; Hjelm 2015), wherein "what is produced is not religion *per se*, but a banal form that somehow merely

quotes religion” (Hoover and Echchaibi 2012, p. 24). While this tension between media and religion—form and content (respectively)—is important to note, so too are the limitations of such models that tend towards technological determinism (Lundby 2013, p. 227) and that eschew the inseparability of medium and message, and “the hybridic and ludic possibilities of the aesthetic” (Hoover and Echchaibi 2012, p. 16) that this gives rise to.

Michael Hoelzl and Graham Ward recognise something of these possibilities, and their disruptiveness for the recognition and representation of religion by way of different media, through their concept of the ‘new visibility of religion’ (Hoelzl and Ward 2008, p. 2). Without being prescriptive other than to nuance our understandings of the secularity-religiosity dichotomy, Hoelzl and Ward emphasise the visibility of religion to query the criteria that we use to determine “what actually counts as religion and who is doing the counting” (Hoelzl and Ward 2008, p. 3). How, in other words, do we recognise what might constitute authentic religious expressions and/or experiences, such as that represented by BlessU-2 and the blessings that it has provided to thousands of visitors, all of whom have responded in a range of ways to their interactions with the device? While perceptions of the robot are clearly subjective, which is a point that I don’t intend to undermine in this paper, what I will further consider in light of an aesthetic framing of BlessU-2 and an emphasis on what it does and does not represent (vis-à-vis the new visibility of religion hypothesis) is, as Meyer puts it:

As message and medium, content and form only exist together, the central question is how earlier mediations are transformed by being remediated via new media, and whether and how these remediations are authenticated as acceptable and suitable harbingers of religious experience, modes of communication and ways to express public presence. (Meyer 2011, p. 33)

In terms of the historical context of BlessU-2, this emphasis on aesthetics and authenticity means locating the robot in trends associated with the Reformation: specifically, and as already indicated, how technologies change authority structures in the church and allow for the kind of subjectivity in religious experiences that maintains an emphasis on religious teachings while emphasising more so the role of the individual. This is precisely the kind of subjectivity we find voiced in the myriad of responses to BlessU-2, although gauging what this means for debates about religious representation contra secularisation is the next step, which I now turn to explore further.

3. Affective Automata: Contextual Associations of Robots

Early religious automata, as we have already begun to see, are part of a long history of religious uses of technology. Danny Schott discusses how, in the seventeenth century, the Jesuit scholar and polymath “[Athanasius] Kircher used his *laterna magica* to bring people back to the church as much as the church looks to technology today to reach its herd” (Schott et al. 2019, p. 5). The ‘magic lantern’ was a forerunner of cinematic projection technology that enabled the production of phantasmic imagery. Images could be projected and enlarged across distances, which was a significant development in a period marked by wonderment at scientific and technological advances, particularly in the field of optics. Koen Vermeir writes of the ambivalence of illusion in this context, noting its association with rhetoric and magic as a kind of simultaneous revealing and concealing, which, when coupled with a Patristic perspective that was influential at the time, can indicate beguilement and even deception rather than a hidden truth (Vermeir 2005, p. 132). Similarly to Plato’s Allegory of the Cave, two-dimensional images such as those projected by the magic lantern were largely seen as distinctive and detracting from the real world. And yet, there was something captivating about these images: Christiaan Huygens, a scientist and contemporary of Kircher also associated with the development of the magic lantern, encapsulates this ambivalence in stating his reservations about uses of the lantern to frighten people because of superstitious and religious fears about spectral images (Hecht 1989, p. 3). This explanation rooted in cultural fears may account for some of Kircher’s uses of the lantern to lure people back to church, as Schott describes. Kircher

himself seems to offer a different reading of the lantern, though, in that he saw images not as distinct from—and subservient to—the ‘real’ but as participatory in it; theologically speaking, illusions, as both ‘elusive’ and ‘allusive’, can be taken “as a sign which makes God’s invisible presence visible” (Vermeir 2005, p. 140). Kircher’s metaphysics revises (Neo-)Platonist philosophies to argue that “knowledge is always informed by the senses and by the shadowy world” (Vermeir 2005, p. 140; see also pp. 138–40, 151), and so, rather than downplaying the value of shadowy images as antithetical to light, they are seen as more closely linked to optics and the movement of light.

In like fashion, automata used in religious contexts were seen as participating in, and thereby revealing something of, the vitality and intricacy of God’s created order. One notable example of such automata is that of a mechanical monk that dates back to the sixteenth century, now held in the collections of the National Museum of American History (Smithsonian). The device, which is likely European in origin, has various motions: it moves its body; the head turns left and right; the mouth moves as though chanting a silent prayer; the left arm raises and lowers the cross and rosary in its hand; the eyes look towards the cross when it is raised; and the right arm beats the chest.¹¹ These innocuous yet mechanically marvellous motions, according to Elizabeth King (2002), were seen as miraculous in their own right (cf. Trovato et al. 2019a): the lore of the object tells of a king, praying for his dying son, who promised a miracle for a miracle. When his child was spared, the king had his mechanic construct the monk, thereby upholding what he saw was his side of the prayer-cum-bargain. The miraculous aspect of the automaton upholds something of Kircher’s metaphysics about the participation of the mechanical in the world rather than being a shadowy refraction or simulacrum of it, and it thereby also upholds the principle of its mediation of the divine in some way. In both cases, the mysteriousness of the new technologies meant that they were able to promote religious ideas and teachings by captivating audiences and alluding to, while also eluding the full revelation of, the intricacies of God’s creation.

Over time, though, as people became increasingly familiar with automata, the religious sense of awe that people felt towards them waned. Andrew Nahum, who surveys the history of automata, notes that, rather than being produced for religious purposes, they “were often built purely to entertain” by the nineteenth century (Nahum 2017, p. 63). To be sure, the contrast being sketched out here between the religious (profane) and secular (mundane) orientations of automata, which is predicated on their entertainment value, should be caveated with the observation that there was also an entertainment value to automata produced and used by the church, which Trovato et al. attest to in their reference to how such devices were able to ‘amaze’ and ‘delight’ visitors (Trovato et al. 2019b, p. 542). It is important to bear in mind here, as already introduced in the previous section, that the distinction between the religious and secular can be regarded as complex at best and misleading at worst: the affectivity of automata in terms of their ability to convey an emotive experience for individuals can be contrasted with the secular association with the rational, but it can also be seen to imitate rather than participate in a genuine religious experience (which connotes Platonic approaches to images as described of the *laterna magica* above). As Nahum goes on to explain, related to the latter approach yet with a slightly different emphasis, it was in fact the *contextual association* of automata that was significant for influencing people’s attitudes: “the nineteenth century saw a new rowdier style of automata, often displayed by showmen, in fairs or even lowly amusement arcades” (Nahum 2017, p. 63; cf. Midson 2020, p. 54). While still popular, automata were becoming less associated with a religious worldview and were seen more in a mundane context, as objects primarily of whimsy and entertainment rather than, or at least more so than, worship or reverence.

Some of the responses to BlessU-2 suggest that, like many of its automata predecessors, it is also seen as an object of whimsy rather than worship. Joachim Hertzberg calls it an example of ‘robot kitsch’ (Hertzberg 2017, p. 313), and Pauline Hope Cheong observes that robots such as BlessU-2 are often regarded as ‘technical novelties’ (Cheong 2020, p. 414).

Stephen Krebs (of the Protestant Church of Hesse and Nassau) describes how responses to BlessU-2 are bifurcated: “people from the street are curious, amused and interested”, whereas “those that are church-oriented are more critical” (Sherwood 2017). BlessU-2’s ability to better engage nonreligious audiences, or at least to encourage a different tone of responses compared with religious audiences, espouses a division of whimsy and worship, suggesting that the robot is more associated with the former.¹² Likewise, Shen Lu and Justin Robertson write of Xian’er—a similar robot monk to BlessU-2 (yet that is notably more technologically advanced) that is used in a Buddhist monastery in Longquan, China—that, although some visitors see the robot as a mascot, praising its ‘cuteness’ and its ability to make Buddhism more accessible, others in the monastery point out that it is not a mascot, but “people are attracted to novelty” (Lu and Robertson 2016). Other commentators have speculated about the relationship between these robots and the media, especially given how Xian’er is based on a character from a comic strip and so is a form of mixed media (Whittaker 2015). Travagnin notes that religious people and organisations can indeed “become protagonists in nonreligious domains”, but with the important caveat that “religious imaginaries are adopted more and more frequently in the secular domain for nonreligious purposes” (Travagnin 2020, p. 124). The successfulness of Xian’er in attracting more people to the monastery has been highlighted (Travagnin 2020, p. 136), but such quantitative measures may belie an accurate assessment of peoples’ (or indeed the wider social) religiosity, which calls us to be mindful of the limits of media representations of religion and what might be described as “major but often superficial exposure” (Fadelli 2019).

This point about the role of the media connotes Nahum’s comment about the importance of contexts in which automata appear. Robots in the public imaginary diverge from explicitly religious associations, which means that we are less accustomed to seeing them as mediators of the divine (Ackerman 2018). Sci-fi often speaks of the salvific and apocalyptic promises and perils of highly advanced and artificially intelligent (AI) robots (Dinello 2006; Geraci 2010); these narratives tend to raise religious and theological issues about what it is to be human rather than explicitly relating robots and religion (cf. Midson 2018). That is not to say that robots are never overtly associated with religion; even in sci-fi, religion is an important subcategory (Mendlesohn 2003; Graham 2015), and of course there are numerous examples of robots in religious contexts, including robots specifically designed for religious contexts such as BlessU-2 and Xian’er, as well as other robots like Pepper, which is designed for a more general and commercial audience but has nonetheless been used to deliver Buddhist funerals (Trovato et al. 2019b, pp. 544–45). Nahum’s point about the importance of contextual association may again apply here, but—given that robots, which share a history with mechanical automata, are regaining visibility in religious settings—there is also the question to be addressed as to the authenticity or significance of even whimsical robotic expressions of religion, and thus to what extent these can be said to be meaningful encounters between religion and robots.

Whimsy and novelty, then, are some of the ways that contextual associations of robots might undermine their perceived religious value and appeal. Another way pertains to the contextual association of robots and machines with industry, where ideals of routine, efficiency, and reason are typically prioritised over and above religious values (Trovato et al. 2018, p. 30). On this point, we might note the design of BlessU-2, which is based on a repurposed chassis of a cash machine (‘ATM’) (LichtKirche 2017). Indeed, many have called attention to the striking juxtaposition of a robot that resembles an anthropomorphised cash machine in a religious context, and that administers blessings in a manner not dissimilar to the way a cash machine dispenses cash (Murphy 2017). Here, unlike the sci-fi examples of a more advanced AI robot that is presented as “an intelligent artificial being typically made of metal and resembling in some way a human or other animal”, we find a different depiction of a robot as “a machine carrying out a complex series of movements, especially one which is programmable” (Oxford English Dictionary 2020). Both of these definitions of robots highlight different understandings of machines that have already been introduced:

the former is modelled on human intelligence and other criteria including empathy and even consciousness or belief; the latter prompts different concerns about automated tasks that lack affectivity and compassion. The former highlights proximity and similitude to humans; the latter, an unbridgeable gulf that vanguards human uniqueness and critiques the mechanical substitution or replacement of humans in various, typically caring or interpersonal, roles. In both positions, the question of human–robot equivalence is raised: do robots belong in human roles? Where differences between humans and robots are noted, is there a risk of asking too much of our robotic creations or misunderstanding the nature of the tasks that they are made to fulfil; where similarities are highlighted, do we associate robots with humanlike qualities, or do we risk overemphasizing our own robotic, machinelike qualities? Such are the extent of these concerns that numerous spokespersons have found themselves reiterating that, with BlessU-2, “we don’t want to robotise our church work, but see if we can bring a theological perspective to a machine” (Krebs in [Sherwood 2017](#); cf. [Manchester Cathedral 2017](#); [Samuel 2020](#); [Ahmed and Manh La 2020](#); [Heilweil 2019](#)). The ensuing question is how that theological perspective is ‘brought’ to the machine, particularly in relation to concerns about similarities and differences between humans and robots and the limits that such concerns highlight about the ethics of humanizing—that is, bringing a *human* perspective to—or perhaps seeking too much from our machines. Indeed, a deeper reading of the context of automata suggests that it is not a matter of ‘bringing’ a theological perspective to a machine, but in fact one of uncovering a theological perspective that machines, whatever their similitude to humans, are already embroiled in. In that sense, there is much in BlessU-2’s design and history that belies its apparent whimsy and novelty; the question is then at what level theology and culture engages the robot—and what the robot makes visible about these wider histories and approaches—in our own multifaceted context.

Having now shown some of the contours of contextual association that can impact how robotic representations are read, in the next section, I take up this question about how theology and culture engages the robot at various levels by examining the role that religious cosmologies play in the contextual association of automata and robots.

4. Robots and Representation: Theological Reflections on the Mechanical Imitation of Life

So far, we have seen something of the ambivalence of technologies and religion. Optical, mechanical, and robotic technologies can mediate something of our experience of the divine, rendering it as both allusive and elusive. Yet, in their mediatory role, these technologies are sometimes seen as able to represent only that which is secular, thereby—in a Platonistic metaphysics—moving us further away from the divine and authentically religious expression, towards whimsicality and novelty. These metaphysical trends have been exacerbated with the increasing aesthetic association of the technological with the worldly and mundane, which has shifted audiences’ sense of wonderment at technological devices from being a reverence of God’s creation to being the work of showmen and entertainers. Increasing familiarity with the workings of mechanical devices exorcised the ghosts from the machines and reduced their sense of mystery in a gradual process of rationalisation. Nowadays, as Agnieszka Bógdał-Brzezińska writes, “the perception of religion and religious practice in the age of digital technologies is changing towards their greater utilitarianism and less ideologicality” ([Bógdał-Brzezińska 2020](#), p. 192). Indeed, reading these historical trends through the case study of BlessU-2, we can make sense of many visitors’ comments voicing concerns that the machination of religious rituals through devices such as BlessU-2 undermines religious affectivity, which is something that humans are presumed, by comparison, to sustain in their roles in religious rituals.

Of course, not everyone shares these concerns, and to totalise such attitudes would be misleading. Many religious persons have in fact spoken positively of their personalised and meaningful interaction with BlessU-2 ([Löffler et al. 2019](#)), which connotes the principles of the Reformation where emphasis fell on the individual reception of religious messages or

content (to use McLuhan's terminology from media theory). Here, the form of transmission or mediation—in this case, robotic—is instructive. Not only do these claims about a perceived ability for BlessU-2 to mediate a religious experience challenge straightforward assumptions of the disenchantment of machines, but they also challenge how machines are perceived as merely whimsical and the apparatus of showmen, which was a trend that Nahum identified (and that Sharkey connotes in his cynical use of the term 'showbots'). Maciej Musiał talks about how people might (re-)enchant robots as a counterpoint to so-called rational thought:

Our world is full of new objects and events—including robots, that we do not rationally understand (of course it is possible to understand them, but that takes a lot of time and effort that we cannot or do not want to make). In order to make some sense of it all, we retreat to the most basic and fundamental way of understanding—that is, to magical thinking. (Musiał 2019, p. 126)

For Musiał, so-called 'magical' thinking enlivens machines and prompts affective responses from audiences. This, Musiał argues alongside various other scholars, underwrites many human–robot interactions (HRI) whereby we seek to participate in and develop meaningful interactions with machines (cf. Coeckelbergh 2017; Turkle 2011; Breazeal 2002).

Given, however, that these interactions take place in non-ritualistic and non-religious contexts, the extent to which they have religious, specifically Christian, significance is debatable. Indeed, Musiał regards his theory of robo-enchantment as a form of 'neoanimism', which suggests an association with different religious values and ideas than those represented by early Christian automata.¹³ Animism is a complex set of ideas that are typically (yet not unproblematically) associated with 'eastern' traditions; in broad terms it highlights the continuities between humans, animals, plants, as well as 'natural' and 'artificial' objects (Kim and Kim 2013, p. 314; cf. Musiał 2019, pp. 93, 98–99). As Mark Coeckelbergh writes of it, "for animists, objects have (individual) spirits [. . .] animism is a denial of the assumption that the world is material-without-spirit" (Coeckelbergh 2010, p. 966). With animism, the inertness of objects is challenged by a belief in their liveliness, agency, and spirituality. It has been used by several theorists to account for the success and popularity of robots in places like Japan, where it relates to Buddhist and Shinto traditions (Kim and Kim 2013, p. 315; Geraci 2006, pp. 235–36). There are some resonances here with the alignment of mechanism, divinity, and vitality that Riskin discerns of early Christian automata, and indeed some critiques of BlessU-2's awkward movements that seem to break the illusion of liveliness (Löffler et al. 2019) espouse the importance of animist principles of enchantment to the intersection of religion and robots.

An emphasis on liveliness by itself does not fully account for the Christian fascination with automata, however. As noted earlier, liveliness is more complex than being identifiable through movement, and stillness is a theologically significant factor (Trovato et al. 2019a). Christian scientists such as Newton and, later, Descartes, taught that the universe was an intricately designed clockwork mechanism that operated according to fixed laws and principles (Christensen 1982; Ablondi 1998, p. 179). Automata, as apparently self-moving figures, were able to represent the adherence of all creation to these divinely set laws, and they could thereby direct audiences' attention towards a rumination on and reverence of God. In other words, automata *modelled* and *participated in* the vitality of God's creation; as such, they were designed to be placed in cathedrals and to represent and captivate a sense of wonder at the intricate workings of God's created order (Riskin 2010; Truitt 2017; Trovato et al. 2018, p. 30). The role of mediation, which Meyer discusses, is here highlighted: "The medium thus becomes hyper-apparent, in that it is celebrated as a technological realisation of already existing religious modes of looking and visualisation. The medium is sacralised as a fulfilment of a religious project that transcends mediation and produces immediacy" (Meyer 2011, p. 34). The form of the medium is not distinct from its content in this participative theological framing. And so, it is by referring audiences to a rumination on God's creative work as revealed throughout creation that early Christian approaches to automata saw these devices as iconographic *representations* of the divine by

way of the intricacies of creation, which is a view that resonates with—yet is somewhat different from—animistic approaches that recognise the intrinsic and individual vitality of all matter.¹⁴ It is thus not so much that Christian automata embody a conflation of divine and technological power, or that they are themselves ‘alive’ (or at least not in the same way that other created beings are), but rather that automata are mimetic representations of divine creative power.

The sixteenth-century mechanical monk that was introduced earlier exemplifies and illustrates this Christian use and appeal of such mechanical devices. The monk made “uninterrupted repetitive gestures, to us the dead giveaway of a robot, [which] correspond exactly in this case to the movements of disciplined prayer and trance” (King 2002). The ‘lifelikeness’ of the device seemingly relies on different markers of vitality than more anthropomorphic or zoomorphic (creaturely) ones that we would nowadays expect from robots such as BlessU-2: according to King’s description, the emphasis is given to the mechanical monk’s careful and solemn movements that are taken as indices of asceticism and spirituality, thus exemplifying an alignment of the mechanical and the religious that resonates less with our contemporary sensibilities and attitudes to machines and robots (Trovato et al. 2019a). Part of this might be explainable through the (religious or ‘secular’) contexts with which we associate such devices, but another telling key feature of the monk is identified by Trovato: “the robotic element [was] hidden” to audiences, thereby “showing [the] lifelikeness of automata and the impossibility of distinguishing them from the object of inspiration” (Trovato et al. 2018, p. 30). The idea behind this design was that the mechanical components were kept “away from human eyes but not from those of the divine” (Trentini 2019), which meant that the mystery of the inner workings of the device, like the mystery of creation, was concealed to humans and depicted as known only to God. The device’s movements and the concealment of the mechanisms behind such movements, King claims, underscored its ritualistic and religiously significant actions; resultantly, the monk was seen as a ‘votive offering’ that orients itself and audiences to God through a form of mechanical prayer (King 2002; cf. Truitt 2017, pp. 48–49).

Of course, the mysteries of the mechanical monk and automata were known to human designers, and so, while the device on the one hand *represents* divinely created order, in another reading it makes a somewhat different and even blasphemous comment about human abilities to *intervene* in the intricate mechanisms of creation. According to this reading, which became more prominent as automata became more popular and, as we have seen, began to appear in ‘rowdier’—that is, more mundane and secular—contexts (cf. Jacob 2019), mechanisms and automata were perceived as a testament to human rather than divine creativity (or, at least, only indirectly related to God) (Trovato et al. 2018, p. 30; cf. LaGrandeur 2013, p. 29). Mechanisms went from being seen as part of a divinely wound cosmology to being part of one that was decipherable and, eventually, manipulable by humans. God and indeed many aspects of religious thought became more and more marginalised as a result of this shifting attitude to mechanisms. As Price writes of this shift, here “we see the prime tangible manifestation of rational, mechanistic explanation over those of the vitalists and theologians” (Price 1964, p. 10; cf. Leung 2019, p. 458). The increasing emphasis on human creativity in place of divine creativity, expressed through mechanistic ingenuity and increasingly sophisticated yet whimsical automata, undermined some of the religious orientations of such mechanical figures, or at least their religious gravitas. Indeed, King (2002) asks of the mechanical monk whether it was made for God or whether it was meant to *appear* as made for God, which alludes to the importance of representation via a subtle yet significant chasm that emerges between human and divine creation and the human and divine ends that such creations serve. Through King’s comment, we can ask about the theological and religious possibilities of appearance and representation in mechanical objects including automata and robots, and what these devices make (in)visible and orientate towards: something transcendent and divine (this is the specifically Christian cosmological point contra animism); something altogether more ‘secular’; or something other.

5. Machinic Equivalence? Simulacra, Secularity, and the Sacred

French postmodernist philosopher Jean Baudrillard argues that artificial creations are unable to represent the divine because they are examples of simulacra, that is, they are self-referential images that, much like we find expressed in critiques of Kircher's magical lantern, convey only their own technicity. Images, in Baudrillard's lexicon, refer to models and icons that are supposed to direct the viewer towards a 'signified' by way of representation, yet Baudrillard sees them in their mediated (and 'hyperreal') form as simulacral insofar as they refer the viewer only to themselves. Illustrating this point, Baudrillard refers to Jorge Luis Borges' short story *Del rigor en la ciencia* (*On Exactitude in Science*), which imagines a model—a map—that no longer points beyond itself, because its scale becomes such (1:1) that it is a useless duplicate of the territory (Borges 1998, p. 325). The map is no longer *referential* but becomes *equivalent* vis-à-vis the territory; resultantly, "the territory no longer precedes the map, nor does it survive it. It is nevertheless the map that precedes the territory—precession of simulacra—that engenders the territory" (Baudrillard 1994, p. 1). In the context of the preceding discussion of automata, we can use this perspective to see how the mechanical device—as analogous to a map or model—is designed to *refer* the viewer to God's creative work and the intricacy of creation, but in its (for Baudrillard, inevitably) secular turn it comes to be recognised as *equivalent* to God's creation, celebrating human ingenuity in making the object. Through this dualistic perspective, the object is eventually seen as an end in itself rather than a means to a religious representation of something divine. The apotheosis of this predicament, for Baudrillard, is our contemporary context that features a proliferation of machines in the form of media and advanced technologies (Baudrillard 1983, p. 84), and in which "the image has taken over and imposed its own immanent, ephemeral logic; an immoral logic without depth, beyond good and evil, beyond truth and falsity" (Baudrillard 1987, p. 23).

Robots, for Baudrillard, are examples of simulacra and are emblematic of the hyperreal condition that we today find ourselves in. He notes that the robot "is dominated by the technical principle; the machine overrides all, and with the machine *equivalence* comes too" (Baudrillard 1983, p. 92, original emphasis; cf. Toffoletti 2007). By this, Baudrillard speaks of a condition where the technological form has subsumed claims to reality and authenticity with its own stock of self-referential images; indeed, Christina Bieber Lake summarises this predicament as being one where "the value of images has almost completely replaced the value of things" (Lake 2021, p. 16). According to Baudrillard, robots are technologies that specifically exemplify this condition in that "[their] only truth is in [their] mechanical efficiency" (Baudrillard 1983, p. 94)—in other words, the technological form is ordered to its own immanent ends that are governed by principles of efficiency and productivity rather than anything else. Baudrillard asserts that the figure of the robot to this end contrasts that of the automaton; arguing that "a whole world separates these two artificial beings", he goes on to say that the automaton, unlike the robot, "is a theatrical counterfeit, a mechanical and clock-like man; technique submits entirely to *analogy* and to the effect of semblance" (Baudrillard 1983, p. 92). Robots differ from automata for Baudrillard because the latter are examples of 'first-order simulacra' that do not abolish the difference between themselves and that which they resemble. Instead, with automata,

"This difference is [. . .] always maintained, as in the case of that perfect automaton that the impersonator's jerky movements on stage imitate; so that at least, even if the roles were reversed, *no confusion would be possible*. In this way the interrogation of the automaton remains an open one, which makes it out to be a kind of mechanical optimist, even if *the counterfeit always connotes something diabolical*." (Baudrillard 1983, p. 94, emphasis mine)

Baudrillard's distinction between automata and robots, I proffer, can be used to temper perceptions of his work as being dualistic and inimical to religion (Geoffroy 2012, p. 25). Whereas Baudrillard's critique of images is often associated with aniconism, which is a theological trend certainly to be mindful of (Balle and Ess 2020, pp. 586–87), he writes

in more nuanced language of automata that, through resemblance and analogy, they are seen to encourage “interrogation upon nature” (Baudrillard 1983, p. 93). To return to the language of models and maps, Baudrillard acknowledges that automata such as the mechanical monk are not self-referential but they are analogous and therefore ex-centric; in referring the viewer to something else, that original is left largely intact. Trovato uses the term ‘*theomorphism*’ to describe this ex-centrism wherein robots and other devices refer beyond themselves and an anthropomorphic form; they are “a tool on which the divine is projected and can possibly act as intermediary with the divine, like any other already existing sacred object” (Trovato et al. 2018, p. 33). In the case of the mechanical monk, the ‘clock-like man’, this means that the device remains clearly and explicitly distinct from the human monks that it is modelled on, as the device has a specific role to *represent* God. It does so via a reference to God’s creative work, as reflected in the mechanisms of creation, making this an indirect reference that preserves the openness of analogy. Thus, in their form and appearance automata maintain—yet, I would add (and in fact emphasize, given the role of ‘interrogation’), playfully critique—what for Baudrillard is a crucial distinction between image and reality, which is different from the mode of equivalence that we find with robots. In the latter, the human form has been robotised, culminating in an impasse between anthropomorphic principles such as the imitation of human intelligence as well as appearance, and robomorphic principles characterised by a technocentric logic that prioritises order and calculability in the interests of efficiency, productivity, and profit (cf. Singler, in Saricetin 2021). As we have seen discussed by Leung and espoused by some responses to BlessU-2, this impasse can culminate in a reading of robots (and/or AI) as secularising.

Although BlessU-2’s designers have explicitly and repeatedly stated that the purpose of the robot is not to replace human clergy, the anxieties that people have about BlessU-2’s anthropomorphic form speak to Baudrillard’s theory of equivalence, namely to the threat of equivalence to humans that it poses, particularly in terms of robotising aspects of care and work in the church. What is evidently concerning here are questions about the mechanical nature of church work and ritualised practices, and whether these tasks can be divorced from human (that is, assumedly, non-machinic) affectivity and empathy. Sigal Samuel (2020), for example, questions whether the pastoral care and anchors for communities that priests provide “is in danger of becoming a luxury good as we create robots to more cheaply do the work of people;” elsewhere, others have asked about how effective robots like Xian’er in Buddhism can be at dealing with deep personal issues (Tatlow 2016), which is a sentiment shared by the Vatican, who are open to robots used in religious contexts but maintain that “the interpretation of the Bible is a role that belongs to the Church” (Ackerman 2018). Such a view indicates how, in many ways, an emphasis on the nature of the medium is deeply entrenched in Christian (certainly much Catholic) theology, and it intertwines with understandings of humans, who make up the living community of the Church, as bearers in some way of the image of God (*imago dei*). It is thus not only a matter of representation that underwrites concerns about robots in religious contexts, but perhaps more saliently one of the authoritativeness (and, expressly in the case of caring roles, the affectivity and empathy) of different mediators—notably, humans in priestly roles and robotic or technological counterparts—in religious contexts. Baudrillard’s theory of robotic equivalence espouses this emphasis on the medium and on the human by rendering mediation via robots and humans as a zero-sum game. This is the logic of equivalence: the distance between the robot and the human has collapsed, and with it, *imago dei* and that which theologically distinguishes and grounds humans. The wider ramifications of this for Baudrillard are that we find only a simulacral image or visibility of religion that marks and masks the disappearance of God and otherness (Baudrillard 2008, p. 5; Baudrillard 1994, pp. 4–6; Walters 2012, pp. 32, 42).

Straddling concerns about robots such as BlessU-2 in religious contexts and their ability to represent religious motifs, then, is an emphasis on the medium itself; form precedes content. (As McLuhan—whose work inspired Baudrillard—would say, the medium is the

message.)¹⁵ Yet by disentangling something of theological anthropology from Christian hermeneutics through an application of religion and media theory, and by challenging the monopoly over the mediation of religious truths that is held by the Church and Church structures and personnel—which is an approach that Luther encouraged through the Reformation that BlessU-2 commemorates—a different relationship between religious content and individual recipients emerges that is more open to plural practices of mediation. Illustrating something of this relationship in Catholic circles, Agnieszka Bógdał-Brzezińska reports that, although there was concern among the heads of the Catholic Church on the issue of sacrilege, the overall response to the use of humanoid robots in religious contexts was ‘encouraging’; “church authorities recognised humanoid robots as evidence of using the divine gift of creativity” (Bógdał-Brzezińska 2020, pp. 191–92). Without rendering the form of the robot inconsequential or entirely transparent, what Bógdał-Brzezińska attests to here is an emphasis on that which is mediated, alongside the form of its mediation that also plays a significant role in shaping what is represented. In other words, the medium is not *entirely* the message, but it can guide our perception of the message while having a design that is itself informed by the message. This is not wholly simulacral but it is somewhat self-referential, much like how the mechanical monk embodied a technological representation of a miracle while also orienting interactants’ ruminations to the intricate workings of God through creation, specifically modelled through an artefact of human creation. Baudrillard, we recall, refers to this not as equivalence but as semblance or *analogy*, which crucially leaves a hermeneutical space for mediation, where origin and recipient are bound through the medium, which itself is the co-determined product of form and content. Put differently, dualistic lines—God and human; human and nonhuman; natural and artificial; natural and mechanical; living and inert; transcendent and immanent; religious and secular—blur and even converge around automotive devices in theological contexts, and this is a longstanding trend. I argue that we can use this lens to approach BlessU-2, especially given that it is designed and able to raise questions about religious teachings—to interrogate them—and it is conditioned by multiple contexts of automata and the Reformation, which we may lose sight of when we overemphasise solely its form and the associations of that with AI and secularity.

6. Robotic Re(-)presentation: A New Visibility of Religion?

I opened this paper with an overview of BlessU-2’s features and its design to commemorate the 500-year anniversary of the Reformation, arguing that this context is an instructive part of the genealogies that inform how we are to ‘read’ the robot and what it represents in religious settings or rituals. BlessU-2’s aim to raise questions speaks to these contexts, encouraging reflection on what technological mediators represent and make visible of religion. To the extent that the robot is designed to raise questions, we might say that it is successful in its aims, yet the challenge about the depth of theological insight that the robot can prompt—or whether it is an object of whimsy or novelty—is, as we have seen, a troubling and pervasive one. Without trying to fully reconcile these positions, I have documented the multiple contexts that condition responses to BlessU-2 and the questions that it was designed to raise. BlessU-2 in many ways interrupts our assumptions about religious mediation—about who or what can administer a blessing—while also continuing a longstanding history of objects and technologies mediating religion in otherwise invisible ways. The novelty of BlessU-2 and other robots encourages questions on such matters, which attests to how, as Löffler, Hurtienne, and Nord put it, “robots in religious contexts are not mere eye-catchers to attract media attention but can be of religious and theological relevance as they help to point out key questions regarding the relationship of religion and media technology in general” (2019). What is particularly useful about this assertion is how it challenges a binary between whimsy and authenticity—that is, authentic theological expression—by acknowledging that BlessU-2 is simultaneously about both.

Likewise, the position that I am arriving at here is one that challenges and resists binarized approaches to robots, such as BlessU-2, in religious contexts, in favor of an

emphasis on analogy, interrogation, and multiplicity. BlessU-2 is a rumination on the mediation of religious ideas that is open to multiple possibilities of representation, which suggests a new subjectivized and technologized take on the ‘new visibility of religion’. What is represented by the robot is the product of individualised hermeneutics that regard the message as more than, but inextricably related to, the medium. The connection but partial distinction between the two (medium and message, or form and content) is alluded to by Baudrillard’s notion of *analogy*, which can be used to undermine some (though not all) of the sensationalism of his later claims to (robotic) simulacra and equivalence, at least in the context of BlessU-2—although concerns of simulacra are clearly not exclusive to our own context and, as expressed by the *laterna magica*, have long shadowed technological developments in religious settings.

Concerns about equivalence can be seen to underpin zero-sum tensions between binarized parts of a dualistic worldview: the human and the robotic, as discussed here; but also, the religious and the secular, as revealed through the reverent and whimsical, or even, mapped differently, through the affective and rational. Without disregarding these concerns, an emphasis on *analogy* by contrast allows for a realization of the ‘open interrogation’ of religion and theology that BlessU-2 invites audiences to, which is a principle that is embedded in the complex and multiple contexts that form its design and reception. What this shows is the theological significance of the questions that BlessU-2 raises, as well as what kind of ‘new visibility of religion’ is implied as per a focus on mediation and representation. BlessU-2 encourages reflections on mechanism, robotics, and iconography and the interaction of Christian teaching and the contemporary world. Where these reflections may challenge religious representation is where they veer into the territory of equivalence—such as, for example, aesthetic concerns about idolatry and what Baudrillard himself contends is the simulacra of God; or anthropological concerns about the robot’s personhood, status, or authority vis-à-vis humans (namely, priests).¹⁶ Where they may affirm religious representation, though, is in their ability to represent something beyond themselves—this suggests an apophatic and analogical form of ‘visibility’. I highlight this apophatic visibility as it underwrites the lack of strong criteria for religious representation or theological significance discussed or developed in this paper. This is intentional: my aim has been to ‘better understand the significance and symbolism of the relationship between the robotic and the religious’, and to be ‘attentive to the contours of what underwrites peoples’ perceptions of robots’ participation in religious contexts’. In response to that, and providing a platform for further work on analogy and equivalence between robots and religion (for example, how analogy might be emphasized for religious education as well as rituals), I have shown that BlessU-2’s openness to both theological and secular readings—what I propose is the ‘new visibility of religion’ that it embodies—is dependent on a complex hermeneutics of individual contexts and the multiple layers of the robot’s historical contexts and framings that are encoded into its design. In short, the robotic representation of religion operates across multiple and contextual layers of analogy, which is facilitated by a non-binary reading of form and content; of novelty and embeddedness (i.e., in Reformation and earlier trends); and of whimsy and meaningfulness, which resists the separation of reason and affect and culminates in something—perhaps, subject to ongoing and individual critique and interrogation—theologically significant.

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Notes

- ¹ See <https://www.youtube.com/watch?v=JTK68l2BHtE> (accessed on 18 February 2020) for a video of BlessU-2 ‘in action’, that is, administering a blessing (in English; as noted above, other languages are also available). Pictures of the robot can also be viewed at <https://lichtkirche.ekhn.de/archiv/wittenberg-2017/mediales-zu-blessu-2/bilder-zu-blessu-2.html> (accessed on 18 February 2020).
- ² The reference to the robot as male, in spite of the ability to select the gender of the robot’s blessing, is an important point that relates to wider research about gender and artificial intelligence, as well as to points about gender and religious ministry that exceed the scope of the present analysis.
- ³ Josh Smith aptly highlights the methodological principle that robots can be usefully understood as forms of media in the subtitle of his book, *Robot Theology: Old Questions through New Media* (Smith 2022).
- ⁴ It’s worth noting here that, although I draw on some empirical responses to BlessU-2 and similar robots in religious contexts as documented by sociological studies and media reports, my project is not empirical in its approach *per se*; rather, I combine historical, theological, and theoretical perspectives to cast light on the relationships and entanglements between religion and robots. In a similar vein, I do not focus on conversion and proselytising using robots as a possible counter to the secularisation thesis—though this relates to my study (see discussion of Xian’er in Section 3)—but I investigate the perceptions of such robots and their ability to represent religious rituals.
- ⁵ According to its designers, ‘Instant Church’ “is an interactive machine that guides visitors through the service and creates an individualized wafer with a laser-engraved QR-code that points to a random Tweet with a hate message that invites a moment of thought” (Schott et al. 2019, p. 1). Another notable parallel with BlessU-2 is that the technology’s success is characterised largely by its ability as a “highly suitable tool to invite a critical discourse [. . .] about the service” (Schott et al. 2019, p. 1), although Instant Church also serves a more educational as well as questioning role.
- ⁶ This is not to say that I am entirely disregarding questions about the ontological status of robots; as I will show later in my analysis, such questions resurface vis-à-vis notions of simulacra and hyperreality. What I am pushing aside for the purpose of the present analysis, though, are questions about robotic personhood, as I am guided by the figure of BlessU-2 and the wider history and contexts of media(tive) objects in Christianity. To this end, my analysis here of BlessU-2 asides and deprioritises questions of robots “experiencing enlightenment” (Whittaker 2015) as such questions, while not irrelevant, correspond more to the theme of *religious robots* rather than *robots used in religious rituals*, which is my main focus in this paper (this also explains my preference for the term ‘robots in religious contexts’ rather than ‘religious robots’). In other words, I am less interested in the theological-metaphysical-anthropological classifications of robots—matters of general or narrow AI, for example (cf. Sturgill 2019, p. 59)—than I am their aesthetic (that is, mediative and representative) capacities vis-à-vis notions of humans and God. That said, it’s also worth noting that, admittedly, the difference between religious robots and robots used in religious rituals may not be so clear-cut in practice: James McBride envisions a ‘not-too-distant future’ where people “program their servant-robots according to their religious affiliations, e.g., Muslim robots, Catholic robots, Mormon robots, and so on” (McBride 2015, p. 26). Likewise, Gabriele Trovato considers how robots designed according to religious principles “may be a key to achieve acceptance” of robots for companionship (Trovato et al. 2019b; cf. Heilweil 2019). In both McBride’s and Trovato’s assessments, though, it is possible to read the robot’s (programmed) religiosity as something that serves the user rather than raising the question of the authenticity of the robot’s own convictions, and that is the approach largely taken here.
- ⁷ When deploying this term, Sharkey was originally referring to the controversial gynoid robot ‘Sophia’, which more readily gives the illusion of intelligence and personhood than BlessU-2—indeed, Sophia was given honorary personhood status in Saudi Arabia in 2017. While the charge of deception is somewhat less pronounced with BlessU-2, thereby diluting some of the ethical connotations of Sharkey’s derogatory term, the emphasis that the term suggests of the aesthetic dimension of robots, however (un)sophisticated they might be, is useful in this context. Moreover, the tensions that Sharkey’s term ‘showbots’ suggest between logic and religion (which pertain to matters of personhood but that exceed the scope of my analysis) are scrutinised and critiqued here, as part of this aesthetics-guided approach.
- ⁸ ‘AI’ is a complex and often contested term, with some opting for more optimistic, aspirational, or aggrandised definitions (these are often, as I discuss here, anthropocentric), and others pointing out that it is just statistics and formulae—in other words, reducing its functioning to computing rather than ‘thinking’. Guided by responses to BlessU-2 and conversations about (less so *with*) it, I am somewhat less concerned with these definitional issues around AI than I am with religious, theological, and social perceptions of robots, mechanisms, and automata.
- ⁹ It is also worth noting that, although Riskin claims that “the idea as well as the technology of human-machinery was indigenously Catholic” (Riskin 2010, p. 19), earlier automata in the ancient world were associated with mythological figures such as Hephaestus that blurred the lines between gods, humans, and technologies. Other medieval uses of automata extend to other religious traditions (i.e., Hinduism, Islam) and to adornments of rulers’ courts and palaces. The early modern automata associated with Christianity that I emphasise here inherit and rework parts of these traditions, but a more detailed study of this extends beyond the scope of this paper. For further discussion of this topic, see Mayor (2018).
- ¹⁰ Cheong (2020, pp. 423–25) uses her research on the ‘affordances’ of Xian’er, a robot modelled on a Buddhist monk in a Chinese context, to attest to the importance of robots’ liveliness for user interactivity. Yet, in contrast, and perhaps more apposite to

BlessU-2, Gabriele Trovato et al. (2019a) celebrates the ritualistic stillness of SanTO, a Catholic robot of his design that is modelled on early modern automata of the sort that I discuss here.

- 11 See <https://www.youtube.com/watch?v=k1e96iRTq5M> (accessed on 18 January 2020) for a video of the movements of the mechanical monk. See also https://americanhistory.si.edu/collections/search/object/nmah_855351 (accessed on 18 January 2020) for the catalogued entry of the automaton in the Smithsonian Museum's collections.
- 12 To be sure, it is important to bear in mind that "public opinion about the use of robots in religion has not been unanimous, and the views of religious personnel are similarly divided" (Travagnin 2020). It would be misleading to overgeneralise claims of religious and non-religious groups, and in fact others have drawn attention to the additional influence of further categories such as age that are significant (Schott et al. 2019). That said, the correlation between religiosity and unfavourable responses to BlessU-2 is nonetheless a significant enough trend that is worth noting and considering the reasons for as part of the enquiry I am making here about BlessU-2 as an embodiment of the intersection between religion and robots, and its wider representation and mediation of spirituality and secularity.
- 13 Moreover, Musial's reference to magical thinking and animism as 'the most basic and fundamental way of understanding' espouses a modernist and dualistic approach to the sociological study of religion that echoes Durkheim's views deduced from so-called 'primitive' religions such as totemism. To be sure, I do not espouse these orientalist views here—rather, I introduce animism insofar as it can be seen to cast light on the history of Christian automata and ideas about the 'liveliness' of automotive devices, introducing nuance to this Christian context rather than straightforward contrasts.
- 14 This is not to say that there is a clear-cut separation or incompatibility of views between Christianity and automata; to conclude as such would be to misapprehend the complexity of both traditions. Both approaches broadly deny that the world is 'material-without-spirit', albeit with various caveats and denominational variations. To be sure, these variations are significant; Coeckelbergh, for example, discerns two strands of animism that manifest in a technological culture. One, he argues, as an "attribution of individual spirit to things;" the other is a more "social, communal dimension" (Coeckelbergh 2010, p. 967). For Coeckelbergh, the former is the most common approach that is associated with modernity and (post-)Christian culture; the latter is nonmodern yet is found in postmodern and indeed posthumanist approaches, which resonate with Musial's use of the term 'neanimism' as part of a "non-anthropocentric, posthumanist axiology" (Musial 2019, pp. 122–23).
- 15 One key difference between McLuhan and Baudrillard, however, as Kim Toffoletti notes, is that Baudrillard "collaps[ed], rather than uph[e]ld, the distinction between self and Other" (Toffoletti 2007, p. 24). Baudrillard's recognition and collapsing of distinctions, as per the notion of equivalence that coincides with hyperreality and simulacra, is an important part of my critique of his work here and its relevance for making sense of what BlessU-2 and other robots in religious contexts can represent and mediate—and nuance—of religious motifs and experiences.
- 16 I hope to have at least shown that the question of the robot's personhood need not foreclose conversations about its aesthetics and indeed its uses in religious contexts and rituals (although, to be sure, anthropological and aesthetic concerns are interlinked in a theological sense via the notion of *imago dei* and the question of its recursiveness in [human] creation (Foerst 2005, p. 511)).

References

- Ablondi, Fred. 1998. Automata, Living and Non-Living: Descartes' Mechanical Biology and His Criteria for Life. *Biology and Philosophy* 13: 179–86. [CrossRef]
- Ackerman, Evan. 2018. Can a Robot Be Divine? Researchers Explore Whether Robots Can Become Useful Sacred Objects in a Religious Context. Available online: <https://spectrum.ieee.org/automaton/robotics/artificial-intelligence/can-a-robot-be-divine> (accessed on 18 February 2020).
- Ahmed, Habib, and Hung Manh La. 2020. Evaluating the Co-dependence and Co-existence between Religion and Robots: Past, Present and Insights on the Future. *International Journal of Social Robotics*. [CrossRef]
- Balle, Simon, and Charles Ess. 2020. Robots in Religious Contexts. In *Culturally Sustainable Social Robotics: Proceedings of Robotphilosophy 2020*. Edited by Marco Nørskov. Amsterdam: IOS Press, pp. 585–91.
- Baudrillard, Jean. 1983. *In the Shadow of the Silent Majorities or the End of the Social and Other Essays*. New York: Semiotext(e).
- Baudrillard, Jean. 1987. *The Evil Demon of Images*. Sydney: Power Institute of Fine Arts.
- Baudrillard, Jean. 1994. *Simulacra and Simulation*. Michigan: University of Michigan Press.
- Baudrillard, Jean. 2008. *The Perfect Crime*. London: Verso.
- Bógdał-Brzezińska, Agnieszka. 2020. Digital Technology as a Tool of Secularisation of Contemporary Society? In *Global Challenges—Scientific Solutions II—Conference Proceedings*. Eurasian Center of Innovative Development 'DARA'. Antwerp: Eurasian Center of Innovative Development (DARA), pp. 188–94.
- Borges, Jorge Luis. 1998. *Jorge Luis Borges: Collected Fictions*. Translated by Andrew Hurley. London: Penguin.
- Breazeal, Cynthia. 2002. *Designing Sociable Robots*. Cambridge: MIT Press.
- Bruck, Michael. 2017. Blessing Thoughts and Blessing Robot. *LichtKirche*. Available online: <https://lichtkirche.ekhn.de/archiv/witte-nberg-2017/mediales-zu-blessu-2/positionen-zu-blessu-2.html> (accessed on 29 June 2020).
- Cheong, Pauline Hope. 2020. Religion, Robots and Rectitude: Communicative Affordances for Spiritual Knowledge and Community. *Applied Artificial Intelligence* 34: 412–31. [CrossRef]
- Christensen, Bryce J. 1982. The Apple in the Vortex: Newton, Blake, and Descartes. *Philosophy and Literature* 6: 147–61. [CrossRef]

- Cocksworth, Christopher J., and Rosalind Brown. 2006. *Being a Priest Today*, 2nd ed. Norwich: Canterbury Press.
- Coeckelbergh, Mark. 2010. The Spirit in the Network: Models for Spirituality in a Technological Culture. *Zygon* 45: 957–78. [CrossRef]
- Coeckelbergh, Mark. 2017. *New Romantic Cyborgs: Romanticism, Information Technology, and the End of the Machine*. Cambridge: MIT Press.
- Dinello, Daniel. 2006. *Technophobia! Science Fiction Visions of Posthuman Technology*. Austin: University of Texas Press.
- Fadelli, Ingrid. 2019. Investigating the Implications of Social Robots in Religious Contexts. Available online: <https://techxplore.com/news/2019-06-implications-social-robots-religious-contexts.html> (accessed on 29 June 2020).
- Ferber, Christian. 2017. Blessings and Technology, Spirituality and Digital Intelligence. *LichtKirche*. Available online: <https://lichtkirche.ekhn.de/archiv/wittenberg-2017/mediales-zu-blessu-2/positionen-zu-blessu-2.html> (accessed on 29 June 2020).
- Foerst, Anne. 2005. Artificial Intelligence and Theology: From Mythos to Logos and Back. In *Mechanical Bodies, Computational Minds: Artificial Intelligence from Automata to Cyborgs*. Edited by Stefano Franchi and Güven Güzeldere. London: MIT Press, pp. 489–514.
- Geoffroy, Martin. 2012. Hyper-real Religion Performing in Baudrillard's Integral Reality. In *Handbook of Hyper-Real Religions*. Edited by Adam Possamai. Leiden: Brill, pp. 23–35.
- Geraci, Robert. 2006. Spiritual Robots: Religion and Our Scientific View of the Natural World. *Theology and Science* 4: 229–46. [CrossRef]
- Geraci, Robert. 2010. *Apocalyptic AI: Visions of Heaven in Robotics, Artificial Intelligence and Virtual Reality*. New York: Oxford University Press.
- Graham, Elaine. 2015. The Final Frontier? Religion and Posthumanism in Film and Television. In *The Palgrave Handbook of Posthumanism in Film and Television*. Edited by Michael Hauskeller, Curtis D. Carbonell and Thomas D. Philbeck. Cham: Palgrave Macmillan.
- Hecht, Hermann. 1989. The History of Projection 1. *The New Magic Lantern Journal* 6: 1–4. Available online: <http://www.magiclantern.org.uk/new-magic-lantern-journal/pdfs/4008658a.pdf> (accessed on 25 February 2022).
- Heilweil, Rebecca. 2019. Deus Ex Machina: Religions Use Robots to Connect with the Public. *The WSJ*. Available online: <https://www.wsj.com/articles/deus-ex-machina-religions-use-robots-to-connect-with-the-public-11553782825> (accessed on 25 March 2021).
- Hertzberg, Joachim. 2017. AI, Kitsch, and Communication. *KI—Künstliche Intelligenz* 31: 313–15. [CrossRef]
- Hjarvard, Stig. 2012. Three Forms of Mediatized Religion: Changing the Public Face of Religion. In *Mediatization and Religion: Nordic Perspectives*. Edited by Stig Hjarvard and Mia Lövheim. Göteborg: Nordicom, pp. 21–44.
- Hjelm, Titus. 2015. *Is God Back? Reconsidering the New Visibility of Religion*. London: Bloomsbury.
- Hoelzl, Michael, and Graham Ward. 2008. Introduction. In *The New Visibility of Religion: Studies in Religion and Cultural Hermeneutics*. Edited by Michael Hoelzl and Graham Ward. London: Continuum.
- Hoover, Stewart. 2009. Complexities: The Case of Religious Cultures. In *Mediatization: Concept, Changes, Consequences*. Edited by Knut Lundby. New York: Peter Lang, pp. 123–38.
- Hoover, Stewart, and Nabil Echchaibi. 2012. The 'Third Spaces' of Digital Religion. *Finding Religion in the Media* 5. [CrossRef]
- Hoover, Stewart, and Seung Soo Kim. 2016. Media. In *Handbook of Religion and Society*. Edited by David Yamane. Cham: Springer, pp. 117–30.
- Horsfield, Peter, and Paul Teusner. 2007. A Mediated Religion: Historical Perspectives on Christianity and the Internet. *Studies in World Christianity* 13: 278–95. [CrossRef]
- Jacob, Margaret C. 2019. *The Secular Enlightenment*. Princeton: Princeton University Press.
- Kim, Min-Sun, and Eun-Joo Kim. 2013. Humanoid robots as "The Cultural Other": Are we able to love our creations? *AI & Society* 28: 309–18.
- King, Elizabeth. 2002. Clockwork Prayer: A Sixteenth-Century Mechanical Monk. *Blackbird* 1. Available online: https://blackbird.vcu.edu/v1n1/nonfiction/king_e/prayer_introduction.htm (accessed on 18 January 2020).
- LaGrandeur, Kevin. 2013. *Androids and Intelligent Networks in Early Modern Literature and Culture: Artificial Slaves*. London: Routledge.
- Lake, Christina Bieber. 2021. Science Fiction, AI, and Our Descent into Insignificance. In *The Robot Will See You Now: Artificial Intelligence and the Christian Faith*. Edited by John Wyatt and Stephen N. Williams. London: SPCK, pp. 13–27.
- Leung, King-Ho. 2019. The Picture of Artificial Intelligence and the Secularisation of Thought. *Political Theology* 20: 457–71. [CrossRef]
- LichtKirche. 2017. BlessU-2 Is an Interactive Experiment. Available online: <https://lichtkirche.ekhn.de/welcome.html> and Archival Material Available online: <https://lichtkirche.ekhn.de/archiv/wittenberg-2017/mediales-zu-blessu-2/positionen-zu-blessu-2.html> (accessed on 18 February 2020).
- Löffler, Diana, Jörn Hurtienne, and Ilona Nord. 2019. Blessing Robot BlessU2: A Discursive Design Study to Understand the Implications of Social Robots in Religious Contexts. *International Journal of Social Robotics*. [CrossRef]
- Lu, Shen, and Justin Robertson. 2016. Robot monk dispenses Buddhist wisdom at Beijing temple. *The Guardian*. Available online: <https://www.theguardian.com/world/2016/apr/26/robot-monk-to-spread-buddhist-wisdom-to-the-digital-generation> (accessed on 8 April 2021).
- Lucie-Smith, Alexander. 2017. The Protestant 'robot priest' shows us one thing—The priesthood cannot be replaced. *Catholic Herald*. Available online: <https://catholicherald.co.uk/the-protestant-robot-priest-shows-us-one-thing-the-priesthood-cannot-be-replaced/> (accessed on 28 June 2020).
- Lundby, Knut. 2013. Theoretical frameworks for approaching religion and new media. In *Digital Religion: Understanding Religious Practice in New Media Worlds*. Edited by Heidi Campbell. Oxon: Routledge.
- Manchester Cathedral. 2017. Feeling Blessed at Manchester Science Festival? BlessU-2 Robot Comes to Manchester Cathedral and the Museum of Science and Industry on a Weekend Visit from Germany [Press Release]. Available online: https://www.manchestercathedral.org/site/assets/files/6077/manchester_science_festival_-_bless_u2_robot.pdf (accessed on 29 June 2020).
- Mayor, Adrienne. 2018. *Gods and Robots: Myths, Machines, and Ancient Dreams of Technology*. Princeton: Princeton University Press.

- McBride, James. 2015. The Advent of Postmodern Robotic Technoreligiosity. *Journal of Evolution & Technology* 25: 25–38.
- McLuhan, Marshall. 2001. *Understanding Media: The Extensions of Man*. Abingdon: Routledge. First published 1964.
- Mendlesohn, Farah. 2003. Religion and Science Fiction. In *The Cambridge Companion to Science Fiction*. Edited by Edward James and Farah Mendlesohn. Cambridge: Cambridge University Press, pp. 264–75.
- Meyer, Birgit. 2011. Mediation and Immediacy: Sensational Forms, Semiotic Ideologies and the Question of the Medium. *Social Anthropology* 19: 23–39. [CrossRef]
- Midson, Scott. 2018. *Cyborg Theology: Humans, Technology and God*. London: I.B.Tauris.
- Midson, Scott. 2020. Robots and Religion: Rival or Revival? *Dialogue* 55: 50–55.
- Miller, Emily McFarlan. 2017. Blessing Robots: Is a Technological Reformation Coming? *Religion News Service*. Available online: <https://religionnews.com/2017/10/11/blessing-robots-is-a-technological-reformation-coming/> (accessed on 29 June 2020).
- Murphy, Margi. 2017. Oh My Bot! Robot Priest Named BlessU-2 Delivers Blessings to a Congregation While Beaming Light from Its Palms. Available online: <https://www.thesun.co.uk/tech/3687923/robot-priest-called-blessu-2-delivers-blessings-like-a-religious-cash-machine-while-it-beams-lights-from-its-palms/> (accessed on 29 June 2020).
- Musiał, Maciej. 2019. *Enchanting Robots: Intimacy, Magic, and Technology*. Cham: Palgrave Macmillan.
- Nahum, Andrew. 2017. Automata, androids and life. In *Robots: The 500-Year Quest to Make Machines Human*. Edited by Ben Russell. London: Scala, pp. 50–69.
- Oxford English Dictionary. 2020. Available online: <https://www.oed.com/> (accessed on 9 January 2021).
- Price, Derek J. de Solla. 1964. Automata and the Origins of Mechanism and Mechanistic Philosophy. *Technology and Culture* 5: 9–23. [CrossRef]
- Riskin, Jessica. 2010. Machines in the Garden. *Republics of Letters: A Journal for the Study of Knowledge, Politics, and the Arts* 1: 16–43.
- Samuel, Sigal. 2020. Robot Priests Can Bless You, Advise You, and Even Perform Your Funeral. Available online: <https://www.vox.com/future-perfect/2019/9/9/20851753/ai-religion-robot-priest-mindar-buddhism-christianity> (accessed on 9 April 2021).
- Saricetin, Defne. 2021. AI and the Human Narrative. *MediaCat*. Available online: <https://mediacatmagazine.co.uk/ai-and-the-human-narrative/> (accessed on 26 March 2021).
- Schott, Danny, Carsten Greif, Sinah Herrklotsch, Michael A. Herzog, Dominik Schumacher, and Florian T. Brody. 2019. Deus ex Machina: The Automation of a Religious Ritual in a Data-Driven Machine—Design, Implementation, and Public Reception. Available online: https://www.researchgate.net/profile/Michael-A-Herzog/publication/336838784_Deus_ex_Machina_The_Automation_of_a_Religious_Ritual_in_a_Data-Driven_Machine_-_Design_Implementation_and_Public_Reception/links/5f8f2e9a299bf1b53e378184/Deus-ex-Machina-The-Automation-of-a-Religious-Ritual-in-a-Data-Driven-Machine-Design-Implementation-and-Public-Reception.pdf (accessed on 28 July 2020).
- Sharkey, Noel. 2018. Mama Mia It's Sophia: A Show Robot or Dangerous Platform to Mislead? *Forbes*. Available online: <https://www.forbes.com/sites/noelsharkey/2018/11/17/mama-mia-its-sophia-a-show-robot-or-dangerous-platform-to-mislead/?sh=18b28ab47ac9> (accessed on 18 November 2018).
- Sherwood, Emily. 2017. Robot priest unveiled in Germany to mark 500 years since Reformation. *The Guardian*. Available online: <https://www.theguardian.com/technology/2017/may/30/robot-priest-blessu-2-germany-reformation-exhibition> (accessed on 18 February 2020).
- Smith, Joshua K. 2022. *Robot Theology: Old Questions through New Media*. Eugene: Wipf and Stock.
- Sturgill, Amanda. 2019. Artificial Intelligence: Its Future Uses in Religious Compassion. In *Religion Online: How Digital Technology is Changing the Way We Worship and Pray*. Edited by August Grant. Santa Barbara: Praeger, pp. 57–66.
- Tatlow, Didi Kirsten. 2016. A Robot Monk Captivates China, Mixing Spirituality with Artificial Intelligence. Available online: <https://www.nytimes.com/2016/04/28/world/asia/china-robot-monk-temple.html> (accessed on 29 June 2020).
- Taylor, Charles. 2007. *A Secular Age*. London: Harvard University Press.
- Toffoletti, Kim. 2007. *Cyborgs and Barbie Dolls: Feminism, Popular Culture and the Posthuman Body*. London: I.B.Tauris.
- Travagnin, Stefania. 2020. From Online Buddha Halls to Robot-Monks: New Developments in the Long-Term Interaction between Buddhism, Media, and Technology in Contemporary China. *Review of Religion and Chinese Society* 7: 120–48. [CrossRef]
- Trentini, Yisela Alvarez. 2019. Robots and Religion: Mediating the Divine. Available online: <https://www.wevolver.com/article/robots-and-religion-mediating-the-divine> (accessed on 20 April 2021).
- Trovato, Gabriele, Cesar Lucho, Alexander Huerta-Merchado, and Francisco Cuellar. 2018. Design Strategies for Representing the Divine in Robots. In *HRI '18: Companion of the 2018 ACM/IEEE International Conference on Human-Robot Interaction*. New York: Association for Computing Machinery, pp. 29–35. [CrossRef]
- Trovato, Gabriele, Franco Pariasca, Renzo Ramirez, Javier Cerna, Vadim Reutskiy, Laureano Rodriguez, and Francisco Cuellar. 2019a. Communicating with SanTO—The first Catholic robot. In *2019 28th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*. New Delhi: IEEE, pp. 1–6.
- Trovato, Gabriele, Loys de Saint Chamas, Masao Nishimura, Renato Paredes, Cesar Lucho, Alexander Huerta-Mercado, and Francisco Cuellar. 2019b. Religion and Robots: Towards the Synthesis of Two Extremes. *International Journal of Social Robotics* 13: 539–56. [CrossRef]
- Truitt, Elly R. 2017. In whose image? Ancient and medieval automata. In *Robots: The 500-Year Quest to Make Machines Human*. Edited by Ben Russell. London: Scala, pp. 33–49.
- Turkle, Sherry. 2011. *Alone Together: Why We Expect More from Technology and Less from Each Other*. New York: Basic Books.

-
- Vermeir, Koen. 2005. The Magic of the Magic Lantern (1660–1700): On Analogical Demonstration and the Visualisation of the Invisible. *The British Journal for the History of Science* 38: 127–59. [[CrossRef](#)]
- Walters, James. 2012. *Baudrillard and Theology*. London: T&T Clark.
- Whittaker, Kipp. 2015. Longquan temple develops robo-monk to interact with visitors. *The Beijinger*. Available online: <https://www.thebeijinger.com/blog/2015/10/09/longquan-temple-develops-robo-monk-interact-visitors> (accessed on 10 September 2020).