Dis- and Re-Embodiment in Religious Practices: Semiotic, Ethical, and Normative Implications of Robotic Officiants

(Article begins on next page)

05 July 2024

Dis- and Re-Embodiment in Religious Practices:

Semiotic, Ethical, and Normative Implications of Robotic Officiants

Abstract: Robotics has been increasingly adopted by religious communities around the world. In late 2015, a prototype of the "robot-monk" Xian'er was inaugurated at the Longquan Monastery in Beijing, with a second-generation model added in 2016 and a third robot released in 2018. Since then, Xian'er has been reciting Buddhist mantras and offering guidance on matters of faith to the thousands of worshippers visiting the temple every year or connecting with it online. In 2017, a robotic arm performing the Hindu Aarti ritual, which involves moving a light in front of a deity following a circular pattern, also appeared. The same year, on the occasion of the 500th anniversary of the Reformation, Germany's Protestant Church introduced a "robot-priest" called BlessU-2, able to give blessings in several languages, with a male or female voice. In 2018, roboticist Gabriele Trovato designed SanTO (acronym of "Sanctified Theomorphic Operator"), a small robot drawing inspiration from the statues of saints, in the aim to offer spiritual succour to Catholic believers, keep them company during prayer, and teach catechism. Such innovations are markedly changing the way people experience faith and religious practices, through a process of *dis-* and *re*-embodiment of "officiating agents", which entails relevant transformations in terms of meaning-making processes, as well as related to the way devotees engage in ethical reasoning and decision-making, and to the normative protocols needed to regulate them. This paper addresses these crucial issues

through a semiocultural approach, combining theoretical reflection with the analysis of the above-mentioned case studies.

Keywords: Robots, Religious officiants, Dis-embodiment, Re-embodiment, Corporeality, Semiotics.

1. Robotic Agents and Religious Practices

Robotics has been increasingly adopted by religious communities around the world. In late 2015, a prototype of the "robot-monk" Xian'er was inaugurated at the Longquan Monastery in Beijing, as part of a larger communicative and proselytist strategy[1] started a few years earlier with the creation of a cartoon character by monk Master Xianfian. A 2-feet high robot covered by saffron-yellow robes evidently resembling the cartoon (as well as its creator, who designed it in his own image)[2] was then developed in collaboration with AI experts at Chinese universities and a technology company, with a second-generation model added in 2016 and another one, allowing greater mobility[3] and a higher degree of interactivity and responsiveness[4], produced in 2018. Thus, Xian'er has progressively evolved, becoming able to answer a very varied set of queries, as well as to question those queries, express reservations, and even raise objections. Moreover, it has been provided with a digital identity, through a WeChat account (i.e. *Xian'er jiqiseng*, "Xian'er the Robot-Monk") that has allowed it to become increasingly popular also in the Web sphere, directly interacting with users

---

[1] Xianfian described it as "a reflection of innovative Buddhist spirit … [which] might help traditional Buddhism reach a wider public more easily" [1].

[2] Which makes of Xian'er an *anthropomorphic* robot, though with cartoon features.

[3] More specifically, the arms, which in the first prototypes formed part of the robot's central motionless body and mainly functioned as deictic elements pointing to the touchscreen placed on its chest — i.e. the actual element allowing users to interact with Xian'er —, became mobile in the 2018-model.

[4] As exemplified by its increased sense of touch, as well as by its augmented communicative tools and capabilities.

from all over the world[5], and further reinforcing the link between it and its multimedia figurativisations[6].

Another interesting case is that of DarumaTO (acronym of "Daruma Theomorphic Operator"), a robot resembling the traditional Buddhist and Shinto doll[7] known as Daruma (達磨) created by a team made up of Gabriele Trovato, Kishi Tatsuhiro, Kawai Mao, Tingting Zhong, Jia-Yue Lin, Zixi Gu, Oshiyama Chiyaki and Takanishi Atsuo (Waseda University, Tokyo) in 2016, with a second more interactive and aesthetically improved version released in 2018, and a third model currently in development within the Horizon 2020 project e-ViTA (European-Japanese Virtual Coach for Smart Ageing). Thought as a social tool for emotionally and cognitively supporting elderly people [4], DarumaTO can communicate via visual sensors, speech recognition and facial expressions (e.g. movements of the eyebrows, lips and eyes on a small screen); it is also able to nod and shake its head, so that the interlocutor feels heard during the conversation. Like Xian'er, it was designed

---

[5] Especially via the "Xian'er's mini-programs", which allow users to communicate with Xian'er as they would do with any other user, posing questions about Buddhism, sharing thoughts and concerns about everyday life, and even meditating with it.

[6] In fact, various animations, audio recordings of Xian'er's recitation of passages from canonical texts and other materials have also increasingly spread in addition to the comics.

[7] Which makes of it a *theomorphic* (from the Greek *theo*, "god", and *morphḗ*, "shape") robot, that is to say, a robot inspired from a sacred entity (cf. [2]). As Gabriele Trovato et al. [3, 4] highlighted, the appearance of theomorphic robots can vary depending on the specific religion, as well as on the connotation of specific deities: "this abstract idea takes a concrete form [which can be anthropomorphic or otherwise] when a robot is inspired by an existing form with which humans generally represent divine entities or sacred objects" ["Questa idea astratta prende una forma concreta quando un robot si ispira a una forma esistente con la quale gli umani in genere rappresentano entità divine o oggetti sacri"] [5: 44, my translation].

primarily to facilitate and accompany the devotees in their religious practices, based on a constantly increased level of interactivity and easiness of communication.

Moving to a different religious sphere, and more specifically to Hinduism, other uses of robotics can also be observed. In 2017, for instance, an automated arm performing the Aarti ritual, which involves moving a lamp or blazing camphor in front of a deity following a circular pattern, was introduced in the Ganpati festival in India. Primarily symbolising the removal of darkness, this ritual has traditionally involved a priest or a devotee performing it, which highlights a crucial difference as related to the example considered above: robotics is in this case used to replace men, and more specifically religious officiants, rather than to simply accompany the devotees in their practices. Particular concern and criticism emerged precisely in relation to such an idea of "replacement": Mumbai priest Santosh Rao, for instance, declared that "a robot doing puja (worship) is wrong… Unless someone is physically handicapped, there is no need for a robot" [6]. Accordingly, Herman Tull, a visiting associate professor at Lafayette College, Pennsylvania, reported that "the performer performs it (*aarti*) not just by going through a series of rote motions… but by engaging mentally with the ritual or with the deity through the ritual. There may be an attitude of loving devotion, of joy in the god, or, of pure focus on the other-worldly. The robot merely performs a physical act… and this really is not worship" [6]. Such criticisms evidently recall the ambivalence of corporeality between what Jacques Fontanille defined the "Me-flesh" (*corps chair*), which participates in the transformation of the states of things and is a "composite totality in existence"[8] [7: 40, my translation] and the "Myself-envelope" (*corps propre*), understood as a "coherent unity in experience"[9] [7: 40, my translation], that is to say, the "body-in-construction, the living vehicle of intentionality and interactions support, and therefore, particularly the support of confrontation

---

[8] "Totalità composita nell'esistenza".

[9] "Unità coerente nell'esperienza".

with otherness" [8: 41] (cf. [9]). While the mechanical body of the robotic arm certainly allows it to perform the physical act of aarti, in other terms, it is not an "experienced", or "lived"[10] body, which prevents it from "engaging" with the ritual and the deity.

However, substitutions of this kind have become increasingly common in the religious sphere. Consider, for instance, the adoption of Pepper, a semi-humanoid robot invented by the SoftBank Group Corporation in 2014 and sold on the mass market since 2015, within the Asian context. The robot has performed as a "Buddhist priest" at Japanese funerals since 2017, chanting sutras in a computerised voice while tapping a drum [11]. Its services can be requested when a human priest is not available or it is necessary to reduce the costs of the function[11] [12].

And it is not just about funerals. Already in 2010 a similar device, Kokoro's i-Fairy robot, presided over the wedding ceremony of Satoko Inoue (a worker at the manufacturer) and Tomohiro Shibata (a robotics professor at the Nara Institute of Science and Technology in central Japan) at Tokyo's Hibiyia Palace Park. Wearing a flower wreath, the "officiant-bot" performed the ceremony in a tinny yet seemingly excited voice, waving its arms, flashing its eyes different colours and moving its head up and down. Exactly like Pepper's, i-Fairy's body was therefore attributed a certain degree of *agency* — and in this specific case, also the possibility of realising a performative act [13], that is to say, to produce utterances that not only describe a given reality, but also change such a reality (i.e. the social and legal marital status of the respondents).

A similar, yet different, case appeared in the frame of Christianism in 2017 when, on the occasion of the 500th anniversary of the Reformation, the German Protestant Church introduced a "robot-priest" called BlessU-2. After the user selected one of the seven available languages and opted for

---

[10] In a more markedly phenomenological view (see in particular [10]).

[11] In fact, it costs about 50,000 yen ($450) per funeral, compared to more than 240,000 yen ($2,200) for a human officiant.

5

a male or female voice, it wished him/her a "warm welcome". A choice of four types of blessings (i.e. traditional, companionship, encouragement and renewal) was then offered, before the bot randomly selected one of about 10 Bible verses from the chosen blessing category, then raised its arms, beamed lights from its palms and recited the biblical verse (which was also shown on the screen), while moving its eyes and mouth and having its nose changing colour. Finally, it offered a printout of the blessing, thanked the users for their visit and said goodbye. Consisting of a metal box (similar to that of an ATM) with a touchscreen chest, two moveable arms on the side, a head with moveable eyeballs and eyebrows, a digital mouth at the top and a light in the nose, BlessU-2 intentionally featured a minimum level of anthropomorphism. In fact, as Sebastian von Gehren, a spokesperson from the church, reported, the robot was not given a human-like appearance on purpose, in order not to suggest the idea of a possible replacement of traditional (i.e. human) pastors [14]. However, it raised concern and criticism, especially as related to the conceptualisation of religious communication in the media: "What is the meaning of a blessing? Who is authorized to pronounce blessings on others? What is the specific human component in performing blessings? When and how do blessings take effect? Can God bless through technology? What are the roles digital technology can and should assume in religious communication? How can these roles be designed for?" [15: 575]. In the aim to answer these questions, Diana Löffler, Jörn Hurtienne and Ilona Nord carried out two studies empirically investigating users' experience, acceptability and design features of the "robotic blessing ritual", based on the feedback collected from visitors who actually experienced it. As a result, they highlighted that, while anthropomorphism was intentionally kept at minimum, the attempt to mimic the gestures of human priests was mostly negatively perceived, resulting in the idea that the robot would replace traditional officiants. Accordingly, Laurens Boer and Harvey Bewley outlined the importance of a design that effectively

"acknowledges the 'thingness' or 'otherness' of robots rather than making them look and act human" [16].

This same idea inspired roboticist Gabriele Trovato, who in 2018 designed SanTO (acronym of "Sanctified Theomorphic Operator"), the first Catholic theomorphic robot, drawing inspiration from the statues of saints, which are typical objects of worship in Catholicism. Skeuomorphism[12] was obtained by "hiding" robotic components under an external appearance inspired by the world of religion in the aim to make the robot acceptable and user-friendly, and to project a "sacred aura" on it. In fact, as its creator reported, "the most critical challenge in design lied in how to make the robot 'sacred' in the same way as a statue in a context of sacredness, projecting a 'divine' essence through its appearance"[13] [5: 46, my translation]. This was achieved by recurring to common architectural elements of sacred art (such as the Golden Ratio), traditional symbols (such as the cross and the candle), and light (which is traditionally associated with the concept of divinity). Moreover, the possibility of movement of the robot was intentionally limited, based on the idea that a lesser degree of movement can enhance, rather than hinder, the interaction with something divine [17]. Interaction was mainly designed to take place by connecting the LED candle (exactly as when a devotee light a candle to start praying), with no other interfaces than speech, facial and sensory recognition[14]. Endowed with AI, SanTO can thus offer spiritual succour to Catholic believers (e.g. by quoting verses from the Bible for spiritual advice), keep them company during prayer (e.g.

---

[12] I.e. the attempt to design a new object so that it resembles an already existing object, with which the user is already familiar, thus increasing the understanding and usability of the new one.

[13] "La sfida più critica nel design sta nel come rendere 'sacro' il robot, allo stesso modo di una statua in un contesto di sacralità, proiettandogli un'essenza 'divina' attraverso il suo aspetto".

[14] In fact, the niche behind the figure of the saint hosts a camera, which tracks the position of the user and makes the "robot-saint" rotate to constantly face him/her, while the cross above it contains a microphone that allows oral interaction; finally, the sensors and conductive paint covering the bot's arms and hands allow touch sensing.

by reciting the rosary or other litanies), and teach catechism or catechesis (e.g. by referring to the Pope's homilies, the biographies of various saints, etc.). Despite clearly representing a *complement* to religious officiants (i.e. a religious "object"), rather than their replacement (i.e. a religious "subject"), the bot has raised concern and criticism, especially as related to security issues (e.g. the risk of an alteration of the information it provides, or its misinterpretation by the users, with repercussions on their life) and the ethical dimension (e.g. the recording and unwanted sharing of confessions or images of the believers, or the possibility of nudging, that it to say, of its manipulative use). Furthermore, on a symbolic level, the possibility of malfunctions seems to jeopardize the idea of infallibility linked to God [5].

Decidedly fewer concerns have arisen in relation to Mindar, a theomorphic robot representing Kannon, the Bodhisattva of Compassion, inaugurated in 2019 in the Kodaiji Buddhist temple in Kyoto [18]. With its aluminium and silicon skeleton fully exposed — a choice that, according to Natasha Heller, associate professor at the University of Virginia, is particularly interesting, as it reveals that "its creator, Hiroshi Ishiguro, is not trying to make something that looks totally human" [19], whereas featuring some anthropomorphic traits —, Mindar does not interact with the other monastic practitioners, nor with the believers, but is rather itself revered by the temple priests, who pray and prostrate themselves in front of it as they would do with any icon of any other Bodhisattva [20]. The reason for this — and, more generally, for the warmer reception encountered by Mindar in comparison to other "officiant-bots" — is not to be found in the robot itself, but rather in the specific features of the deity it recalls, that is to say, in the semiosphere within which it is inserted in and to which it makes reference. As reported in the Lotus Sutra, in fact, Kannon can have different embodiments, manifesting in different forms — not excluding robotic ones. Greater concern rather

derives from its association with Artificial Intelligence[15]. In fact, while at present Mindar only recites pre-programmed sermons, its designers plan to provide it with machine-learning systems, thus expanding its capabilities, but also the possible risks associated with its adoption, especially in terms of ethics and meaning-making processes. These aspects, as well as the main effects of meaning stemming from the examples considered above, will be further discussed in the following paragraph.

2. Religion between dis-embodiment and re-embodiment

An increasing number of scholars have dealt with the impact of new technologies on the way people practice religion and spirituality, also highlighting their potential in transforming the very concepts of religion and spirituality [21]. While not extensively investigated, the role of corporeality in such dynamics is crucial. In fact, as Massimo Leone highlighted,

> It is difficult to think about religions without thinking about corporality and bodies, those of the faithful [and of the officiant], their movements in prayer and liturgy, how they are purified, clothed, undressed and decorated according to precise spiritual codes, how bodies enter into the narratives of sacred texts, iconography, ritual representation, processions and pilgrimages, and how they are exhibited or hidden, disciplined or guided

---

[15] As reflected in the collective imaginary. Let us consider, for instance, the movie *Doomsday Book* (*인류멸망보고서*) directed by Jee-woon and Pil-sung (2012), and in particular its segment *The Heavenly Creature*, which represents In-myung, an AI-powered robot that lives in a Buddhist monastery. The robot becomes a Buddhist itself, and achieves independence from the humans who created it, escaping their control. It eventually reaches Enlightenment and enters Nirvana, generating various reactions among humans: while the Buddhist community shows veneration toward the "enlightened robot", the corporation that invented it decides to exterminate it out of fear and envy.

by religious dictates. Religion is also about the body, about bodies, about incorporation [22].

However, as technological development has advanced, and the Covid-19 pandemic and other crucial socio-economic factors have created a need to find alternative ways of experiencing religion and religion practices, new forms of "techno-spirituality" (see in particular [23, 24, 25, 26, 27, 28, 29, 30]) have promoted a marked process of digitalization of religion, which, while "not eliminat[ing] bodies, … encodes them in *disembodied* and transferable patterns" [22, my emphasis].

The Church of Jesus Christ of the Latter-day Saints runs the world's largest online genealogical service; religiously inspired web logs, portals, bulletin boards, dating sites and chat rooms are flourishing the world over; the Vatican has its own text message service and pod casts, and Pope Benedict XVI his own iPod. Christian gaming software is attracting a strong following, Hindi gods have their own websites, and there is an ongoing debate about the use of Cairo's nascent wireless cloud to broadcast a single call to prayer from the city's many minaret towers. And all around the world, technology manufacturers are increasingly catering to the ways in which computational devices might support religious practices, producing religion-specific technologies and experiences [29: 141].

While enabling people to maintain their daily faith practice online and providing them with new ways of congregating (see in particular [31]), these practices have "disintegrated" the body, hiding some parts of it, making it invisible, sometimes re-shaping it under the forms of an avatar (consider, for instance, the case of Second Life). As research (see in particular [32, 33, 34]) has shown, such a

process of "disembodiment" has brought about important challenges, especially in terms of involvement, communal behaviour, and alteration of the very "essence of religious and spiritual practice" [35]. In fact, creating a new, and different space-semiotic circuit, it opens a space of extreme indeterminateness and variability, which not only reflects, but also enhances the problems related with religious freedom, the relationship between the officiant and the religious community, and the one between the faithful and the institution — together with a series of crucial issues concerning privacy, data security and more material aspects.

Combining such dynamics with a process of *re*-embodiment, the innovations discussed above have further changed the way people experience faith and religious practices, entailing relevant transformations in terms of signification processes, as well as related to the way devotees engage in ethical reasoning and decision-making, and to the protocols needed to regulate such aspects. From Xian'er to Mindar, from the robotic arm to DarumaTo or SanTO, from Pepper to i-Fairy, in fact, a double process can be detected: on the one hand, the relationship between the (human) body of the officiant and his performance is broken (*dis*-embodiment); on the other hand, precisely by virtue of this rupture, a possibility of a re-incorporation (*re*-embodiment) — in a different body, the officiant-bot's machinic one — is prefigured and realised. However, while the former is a "lived", "experienced" [10] body (i.e. the *Leib* described by Husserl [36], or the *phenomenal body* portrayed by Sartre [37]), the latter rather recalls the idea of a body-object (i.e. the *Körper*, or *material*, *objective body*). In fact, as we observed, the *difference* between the body of the officiant-bots and that of the "traditional" human officiants is generally particularly emphasised, by displaying mechanical parts (such as in Mindar), reducing anthropomorphism as much as possible (and explicitly remarking this, such as in Bless-U2, Pepper or i-Fairy), or using a cartoon style design (as in Xian'er). Yet, as we have seen, this has not prevented concern and criticism within a number of religious communities. While approving the use of technology to improve communication with the

believers and reaching more people, for instance, Christianism has strongly argued that robots cannot replace human priests (see, for instance, [38], and the declaration by Salvarani reported in [39]). Similar positions have been maintained in the Islamic context [40, 41], as well as in Hinduism [42; 6].

A better reception has instead been registered within the Buddhist and Shinto religious spheres, as a reflection of the belief that all beings have the potential to become enlightened, since a "Buddha-nature" can be found within anything in the universe [43], and, more generally, that the sacred nature of the world permeates all entities, therefore making robots "natural partners" to human beings [44]. As we anticipated above, in other words, it is essential to consider the semiosphere within which officiating robots are inserted and used, and the roles that, according to its codes, these can assume. While the metaphysical conception of the world largely adopted in Buddhism and Shintoism allows robotic officiating agents to act as ritual performers, therefore conceiving them as possible *Senders* (in a Greimassian perspective, cf. [45]), exactly as human officiants, Christianism, Hinduism and other beliefs insists more on the ontological status of the (human) body of traditional religious officiants, therefore only admitting the adoption of robots as *Helpers*, which can accompany men in rituals (on a *technical level*), but must not aim at replacing them on the level of *values*. While highlighting the difference between the robotic body and the human one undoubtedly contributes to the recognition of their different "natures", therefore, it seems to be above all the *function* attributed to the bots that actually determines their acceptability, especially in those religious systems that do not consider the destination plan (i.e. Sender level) as a prerogative of robotic officiants. This would explain, for example, the better reception of SanTO, a theomorphic robot that is also anthropomorphic (since it is modelled on the image of typical saint figurines, which in turn resemble the human figure of the saints they refer to), compared to the automated arm used in the aarti ritual, or to the highly machine-like body chosen for Bless-U2.

Furthermore, it points to another crucial fact, which cannot be neglected: in most religions, technological innovations used to support and integrate human officiants are not a complete novelty. As Adrienne Mayor documented in her book *Gods and Robots* [46], animated machines have indeed existed since ancient Greece. During the Middle Ages, moreover, mechanical angels and fire-breathing devils were largely adopted in Christianism, together with mechanical devices inspired to the figures of the saints. A very popular case also saw the light in 1560, when Philip II of Spain commissioned Juanelo Turriano the so-called "mechanical monk" (or "monkbot"), a proto-robotic figure resembling a saint (probably San Diego de Alcalá, see [47]), created as a votive offer[16], whose mechanical body could (and still can) perform a variety of actions, from moving its head, mouth and eyes, to beating its chest with its right arm and raising its left hand to raise a rosary to its lips. The novelty rather consists in the presence of Artificial Intelligence-powered systems — which, as we mentioned above, is precisely the reason for most of the concerns regarding SanTO. In addition to data security (i.e. the use, storage and sharing of the information collected and generated by the robot), in fact, the main risks associated with it concern nudging, or its potential negative impact on people's behaviour, that it to say, the possible implications of its use as a Sender, rather than as a Helper (as it was conceived).

In this respect, it is worthwhile recalling Umberto Eco's distinction between *instruments*, which require human intervention to function, and *machines*, which rather operate automatically [48]. The integration of AI-systems into officiating robots make them move from the realm of the former, which perfectly matches the role of Helpers required for their acceptance in certain contexts, to that of the latter, which rather challenges it. Once again, therefore, the function, or better the *functioning*, of robots emerges as a fundamental factor for their acceptability and reception, as well as for the regulation of their use. In fact, while using instruments does not raise particular problems

---

[16] Not to be used in rituals of any kind, but thought to be shown exclusively to God.

in this sense, the adoption of machines (e.g. AI-powered officiating robots) involve crucial ethical and normative issues, especially as related to the status attributed to robotic officiating agents, and the obligations and rights deriving from it, as well as to their possibilities of interaction with the believers.

On the other hand, as we highlighted above, design also plays a fundamental role in the acceptability of bot officiants. As Gabriele Trovato [5] outlined, in fact, for a robot to be able to effectively assist the devotees in their religious practices (i.e. to perform as their Helper, in a Greimassian perspective), it is essential that it provides a certain degree of easiness of use, and that it adequately recalls the forms of the traditional sacred objects adopted in the considered system. It is also fundamental, as we have seen, to place particular emphasis on the robot's non-anthropomorphic components (e.g. the ATM box-like conformation of Bless-U2, the visible mechanical components of the robotic arm used at the Ganpati Festival, the cartoonish style of Xian'er, the exposed aluminium and silicone skeleton of Mindar, the figurine look of SanTO, etc.), not only to avoid the risk of the so-called "uncanny valley"[17], but to emphasise their "thingness", that it so say, their "otherness" compared to humans (cf. [16]).

It is precisely in this sense that Robert M. Geraci recalled the concept of *misembodiment*:

> By the term 'misembodied' I want to point toward the odd nature of embodiment in AI. The immortal salvation of the future requires a kind of embodiment (some computer housing for the informational self) but the human body, itself, becomes irrelevant. In

---

[17] Masahiro Mori [49] coined the expression "uncanny valley" to refer to the fact that as robots appear more humanlike, they become more appealing, but only up to a certain point. Upon reaching the "uncanny valley", our affinity descends into a feeling of strangeness, uneasiness and even revulsion.

particular, a virtual body becomes more significant than a human body. Misembodiment refers to the move toward a *purified body*; *purified*, in this case, of its *humanness* [44: 241, my emphasis].

Such a "purification", however, is precisely what marks the impossibility, for officiating robots, to equate traditional (human) officiants, and to perform like them. This is primarily related to the crucial role played by corporeality in meaning-making processes. As Charles Sanders Peirce [50] remarked, in fact, at the very basis of semiosis — that is to say, of the dynamics that enable us to make sense of the world —, there is *perception*, with its bodily-based inferential processes:

> Perception, for Peirce, far from being an automatic record of external reality, is a highly constructive process, which requires exactly the same inferential and abductive devices as abstract forms of reasoning do, while being rooted firmly in the basic physiological functioning of our bodies. Therefore, semiosis begins in the body and in its perceptive and proprioceptive processes [51: 244].

Based on this idea, Patrizia Violi underlined the strong connection between bodily-grounded experience and meaning [52] and reconsidered the concept of "embodiment" in a semiotic perspective, maintaining that the body cannot be understood and described but as related to the discursive practices that define it [51]. Evidently, this does not imply denying the material reality of corporeity, but requires to recognise the importance of the practices and discourses through which the body attests itself, by confronting itself with other bodies and the external world. Remaining mostly impenetrable to such a world (with just a few pre-set and often quite limited exceptions) and to otherness, the mechanical body of officiating robots allows them to *exist* in it (recalling the

level of the *corps-chair* described by Fontanille [7]), but not to *experience* it (i.e. to reach the dimension of the *corps propre*) — and hence, to properly make sense of it. This is what, on the level of meaning-making processes, undermines the capability of robotic officiants to effectively interact with the believers, and to adequately make sense of such an interaction — as lamented, for instance, by Salvarani, in relation to the Christian community:

> Presiding over religious functions for ... Christians is not a technical matter, it cannot be entrusted to those who simply know mechanisms and rituals, but to people who have a *relationship* with the community. …. I put the question mark here: by entrusting it to a robot, doesn't the *relationship* with others risk being put in crisis? ... Where does the liturgy that arises from the bond between the word of God and the community go?[18] [39, my translation and emphasis].

While certainly crucial, therefore, the ongoing reflection on material aspects such as privacy and data security issues, urgently needs to be reconsidered in the frame of the semiotic processes associated with the adoption of robotic officiants, especially as related to their recognised ontological status and possible role(s), always in accordance with the main pillars of today's religious and spiritual systems — where such entities are increasingly present, autonomous and important, whether they are encouraged or rather feared.

---

[18] "Presiedere a funzioni religiosi per … [i] cristiani non è un fatto tecnico, insomma non si può affidare solo a chi conosce meccanismi e rituali ma a persone che abbiano una relazione con la comunità. …. Il punto interrogativo lo metto qui: affidandola a un robot, la relazione con gli altri non rischia di essere messa in crisi? … Dove va a finire la liturgia che nasce da un legame fra la parola di Dio e la comunità?".

References

1. Sherwood, Harriet. 2016. Robot monk to spread Buddhist wisdom to the digital generation. *The Guardian*, 26 April 2016. https://www.theguardian.com/world/2016/apr/26/robot-monk-to-spread-buddhist-wisdom-to-the-digital-generation. Accessed 4 September 4 2023.

2. Trentini, Yisela Alvarez. 2019. Robots and religion: Mediating the divine. *The Startup*, 21 July 2019. https://medium.com/swlh/robots-and-religion-mediating-the-divine-2bd73220787d. Accessed 4 September 2023.

3. Trovato, Gabriele, Francisco Cuellar, and Masao Nishimura. 2016. *Introducing 'theomorphic robots'*, paper presented at the 2016 IEEE-RAS 16th International Conference on Humanoid Robots, Cancún, Mexico, Nov 15-17, 2016. https://ieeexplore.ieee.org/document/7803429.

4. Trovato, Gabriele, Loys De Saint Chamas, Masao Nishimura, Renato Paredes, Cesar Lucho, Alexander Huerta-Mercado, and Francisco Cuellar. 2021 [2019]. Religion and Robots: Towards the Synthesis of Two Extremes, *International Journal of Social Robotics* 13: 539-556. https://doi.org/10.1007/s12369-019-00553-8.

5. Trovato, Gabriele. 2020. Il robot SanTO: il nuovo con uno sguardo al passato, *Filosofia* (65): 39-50. https://doi.org/10.13135/2704-8195/5077.

6. Bhattacharya, Ananya. 2017. The robots are coming for one of Hinduism's holiest ceremonies. *Quartz*, 4 September 2017. https://qz.com/india/1066718/the-robots-are-coming-for-one-of-hinduisms-holiest-ceremonies. Accessed 14 September 2023.

7. Fontanille, Jacques. 2005. Il malessere. In *Il discorso della salute. Verso una sociosemiotica medica*, ed. Gianfranco Marrone, 35-50. Rome: Meltemi.

8. Fontanille, Jacques. 2013. Figures of the Body and the Semiotics of Imprint: Semiotic Figures of the Body in the Humanities. *Chinese Semiotic Studies* 9(1): 37-52.

9. Fontanille, Jacques. 2004. *Soma et séma. Figures du corps*. Paris: Maisonneuve & Larose.

10. Merleau-Ponty, Maurice. 1945. *Phenomenologie de la perception*. Paris: Gallimard. English Translation by Donald A. Landes. 2012. *Phenomenology of perception*. London and New York: Routledge.

11. O'Leary, Denyse. 2018. Robot Priests: And you thought "Robotic Religion" was just a pointed criticism…?. *Mind matters*, 23 June 2018. https://mindmatters.ai/2018/07/and-you-thought-robotic-religion-was-just-a-pointed-criticism/. Accessed 4 September 2023.

12. Rambelli, Fabio. 2018. Dharma Devices, Non-Hermeneutical Libraries, and Robot- Monks: Prayer Machines in Japanese Buddhism. *Journal of Asian Humanities at Kyushu University* 3: 57-75. https://doi.org/10.5109/1917884.

13. Austin, John Langshaw. 1962. *How to Do Things with Words*. Oxford: Clarendon Press.

14. CBN. 2017. Not Science Fiction: Robot Pastor Makes Debut as Pulpit. *The Christian Broadcasting Network*, 4 June 2017. https://www2.cbn.com/news/world/not-science-fiction-robot-pastor-makes-debut-pulpit. Accessed 7 September 2023.

15. 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* (2021)13: 569-586.

16. Boer, Laurens, and Harvey Bewley. 2018. Reconfiguring the appearance and expression of social robots by acknowledging their otherness. In *Proceedings of the 2018 on designing interactive systems conference 2018: DIS '18*, 667-677. Association for Computing Machinery. https://dl.acm.org/doi/10.1145/3196709.3196743.

17. Vidal, Denis. 2007. Anthropomorphism or Sub-Anthropomorphism? An Anthropological Approach to Gods and Robots. *Journal of the Royal Anthropological Institute*, XIII(4): 917-933. https://www.jstor.org/stable/4623070.

18. Siripala, Thisanka. 2019. An Ancient Japanese Shrine Debuts a Buddhist Robot. *The Diplomat*, 5 March 2019. https://thediplomat.com/2019/03/an-ancient-japanese-shrine-debuts-a-buddhist-robot/. Accessed 7 September 2023.

19. Sigal, Samuel. 2020. Robot priests can bless you, advise you, and even perform your funeral. *Vox*, 13 January 2020. https://www.vox.com/future-perfect/2019/9/9/20851753/ai-religion-robot-priest-mindar-buddhism-christianity#:~:text=%E2%80%9CMindar's%20metal%20skeleton%20is%20exposed,at%20the%20University%20of%20Virginia. Accessed 14 September 2023.

20. 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(2020): 120-148. https://doi.org/10.1163/22143955-00701006.

21. Kimura, Takesih. 2017. Robotics and AI in the Sociology of Religion: A Human in Imago Roboticae. *Social Compass* LXIV(1): 6-22. https://doi.org/10.1177/0037768616683326.

22. Leone, Massimo. 2023. *(Dis)Embodiment in Religion and Ethics*. Bruno Kessler Foundation – Center for Religion Studies. https://isr.fbk.eu/en/disembodiment-in-religion-and-ethics/. Accessed 4 September 2023.

23. Zaleski, Jeffrey. 1997. *The Soul of Cyberspace: How New Technology is Changing Our Spiritual Lives*. San Francisco: HarperEdge.

24. Cobb, Jennifer. 1998. *Cybergrace: the search for god in the digital world*. New York: Crown Pubs.

25. Brasher, Brenda. 2001. *Give me that online religion*. San Francisco: Jossey-Bass.

26. Hoover, Stewart M., and Lynn Schofield Clark (eds.). 2002. *Practicing Religion in the Age of the Media: Explorations in Media, Religion and Culture*. New York: Columbia University Press.

27. Garner, Stephen. 2003. *Techno-Sprituality*. Paper presented at the IT | Church | Culture Meeting, Carey Baptist College, Auckland, New Zealand, 1 November, 2003. https://www.greenflame.org/docs/Technospirit-talk. Accessed 6 September 2023.

28. Bell, Genevieve. 2004. The age of auspicious computing: ethnographic accounts of religion & new technology. *ACM Interactions – Special Issue on Play* 11(5): 76-77.

29. Bell, Genevieve. 2006. No More SMS from Jesus: Ubicomp, Religion and Techno-spiritual Practices, in *Ubi-Comp 2006: Ubiquitous Computing*, ed. Paul Dourish and Adrian Friday, 141–158. Berlin: Springer.

30. Muller, Michael J., Ellen Christiansen, Bonnie A. Nardi, and Susan Dray. 2001. Spiritual Life & Information Technology. *Communications of ACM*, 44(3): 82-83. https://doi.org/10.1145/365181.365211.

31. Henao, Louis Andres. 2022. Faith in the metaverse: A VR quest for community, fellowship. *AP News*, 31 January 2022. https://apnews.com/article/coronavirus-pandemic-technology-health-religion-virginia-04f7203bcf9026fee54a8893f396dca0. Accessed 6 September 2023.

32. Kari, Paul. 2021. Please don't stop the music: How choirs are singing through the pandemic. *The Guardian*, 22 April 2021. https://www.theguardian.com/music/2021/apr/22/choirs-coronavirus-covid-19-us-virtual-singing. Accessed 12 September 2023.

33. Wolf, Sara, Frauke Moerike, Simon Luthe, Ilona Nord, and Jörn Hurtienne. 2022. Spirituality at the Breakfast Table: Experiences of Christian Online Worship Services, in *CHI Conference on Human Factors in Computing Systems Extended Abstracts*, 1-7. https://doi.org/10.1145/3491101.3519856.

34. Derogatis, Amy, and Isaac Weiner. 2022. How the sound of religion has changed in the pandemic. *The Conversation*, August 2022. https://theconversation.com/how-the-sound-of-religion-has-changed-in-the-pandemic-140051. Accessed 12 September 2023.

35. Claisse, Caroline, and Abigail C. Durrant. 2023. "Keeping our Faith Alive": Investigating Buddhism Practice during COVID-19 to Inform Design for the Online Community Practice, in *CHI '23: Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*, Hamburg, Germany, April 2023. https://doi.org/10.1145/3544548.3581177.

36. Husserl, Edmund. 1913. *Ideen zu einer reinen Phänomenologie und phänomenologischen Philosophie II: Phänomenologische Untersuchungen zur Konstitution*. Nijhoff: Den Haag.

37. Sartre, Jean-Paul. 1943. *L'Être et le néant. Essai d'ontologie phénoménologique*. Marseille: Gallimard.

38. Lucie-Smith, Fr. Alexander. 2017. The Protestant 'robot priest' shows us one thing – the priesthood cannot be replaced. *Catholic Herald*, 5 June 2017. https://catholicherald.co.uk/the-protestant-robot-priest-shows-us-one-thing-the-priesthood-cannot-be-replaced/. Accessed 12 September 2023.

39. Barbieri, Daniele. 2019. La religione e i robot, with an interview to Brunetto Salvarani. *Vocevangelica*, 25 September 2019. https://www.voceevangelica.ch/voceevangelica/home/2019/09/Mindar-robot-religione-Giappone.html. Accessed 12 September 2023.

40. Ziaee, Ali Akbar. 2012. A Philosophical Approach to Artificial Intelligence and Islamic Values. *IIUM Engineering Journal* 12(6): 73-78. https://doi.org/10.31436/iiumej.v12i6.191.

41. Sturgill, Amanda F. C. 2019. Artificial Intelligence: Its Future Uses in Religious Compassion, in *Religion Online: How Digital Technology is Changing the Way We Worship and Pray*, vol. 1, ed. August E. Grant, Amanda F. C. Sturgill, Chiung Hwang Chen and Daniel A. Stout, 57-66. Santa Barbara: ABC-CLIO.

42. Scheifinger, Heinz. 2015. New Technology and Change in the Hindu Tradition: The Internet in Historical Perspective, in *Asian Religions, Technology and Science*, ed. István Keul, 153-168. London: Routledge.

43. Mori, Masahiro. 1999 [1981]. *The Buddha in the Robot: A Robot Engineer's Thoughts on Science and Religion*. Tokyo: Kosei.

44. Geraci, Robert M. 2006. Spiritual Robots: Religion and Our Scientific View of the Natural World. *Theology and Science* 4(3): 229-246. https://doi.org/10.1080/14746700600952993.

45. Greimas, Algirdas Julien. 1966. *Sémantique structurale*. Paris: Larousse. English Translation by Daniele McDowell, Ronald Schleifer, and Alan Velie. 1983. *Structural Semantics: An Attempt at a Method*. Lincoln: University of Nebraska Press.

46. Mayor, Adrienne. 2018. *Gods and Robots: Myths, Machines, and Ancient Dreams of Technology*. Princeton: Princeton University Press.

47. Torres, Hannah. 2014. *Clockwork Prayer*. Thesis. Department of English – University of Michigan, Spring 2014.

48. Eco, Umberto. 1997. *Kant e l'Ornitorinco*. Milan: Bompiani. English Translation by Alastair McEwen. 1999. *Kant and the Platypus*. London : Secker & Warbur.

49. Mori, Masahiro. 2012 [1970]. The Uncanny Valley. *IEEE Robotics & Automation Magazine* 19(2): 98-100. https://doi.org/10.1109/MRA.2012.2192811.

50. Peirce, Charles S. 1934–1948. *Collected Papers*. Cambridge: Harvard University Press.

51. Violi, Patrizia. 2008. Beyond the Body: Towards a Full Embodied Semiosis. In *Body, Language and Mind*, vol. 2, ed. Roslyn M. Frank, René Dirven, Tom Ziemke, and Enrique Bernárdez, 241-264. Berlin: Mouton De Gruyter.

52. Violi, Patrizia. 1997. *Significato ed esperienza*. Milan: Bompiani.