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Head of Barbican International Enterprises: Neil McConnon

Editors: Chloe Wood with Suzanne Livingston and Maholo Uchida

Catalogue contributors: Neil McConnon (foreword), Suzanne Livingston, Maholo Uchida, Emily D. Bilski, Jennifer Robertson, Steve Goodman (Kode9), Francesca Rossi, Demis Hassabis and Fan Hui (AlphaGo), Mark Fisher, Ramon Amaro, Joy Buolamwini, Jeffrey Ding and Emily Gong, Margaret Atwood, Hiroshi Ishiguro, Danielle Sands

Copy-editing/ proofreading: Marta Faustino, Eden Glasman, Anna Holsgrove, Chloe Wood, Veronika Zilinkova
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ROBOTS AND RELIGIOSITY: JAPANESE PERSPECTIVES ON SPIRITUALITY AND SCIENCE

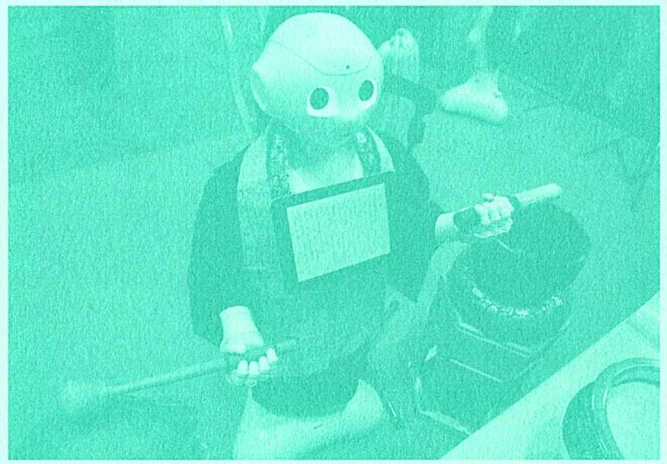
Jennifer Robertson

In August 2017, the mass media reported that Pepper, SoftBank Robotics' 'emotional robot,' had been given a new role as a Buddhist priest for hire at funerals (fig. 1). As is typical of mass-media reports about humanoid robots, this story was an exaggeration. Pepper has yet to conduct an actual funeral. 'He' – most Japanese robots are gendered[1] – was featured at the 2017 Life Ending Industry Expo in Tokyo, where the plastics manufacturer Nissei Eco had set up an ersatz Buddhist altar. A human priest was present to oversee the robo-acolyte and to assess whether 'Pepper could put 'heart' (*kokoro*) into his performance, since the most fundamental aspect of religion that priests convey is 'heart' (*kokoro*).'[2]

Kokoro is most often translated as 'heart' or 'heart mind'. Some roboticists have translated the word as 'consciousness' in English editions of their work.[3] *Kokoro* is an essential part of being human and refers to the 'heart or seat of the will and the source of volition and motivation.'[4] *Kokoro* does not continue to exist after death, and thus is a defining feature of life, or *inochi*. *Inochi* in turn encompasses three basic, seemingly contradictory but interrelated meanings: a power that infuses sentient beings from generation to generation; a period between birth and death; and the most essential quality of something, whether a living thing or a made object, such as a puppet.[5] Thus, robots are 'living' things – they have *inochi*. *Kokoro* has an especially positive valence in Shinto, the animistic practices that preceded the arrival of Buddhism in Japan in the sixth century CE. 'Heart-mind' is not only possessed by sentient beings, but can also be a quality imbued in a thing, such as an artwork, a tasty meal, a puppet, or a robot. In short, the semantic and semiotic coverage of *kokoro* is more inclusive than simply the 'isness' or 'beingness' of a human.

Pepper's stint as a priest was anticipated earlier that same year by Bless U-2, a large, tinny, retro-looking robot introduced in Germany as part of the 500th anniversary of the Protestant Reformation (fig. 2). The multi-lingual stationary robot was created to provoke debate about the role of machines in religion.[6] Even earlier, in 2016, the diminutive robot monk Xian'er debuted at Longquan, a temple outside of Beijing, where he chanted sutras and answered simple questions about Buddhism (fig. 3). The thirty-centimeter-tall monk-bot has a saffron-coloured cylindrical body on top of which sits a smooth, round head with a smiling face. Pepper, in contrast, is svelte and twice as tall. Both humanoids are wheeled, can speak, and have touch-screen tablets mounted on their chests.

Japanese roboticists are quick to suggest that Shinto has shaped an acceptance of human-robot compatibility and coexistence. Shinto – literally, 'the ways of the *kami*' – centers on vital forces or essences (*kami*) residing in, or embodied as, organic and inorganic things – from birds and trees, to rocks and cars – which can be mobilized, usually for good purposes. In this sense, as noted in connection to *inochi*, robots are comprehensible as 'living' things in the Shinto universe; no one confuses them with flesh-and-blood lifeforms, but their *kami* agency is recognized. While they may not claim to be animists, many Japanese roboticists nevertheless draw from this synergistic nature-culture 'platform' in emphasizing not only the interchangeability of robots and humans in areas



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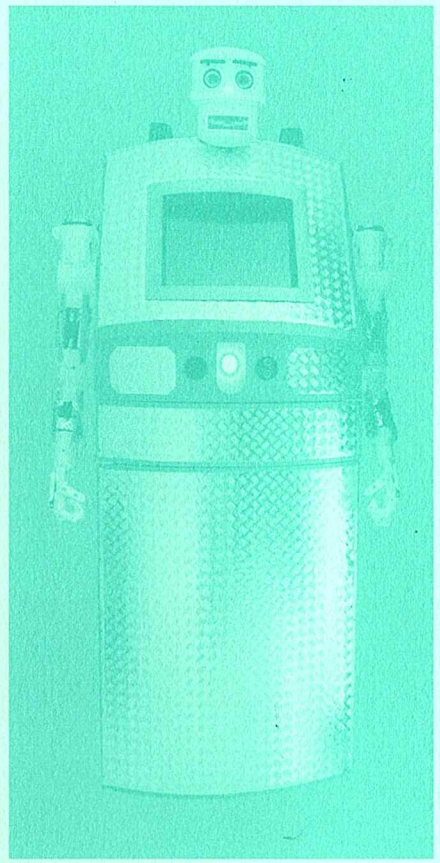

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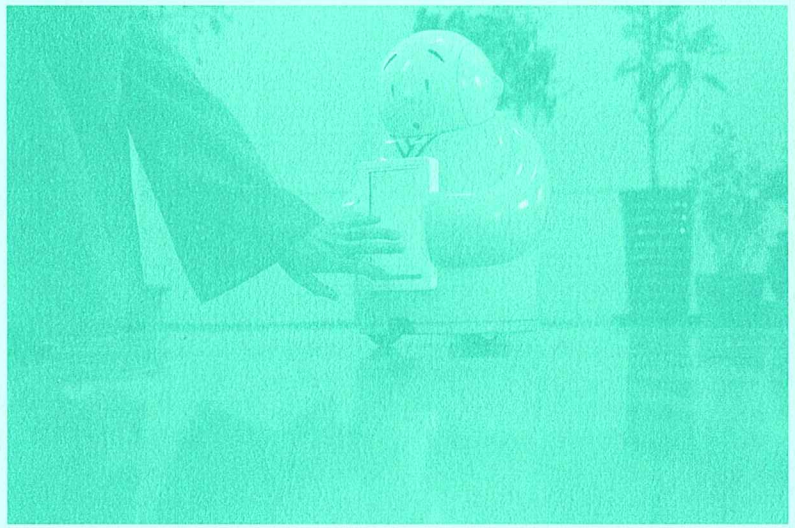

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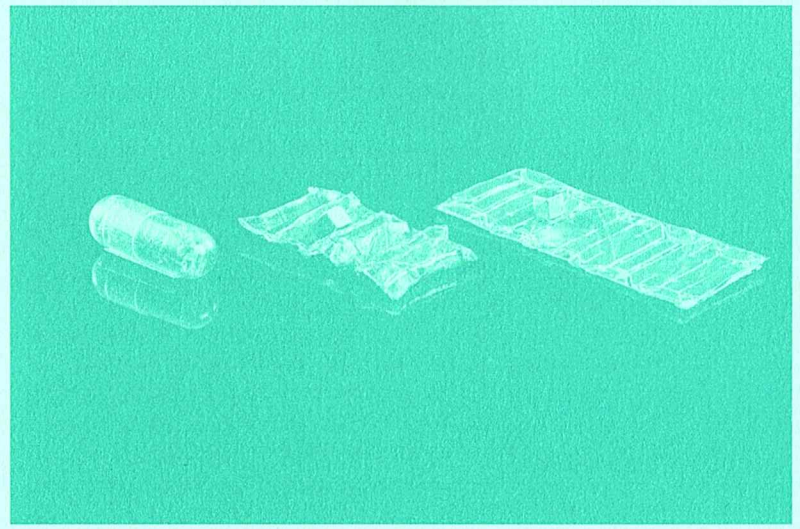

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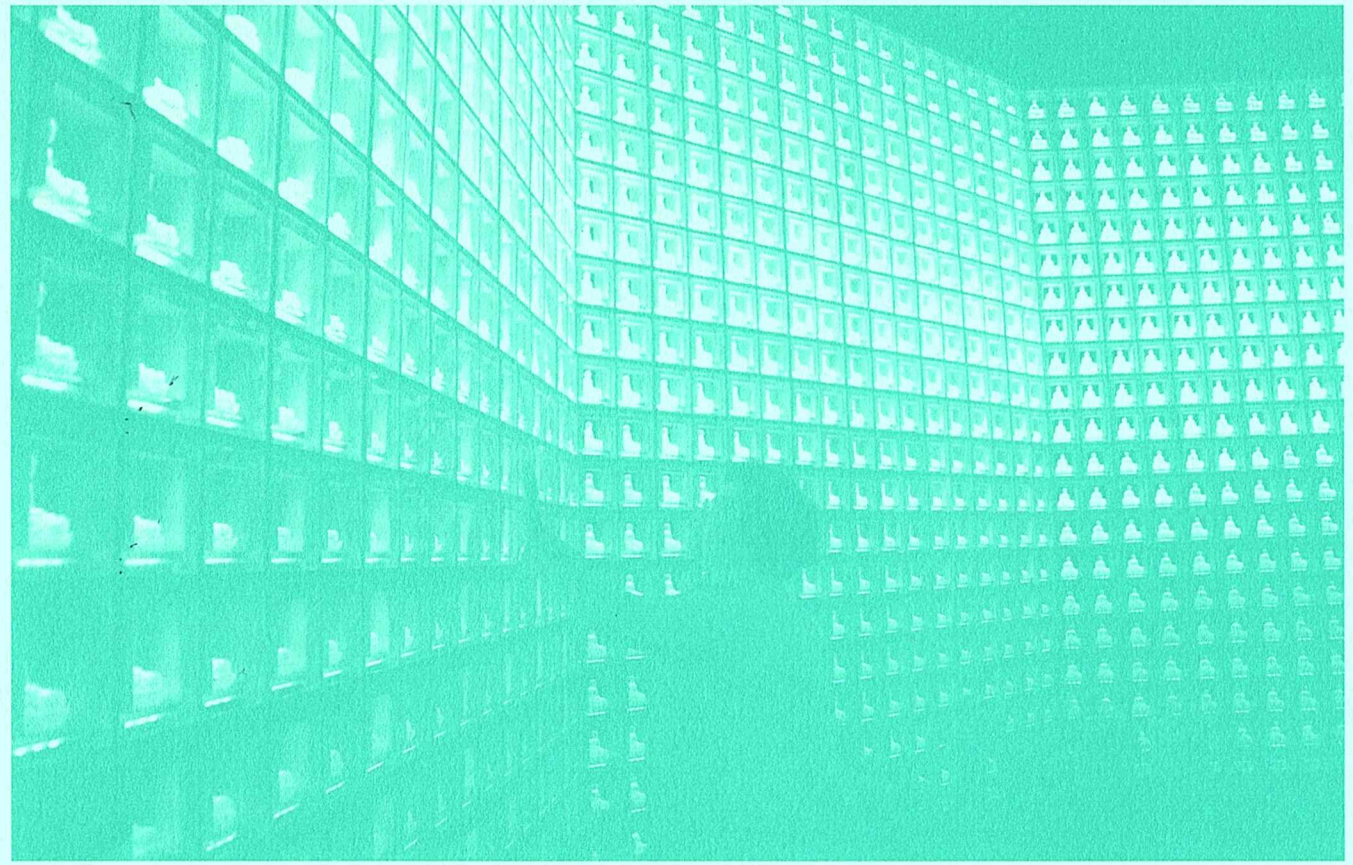

fig. 5

of everyday life and work, but also their mutual enhancement and even mutual constituency.[7] At least one robot engineer locates human-robot coexistence in Buddhist teachings. Masahiro Mori (b. 1927) regards robots as sharing a life space with humans on account of their 'Buddha nature' (*busshō*). As he explains:

'The robot's relationship to me is like my relationship to the Buddha... since I myself was created by the Buddha, the machines and robots that I design must also be created by the Buddha... From the Buddha's viewpoint, there is no master-slave relationship between human beings and machines. The two are fused together in a [harmonious] interlocking entity.'[8]

I have been using the word 'robot' as self-evident; this is a good point at which to provide a working definition. A usefully comprehensive yet concise one describes a robot as an aggregation of different technologies – sensors, lenses, software (including some level of artificial intelligence), telecommunication tools, actuators, batteries, synthetic materials – that make it capable of interacting with its environment with some human supervision through tele-operation or semi-autonomously. Robots exist in many different shapes and sizes: swallowable nano-bot capsules (fig. 4), insect- and fish-bots, animaloids, robotic wheelchairs and air conditioners, and exoskeletons, among others. The most successful consumer robot to date is Roomba, the disk-like vacuum cleaner. For many people, however, the word 'robot' is associated with the humanoids and androids in science fiction movies, novels, and comics that have amazing abilities. Real-world humanoids like SoftBank's Pepper and Honda's ASIMO are slow and clumsy in comparison, even though they represent cutting-edge technologies. The PR videos made by robotics companies are heavily edited and greatly speeded-up to give the impression of smooth, coordinated movement.

'Robot' was coined by the artist Josef Čapek from the Slavic *robota*, meaning drudgery or slave labor. The word first appeared in his older brother Karel Čapek's 1920 play, *R.U.R.* (*Rossum's Universal Robots*). Premiering in Prague in 1921, *R.U.R.* was staged in venues from New York to Tel Aviv, and in Tokyo in 1924 under the title *Jinzō Ningen* (lit. 'human-made human'). A science fiction melodrama with comical passages, *R.U.R.* is about a factory in the near future where artificial humans are mass-produced from protoplasmic batter as tireless workers for export all over the world. To make a long story short, in *R.U.R.* new model robots are provided with emotions and, now able to experience anger at their exploitation, they revolt en masse, killing all but one human.

By 1930, *robotto* was a familiar term in Japan, and was even the brand name of safety matches. Robots were and continue to be the subject of cartoons, animation, short stories, and novels. Even though the robots in *R.U.R.* were bent on destroying humans, and although there are evil robots in Japanese science fiction, the dominant perception of robots in Japan since the 1930s has been very positive. They are symbols of advanced technology; humanoids especially serve as brand ambassadors. Today, the desirability of human-robot coexistence and collaboration is a major plank in the government's domestic policy platform.

Ever since his short first term in office (2006-2007), Japan's Prime Minister Abe, re-elected in December 2012, has been a leading proponent of the robotization of Japan. His administration is also banking on robotics to generate spin-off industries that will resuscitate the economy – including the production of robotic devices designed for the ever-lucrative and expanding global weapons economy.

Many of these spin-off industries were showcased at the Life Ending Industry Expo, where Pepper debuted as a priest. They included automated columbariums (fig. 5), robotic altars, and virtual reality headsets for consumers to experience their own funeral. Technology and robots have been adopted for both religious and spiritual purposes. Japan's rapidly aging population of 126.5 million, of which nearly thirty percent are over the age of sixty-five, is forecast to shrink by nearly 30 million people over the next fifty years, creating a thriving market for funerals, graves, and anything related to the afterlife. These developments underscore what scholars of Shinto and Buddhism have pointed out: namely, that religion and religious organizations are, in part, a service industry. They provide services that adapt and respond to specific needs and desires, from the esoteric to the pragmatic.

Technology, including robots, can augment and extend those services. Mortuary rituals that commemorate and memorialise one's personal belongings, including robots, also highlight the tenacity of the animistic thinking central to Shinto coupled with the adaptability of Buddhist funerary rituals. Administered by human priests (as opposed to Pepper), funerals for defunct robot companions, computers, and electronic devices are already offered by some Buddhist temples.[9] These memorial services (*kuyō*) offer a powerful emotional and aesthetic experience of identification and affinity with intimately familiar things that are no longer functioning or useful, but that cannot simply be thrown away. The rituals also double as a recycling service, as unlike some other intimate objects that are similarly memorialized, like calligraphy brushes and papier-mâché dolls, electronic devices cannot be safely cremated.

The syncretisation of Shinto and Buddhism evident today was completed during the Heian period (794-1185) based on the belief that Shinto *kami* were Japanese manifestations of the original essences of the Buddha and bodhisattvas. Whereas Shinto is widely acknowledged as providing a metaphysical platform for human-robot coexistence, Buddhism has been overlooked as a sophisticated philosophy of materiality that addresses the familiar status of material objects, including robots. Briefly, the realm of material desires is not simply an obstacle for one's spiritual pursuits; materiality also provides a space for interplay in which human beings can give shape and expression to their religious and spiritual ideas as manifested in the affective care extended to important possessions.[10]

In conclusion, the imagination in Japan of human-robot coexistence is premised on a melding of spirituality and science. On the one hand, robots are imagined to help restore family and interpersonal networks at the affective core of Japanese society. In contrast to the destruction of humanity by robots in *R.U.R.*, Japanese roboticists and the government alike promote robot-human coexistence as a technological corrective to demographic and social transformations. On the other hand, humanoids and robotic pets are envisioned as playing a role in human religious and spiritual pursuits, and their memorialization offers a pragmatic means of disposal coupled with a measure of ontological relief (*anshin*).

Jennifer Robertson is Professor of Anthropology and the History of Art at the University of Michigan. Robertson's research focuses on the various social, cultural, and aesthetic dimensions of human-robot interaction, with a focus on Japan.

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8. M. Mori, *The Buddha in the Robot*, trans. Charles Terry (Tokyo: Kōsei Shuppansha,1981 [2005]), pp.179-180. Mori is best known for his hypothesis of the 'uncanny valley', the interpretations and applications of which I critique in Robertson, Robo Sapiens Japanicus, pp.153-160.
9. For information on robot funerals, see Robertson, *Robo Sapiens Japanicus*, pp.183-187.
10. F. Rambelli, *Buddhist Materiality: A Cultural History of Object in Japanese Buddhism* (Stanford, CA: Stanford University Press, 2007), p.268.

fig. 1 Pepper as a Japanese Buddhist priest at the Life Ending Industry Expo in Tokyo, August 2017.

fig. 2 *Bless U-2*, a robot experiment created by the Protestant Church in Hesse and Nassau, Germany, for the 500th Anniversary of the Protestant Reformation.

fig. 3 Xian'er, a Chinese robot monk at Longquan Buddhist temple near Beijing. April 2016.

fig. 4 *Ingestible origami robot*. Daniela Rus and her Research Group at MIT CSAIL. 2016.

fig. 5 Yumiko Nakajima at a high-tech columbarium operated by Kōkoku-ji, a Buddhist temple in Tokyo. Nakajima is surrounded by 2,045 LED illuminated Buddha statues that each represent the spirit of someone who has passed away.