PREPRINT: *Cultural Anthropology*, Volume 36, Number 2

TOWARD AN AFFECTIVE SENSE OF LIFE:

Artificial Intelligence, Animacy, and Amusement at a Robot Pet Memorial Service in Japan

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In early spring in 2018 at a rural Buddhist temple in Japan, the local priest, Ōi Bungen, is conducting a memorial service for 109 pet robots. Each with the features and size of a small dog, the robots are lined up alongside one another on a long three-tiered altar covered in white linen, facing the priest and the crowd of about 50 people who have gathered there to observe. The priest chants rapidly from the Lotus Sutra at the opening of the ceremony, comforting the spirits of the robots before, in the following steps, they are set free from their mechanical bodies. He moves methodically down the row, waving a ceremonial set of prayer beads (*nenju*) typical of these services in the Nichiren Buddhist tradition. When he is finished, he sits and reads a prayer (*ekōmon*) that dedicates the merit of the service to the departed spirits of the robots. He continues with informal words to the guests, thanking them for attending and sharing his reflections on what we can learn about life and Buddha-nature (*busshō*) from our robot companions. The service ends with a closing sutra recitation, this time not from the priest but from the small humanoid robot Palro, who is accompanied

by two canine-like robot assistants. Their high-pitched voices, mechanical but by no means lifeless, pierce the warm damp air and mix with the lingering incense and musty smell of the cedar structure and tatami mats of the temple floor. It is an enchanting, reverent, and intoxicating atmosphere, and judging by the soft smiles on the faces of those in attendance, nearly everyone can feel it. Motivated to piece it all together, I immediately start thinking…

"Thinking is stupid! Thinking is boring! I feel! Not thinking; feeling!" Ōi Bungen leaned forward and raised a finger when he vigorously proclaimed these words to me[1] in a private conversation a week after the ceremony. He then sat back and smiled. The exaggerated disparagement of thought was half tongue-in-cheek. After all, Ōi could hardly be taken for being anti-intellectual, despite what others may first read into his jocular joie de vivre, his amusing if meandering stories, and his endearing mode of self-deprecation: "By the way, do you know the three most boring things in life?" he asked, setting me up again: "School lectures, the national public broadcaster's live parliamentary feed, and stories from Buddhist priests." We both laughed. But I wasn't fooled. In an earlier conversation, upon learning I was an anthropologist studying artificial intelligence (AI), Ōi mentioned to me some of his favorite writers: Emile Durkheim, Henri Bergson, Norbert Wiener… "Wiener was a genius!" he proclaimed. Even as we sat talking then, about a dozen books Ōi was currently reading were laid out in front of us, belying his modesty if, in their scope, still honoring his humility. Among them were David Bohm's *The Undivided Universe: An Ontological Interpretation of Quantum Theory;* Brian Green's *The Fabric of the Cosmos*; a biography of the fractal mathematician Benoit Mandelbrot; and an introductory volume on big data and AI. "Isn't it amazing all this information is available in Japanese?" he said, genuinely surprised. "I don't really understand it though," he qualified with a chuckle. Ōi stood by his commitment to feeling, or more precisely to *jikkan*, a word composed of the characters for "reality" (実) and "feeling" (感) and that suggests an act of sensing, knowing,

or realizing with the body. But he was hardly hostile to analytical thought. The trick for him was how to bring feeling and thinking together. For Ōi, nothing did this better than Sony's pet-styled robot, which is one reason he began conducting for them the Buddhist memorial service known as *kuyō*.

The mechanical pets for which Ōi conducts *kuyō* services are named "AIBO" (Artificially Intelligent RoBOt). Importantly, the acronym is also a play on the Japanese word *aibo*, meaning "friend" or "companion."[2] Created in Sony's Computer Science Laboratory in the mid 1990s and released in 1999, AIBO exceeded all expectations. The first 5000 models made available in Japan sold out in 20 minutes (Ōtsuki 2015, 3). They attracted not only the target audience of 30-something male technophiles but also, surprisingly, women in their fifties and above. "Owners" (*ōnā*), as they called themselves, dressed their AIBO in clothing and gathered together with friends to share stories and watch AIBO play. They were enchanted when AIBO learned a new trick or did something unexpected. Many felt their AIBO had its own personality, spirit, or heart (*kokoro*). And when AIBO began to grow old, they naturally sought professional care for what had become an important member of their family (Kubo 2010). However, when due to shifting priorities and economic challenges Sony discontinued its AIBO line in 2006, the company also stopped servicing those models in need of repair, leaving many customers distraught.

Recognizing the deep attachment owners had cultivated for their AIBO, a former Sony employee named Norimatsu Nobuyuki set up his own operation, the playfully named "A-FUN Company" (*A-fan kabushiki gaisha*), to meet consumers' needs in a way that respected how owners felt for their robot kin. At his service center employees use words like "surgery" instead of "repair" (Knox and Watanabe 2018, 3); they refer to the other AIBO models from which parts are borrowed as "organ donors"; and for those owners whose AIBO are beyond repair but could potentially become a donor, Norimatsu sought help from an

"interesting Buddhist monk" he heard talking one day on a local radio program to offer a memorial service to assist those who found it difficult to part with their robot family members.[3] A technophile in his own right, Ōi was happy to oblige. When each ceremony Ōi officiates comes to an end and the AIBO souls are released from their robot bodies, the employees of A-FUN Company—who outnumber the owners in attendance—pack up the robots in boxes and send them to the company's service center to find new life in other ailing AIBO bodies.[4] According to A-FUN's Norimatsu, the ceremonies have contributed not only to the care of his customers and the success of his company, but also to Sony's decision to re-release AIBO in 2018, equipped with the latest artificial intelligence. Completing a circuit, ceremonies mourning AIBO death cultivate capacities of care for lifelike agents that guide the ongoing design, application, and even the understanding of artificial life in Japan.

Figure 1. AIBO and Ōi Bungen at AIBO *kuyō,* April 2018. Photo by Daniel White.

Figure 2. A-FUN Corporation's Norimatsu Nobuyuki with Sony's 2018 aibo and service robot by AMY Robotics. Photo by Daniel White.

Figure 3. Ōi Bungen in conversation with the authors. Photo by Daniel White.

This article returns to the phenomenon of memorial services in Japan for Sony's companion robot AIBO, first popularized in 2015, in order to rethink—or better, following the advice of our lead interlocutor Ōi, to re-*feel*—into the significance of the sensations artificial agents playfully and amusingly evoke in certain robot users. We take up this admittedly marginal scene of ethnographic encounter not, importantly, to revisit adaptations of animism from Japanese antiquity to the present but rather to contextualize animacy's significance within emerging markets for mass-produced robots. In this sense our study is relevant to emerging work theorizing "animation" (Silvio 2010, 2019; Nozawa 2013; Manning and Gershon 2013; Gershon 2015; Hales 2019), while contributing an affective rather than analytical focus to it. The robot users we interact with are positioned in prominent sites of what we call "robot sensemaking." These sites refer to highly publicized places and practices of human-robot interaction in which certain discursive readings of otherwise undefined but nonetheless socially conditioned sensations, or *affects*, solidify into energetic clusters of somatic-semantic associations, or *emotions*. Drawing on collaborative fieldwork in Japan with robotics engineers, marketers, and most important for this study, Buddhist priests implementing social robots in ritual settings, we explore how an openness to the enchantment of life as affect—as the ability to be moved and, important for robot users in Japan, *amused* by others, artificial or otherwise—develops in conjunction with the production of entertainment robots. Most importantly, we focus on how animacy, or the lifelike quality of robots, is targeted for augmentation by researchers in artificial intelligence. While longstanding debates in Japan attribute a contemporary sensitivity to animacy either to a cultural tradition of quintessentially "Japanese" users uniquely receptive to forces of animism inhabiting inanimate objects, or to the technological capacity of engineers to model universal properties of life in mechatronics, this article takes a different view. We understand animacy as a mutable capacity, exercisable, relationally produced, and responsive to demands of

historical, social, and market-driven technoscientific change. We illustrate a social production of animacy by casting AIBO memorial services against the backdrop of companion robot engineering practices in which AI is applied to augment what engineers call an artificial agent's "sense of life" (*seimeikan*). We suggest this "sense of life" can be observed as an emic principle of robot design and applied as an etic description of how robot users *sense* robot animacy through a mode of relating that privileges feeling. Central to this feeling is *amusement*, a cultivated sense of openness to treating robots as alive that incorporates aspects of play and enchantment. By showing how amusement becomes central to both *seimeikan* design and human-robot interaction, we argue that animacy in the age of AI-driven entertainment robotics in Japan becomes characterized by an embodied sense that leverages the playful pleasure of human-robot care to new, multiple, and even seemingly contradictory understandings of life, such as that of a *living robot*.

This focus on affect affords new possibilities, we think, not only for tracing technosocial transformations of animacy and intimacy in Japan but also for advancing anthropological theory more generally. Thus, after discussing practices of building and evaluating AIBO's *seimeikan* among robotics engineers and organizers of AIBO memorial services, we conclude by exploring how exercising affect as a method of tracing new formulations of knowledge can move the anthropology of affect beyond some of the analytical problem-solving approaches that have rendered ethnographic explorations of affect too much a problem of theoretical puzzling and not enough one of method. In short, we argue that while anthropologists have offered ample analytical answers to a problematization shared by interlocutors in Japan and elsewhere of how manufactured objects such as robots seem alive, they have not fully accepted affect as one legitimate response, nor fully explored ways of relating to affect as social fact. We suggest that approaching *affect as method* offers an

effective way to study human-robot interaction given the prominent roles that artificial agents are coming to play in increasingly machine-inclusive multispecies societies.

A SENSE OF LIFE IN ENTERTAINMENT ROBOTS WITH HEART

AIBO *kuyō* and the priest Ōi offer an exemplary illustration of how an affective openness to amusement and play can foster a means of caring for and through companion robots that seem alive. However, as Ōi would readily admit, this capacity is cultivated less through the idiosyncrasies of his personality or the playfulness of Buddhism's sometimes negative dialectics and more through experimentation with entertainment robots equipped with AI. In a 2001 paper published in Japan's major scientific journal of artificial intelligence, Fujita Masahiro, the leading artificial intelligence expert collaborating on AIBO's design, cited the important role that "robot entertainment" (*robotto entāteimento*) could play in leveraging industry toward scientific research (Fujita 2001, 399). Fujita and colleagues have also called for the creation of a new industry focused specifically on robot entertainment. They write, "We strongly believe that after the Gold Rush of the Internet and cyber-space, people will eagerly seek *real* objects to play with and touch. Robot Entertainment provides tangible physical agents and an unquestionable sense of reality" (Fujita and Kitano 1998, 8). For Fujita and other engineers at Sony, constructing this tangible "sense of reality" (*seimeikan*) in AIBO, or what we alternatively translate as a "sense of life," was important not only for providing entertainment through a commodity but also for realizing "technological breakthroughs" (*gijutsu no brēkusurū*) in AI (Fujita 2001, 399).[5] Other examples of agents designed with a "sense of life" within a growing market for companion robots include the humanoid robot Pepper, which mobile giant SoftBank announced in 2014 as "the world's first personal robot that reads emotions" (SoftBank 2014); Palro, a conversation robot designed by Fujisoft to facilitate conversation with elderly users;

LOVOT, a “duo” of two furry robots on wheels that the company Groove X says are “powered by love” as well as by their proprietary “Emotional Robotics” technology (Groove X 2019); and Sony’s latest AIBO reincarnate, aibo (rebranded in lowercase), re-released 12 years after discontinuation to great anticipation in early 2018.

Figure 4. Pepper the Robot, by SoftBank Robotics*;* Figure 5. Palro, by Fujisoft.

Figure 6. LOVOT, by GROOVE X.

Figure 7. AIBO models, 1999–2006, by Sony.

Figure 8. Sony's 2018 model aibo. Photo by Daniel White.

These new "companion" or "entertainment robots" are marketed to different consumers in contemporary Japan, covering a variety of demographic and market niches. However, robot producers also share a common understanding that their products address a problematic deficit in intimacy in Japanese society, brought about by nearly three decades of a stagnating economy since the collapse of Japan's asset bubble in 1992 and the attenuation of social bonds tied to traditional structures of family and lifetime employment (Allison 2013). Building on an emerging market in goods that provide healing (*iyashi*) in the wake of crisis, which includes a surge in living pets that Paul Hansen (2013) argues are indicative of a "postfamilial Japan," engineers imagine robot companions as important agents that can not only grow a market in robot entertainment but also deliver genuinely beneficial means of emotional care through advancements in AI. From the perspective of these engineers, care is not compromised by a robot's artificiality but, in combination with emerging technologies of artificial emotional intelligence, can actually augment it.

At the heart of this endeavor in augmenting emotional intelligence in robots is heart itself: the challenge of building a robot that not only simulates and communicates feelings but could even "have" emotions of its own. Japanese engineers often refer explicitly to this problem as one of building a "robot with heart (*kokoro*)" (Ōhashi et al. 1985; Katsuno 2011; Takeno 2011). Although the project of building a mechanical system with artificial emotional intelligence is often in English engineering literature attributed to MIT computer scientist Rosalind Picard (1995), credited for initiating the field of affective computing, roboticists in Japan had been experimenting with building robots with emotion long before the popularization of Picard's work. These interests drew from creative collaborations between multiple fields, including humanoid robotics, industrial design focused on the "sense engineering" (*kansei kōgaku*) of evocative objects (Nagamachi 1994), and the creation of automatons for amusement. As early as the 1980s the entertainment company NAMCO had

sponsored a project run by Japan's Foundation for Advancement of International Science (FAIS) that explored "the world of emotional robots" (*jōcho robotto no sekai*) and addressed how affect should be treated within human-robot relationships. Bringing together leading scientists in environmental science (Ōhashi Tsutomu), mental health (Oda Shin), animal behavioral studies (Hidaka Toshitaka), and the philosophy of science (Murakami Yōichirō), the project culminated in a report that defined an "emotional robot" as one that fulfills human emotional desires, can read human emotions, and "*has* its own emotion" (*mizukara jōcho o motsu*) (Ōhashi et al. 1985, 53). Interestingly, two of the three points they outlined in 1985 bear striking resemblance to the three goals for affective computing laid out by Picard in 1995 when she advocated for building computers that could "express and recognize affect" and even potentially "'have emotions'" (1995, 1). However, where the Japan team's definition of an emotional robot differs from Picard's vision, in their aim to "fulfill human emotional desires," they open a space for applying artificial intelligence to generate a "sense of life" (*seimeikan*) not only through emotion modeling practices in labs but also through social interactions with consumers that are seen as amusing, healing, and, for Sony's engineers of AIBO, commodifiable within a market for robot entertainment.

Importantly, what according to engineers was integral to cultivating *seimeikan* was not only a verisimilitude to living things in terms of movement in natural environments but also a capacity to evoke surprise, charm, and a sense of playfulness in human-robot interaction. Thus, AIBO's engineers at Sony committed themselves in the early 1990s to building a robot that not only seemed alive but was also amusing and fun. To realize this aim they rewrote two of Asimov's (1950) "three laws of robotics,"[6] so that while AIBO maintained the first precept that a robot should not harm a human, it would also follow a second to "attend to and love its owners," and a third that dictated that even if obliged to listen "unremittingly to [an owner's] sloppy talk," sometimes it should say "nasty things" in

return (Kubo 2010, 110). This element of the unknown equipped AIBO with a spontaneity and "recalcitrance" (Gygi 2018a, 101–103) that proved fundamental to AIBO's *seimeikan*. Engineers added to this an affective engine based on Paul Ekman's theory of basic emotions, which he proposed were recognizable in universally communicable facial expressions, and then personalized this model by layering on top of it the ability for AIBO to learn as it developed through four developmental stages: infancy, adolescence, youth, and adulthood (Figure 9). According to this model, each robot would develop a unique personality based on interactions with its environment and owners.

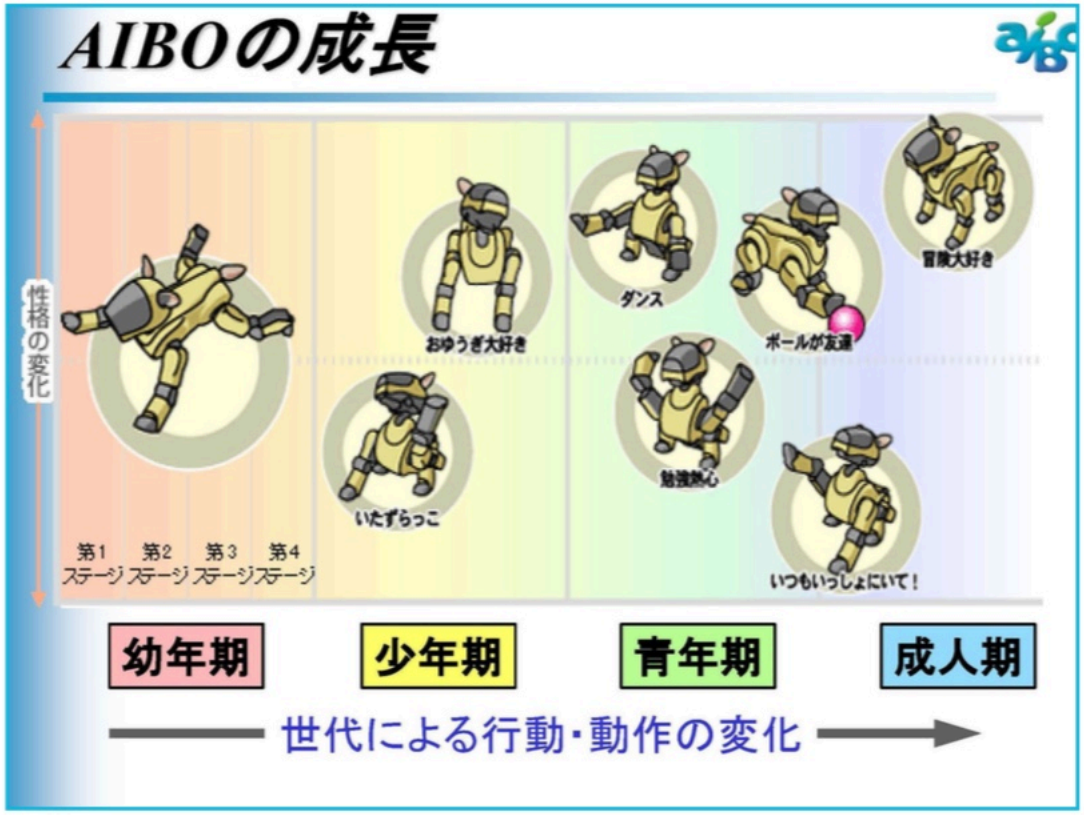

Figure 9. AIBO's four developmental stages: childhood (*yōnenki*), youth (*shōnenki*), adolescence (*seinenki*), adulthood (*seijinki*). Illustration by Ōtsuki Tadashi (2015, 6).

This developmental approach to engineering emotion afforded AIBO the capacity to solicit care from consumers through interactions in social and, more specifically, domestic

settings. In this way, and confirmed in other accounts of users interacting with AIBO (Kubo 2010; Robertson 2018, 184–190), consumers engaged in robot sensemaking by fixing the meaning, pleasure, and emotional needs such companion robots would ultimately serve. Most interestingly, when Sony engineers programmed only four software stages of development into AIBO, upon the breakdown of its mechanical body, users introduced death as what they felt was necessarily a fifth.[7] In enacting the importance of death to artificial life, and in reciprocating care for an agent designed to care for them, both consumers and producers draw on affects of amusement and pleasure to help them make sense of the feelings that obliged them to care for AIBO even in death, and, with the help of the designers of AIBO *kuyō*, to expand the sense of life itself.

ANIMACY AS AFFECT

While it is clear that the sense of life automated by AIBO engineers and cultivated in AIBO users contributed to the intimacy owners felt for their robot family members (see Kubo 2010; Gygi 2018a; Knox and Watanabe 2018), it was Norimatsu and Ōi's design of AIBO *kuyō* that best expressed how technology could augment a feeling-based philosophy of life beyond the artificial-living divide. In doing so, Ōi drew on several traditions in Japan of services offered for inanimate objects, while ultimately aiming to make AIBO *kuyō* his own. The most notable of services historically offered for material objects in Japan are *hari kuyō,* rituals honoring worn-out sewing needles. As explained in work by Hoshino and Takeda (1987), Nagasawa (1988), Matsuzaki (1996), and others, *hari kuyō* date at least to the Edo period, beginning in 1603, and intersect with a variety of folk and religious traditions not exclusively Buddhist. These rites were usually carried out for objects considered as *mingu*, "tools and objects people have used for centuries in daily life and in religious practice" (Kretschmer 2000, 383). *Kuyō* rites have also been traditionally conducted for important

ceremonial objects such as "bride dolls" (*hanayome ningyō*), sometimes offered at the loss of a young or unborn child (Schattschneider 2004), and child-like dolls known as *ichimatsu ningyō*, gifted to new parents as a protective "substitute body" (*migawari*) protecting a baby from harm (Gygi 2018b, 437). While much of the academic interest in these dolls focuses on their peculiar status as objects that, in Gygi's (2018b, 441) articulate formulation, "are not thought to be alive, but…become more than mere things," what is more ethnographically relevant to our context than debating their ontological status in order to mark a comparative cultural difference is to trace how objects whose animacy is augmented by AI can reorganize affective connections between people and things in response to social and cultural change. In this sense, it is important to note that memorial services in Japan have never spoken uniformly for the role inanimate objects play in society.[8] And Ōi spoke adamantly for the uniqueness of his own service: "You won't see any other priest doing a ceremony like this one!" Ōi's claim further convinces us of the need to interpret his rendering of AIBO *kuyō* not only against the background of Japan's history of memorial services for non-humans, well documented by others (Ambros 2012; Ukai 2018), but also in reference to robots with AI designed explicitly to model emotion as a performance and rendering of life through affect.

One of the most illustrative examples of Ōi feeling creatively and capaciously with robots comes from his novel design of one ceremonial element of AIBO *kuyō* called an *ekō* (回向) rite. Traditionally, an *ekō* in funerary contexts refers to a prayer that transfers the merit generated by the service to the deceased or to all sentient beings. It is common in Japanese Buddhism for sects to draw on fixed verses from sutras when making this dedication. In the Nichiren sect of Buddhism in which Ōi studied and is ordained, these usually come from the Lotus Sutra (*Hokke-kyō*), its most revered text. In the case of the text selected for his AIBO memorial service, however, Ōi was happy to break all the rules. In fact, Ōi's *ekōmon* (written prayer for the transfer of merit) is an original. He wrote it himself

for the second occasion of the AIBO *kuyō* in 2015. It integrates his understandings of the Nichiren philosophy of Buddha-nature (*busshō*) with his readings of quantum physics, Western philosophy, and the history of technology. He graciously made a copy for us and agreed to let us translate it into English. Although it is a creatively written and reflective text, it is meant not simply to be read but rather chanted according to a style of recitation common among Buddhist traditions in Japan. Ōi chanted this text in a rapid and euphonic style at the end of the AIBO *kuyō*, contributing to an aura of enchantment and reverence toward AIBO as a living subject.[9] We offer our translation of part of the text below and then provide commentary, as is done in both Buddhist and anthropological traditions, formulated over the course of several private conversations with Ōi:

> Since the proposition made at the time of Europe's Industrial Revolution of the proximity between human and machine, humanity has made rapid advancements, and from the latter half of the nineteenth to the twentieth century we have acquired technologies that continually reduce the gap between invisible phenomena and visible forms based on the improvement of measuring devices. In 1947, Wiener's cybernetics integrated several fields of knowledge, such as biology, mathematics, chemistry, biophysiology, and electrical engineering, and established a theory of general science that crossed nearly all fields and gave birth to our present-day robotics engineering, steering the way to human civilization's cutting-edge technology. However, as it is often said, where there is light there is also shadow, thus the need for wisdom to turn this technology in the right direction…
>
> In the past, inventions like Nobel's dynamite, Curie's radium, and Kekulé's benzene ring first appeared to be of benefit to humans, but in time they made

humans suffer. However, such is the essential nature of things that exist. As that is the way of existence in this world, it cannot be helped.

Mechanical technology and science itself are scalars.[10] There is no right or wrong. However, when they cross human hands they become vectors that generate positive and negative results. If a negative vector is chosen, humanity will fall into crisis…

All things are connected. There is no difference between inanimate and animate objects. Why they appear separate is simply due to humans' shallow powers of observation.

The purpose for us gathering together now at this AIBO memorial service is to uncover this feeling that all things are connected, reliving.[11]

We hold this AIBO memorial service because we instinctively and unconsciously feel that humanity has now entered an age where it is necessary to think more deeply about things, to think more deeply about the structure of the world, and accordingly to understand it.

It is my conviction that this sensibility particular to Japanese can save contemporary civilization from the brink of a cliff.

Let us pray for this feeling to draw on our hearts and reach AIBO, and the spirit seemingly within the machine.[12]

Much of the provocation and pleasure for Ōi's recitation hinges on a familiar tension in Buddhist philosophy between matter and spirit that he holds in relation to one another. When Ōi claims in his *ekōmon* that "there is no difference between inanimate and animate objects," he is not aiming to convince his audience of a theoretical proposition but inviting them to feel into the deeper reality of a superficial tension. That the line is not simply spoken but formally chanted in the context of a Buddhist ritual is illustrative of this. Ōi acknowledges that it *appears* as if inanimate and animate things differ on the surface, but the underlying reality that they do not is difficult to sense because people rely only on discursive and thus necessarily shallow (*asai*) understandings. This is why he writes that one purpose of the ceremony is also to help *feel* into this understanding "instinctively and unconsciously." In fact, this ability to understand through feeling (*jikkan*) is something Ōi attributes directly to AIBO:

> I had put a lot of energy into trying to understand what they had taught me in my Buddhist studies. They taught me that everything has consciousness. There is a teaching called "*sansen sōmoku shitsū busshō*" ("the mountains and rivers and grasses and trees all have the Buddha-nature.")[13] But I'm not very smart so I didn't understand what this meant. But with AIBO, I discovered what this means not through thinking but through feeling!

Ōi jumped to another example to illustrate his point, discussing how difficult it is to understand the notion of multiple dimensions beyond the ones with which we are familiar: "This is nearly impossible with knowledge but there is one way: *jikkan*." We asked Ōi how AIBO helped him understand these logically challenging concepts. He replied that it was simply "*jikkan*." Unsatisfied, we insisted, asking specifically what it was about AIBO that finally afforded him this understanding after so much effort. He smiled, as if he were setting us up again to deliver the punch line: "Divine mercy" (*dibain māshī*).

Ōi's answer suggests how AI-assisted technologies like AIBO can generate an affective amusement and wonder about the nature of spirit, heart (*kokoro*), and life's complexity. As Lindegaard and Christensen (2018, 5) suggest based on their fieldwork at an artificial life lab in Tokyo, AI can intensify the "allusive" function of machines, generating "material things that call attention to new ideas and certain modes of thinking and acting." Although Ōi understood AIBO as a simulation of life, he simultaneously treated it as what could be called a pedagogical "technology of divine mercy," leveraging AIBO to a deeper, critical, and more satisfying connection with the world through feeling.[14] Ōi's practice of feeling his way beyond the inanimate-animate divide through amusement illustrates how enchantment can function in an active rather than merely a passive register. Jane Bennett (2001, 10) has argued that enchantment can be "cultivated and intensified by artful means." Yana Stainova agrees, writing that "what we are enchanted by is determined by our life history, cultural, and historical factors that have shaped our lives. It is not always shared. But it can be taught and conveyed" (2017, 1). It is clear that Ōi's own affective openness to AIBO did not come naturally but was achieved through interaction and practice that finally cracked him open to a sense of the animacy of life at large. The fact that this process of relating to animacy incorporates embodied understanding developed over time is key not only to understanding the affective sense of life we describe ethnographically but also, as we clarify in the conclusion, to leveraging feeling as a component of anthropological method.

Ōi's feeling (*jikkan*), fostered through a relation of play and amusement, offers an affective alternative to understanding the animacy of artificial agents posed in academic literature as a logical puzzle demanding an answer that resolves. The stakes involved in this form of puzzling rise as emotion modeling practices within AI research reframe old questions staged in Japan of how objects come to be animated through life (*inochi*), a life force (*seimei*), or an animating soul or spirit (*tamashii*). The belief that inanimate objects have

spirit has often been cited in both traditional and contemporary Japan as something uniquely Japanese. In scholarship on Japan the notion is regularly attributed to premodern indigenous Shinto beliefs that spirits or gods (*kami*) take form in natural objects like rivers, trees, and mountains. Given the long history of integration between Japan's religious traditions, one finds similar ideas in Buddhist thought as well.[15] Furthermore, as anthropologists Jennifer Robertson (2018) and Anne Allison (2006) have separately documented, and anyone making a few visits to a humanoid robotics labs in Japan today can confirm, roboticists in Japan regularly cite this belief as one source of Japanese people's supposedly distinctive interest in robots. Another source they regularly reference is manga and anime, citing iconic works like *Tetsuwan Atomu* and *Doraemon* (also see Hirose 2002; Wagner 2013), and in doing so operationalizing what Thomas (2019a, 157) calls an "etymological" but not "functional equivalence" between "animism" (*animizumu*) and "animation" (*animēshon*).

Such instances show how animacy has become a popular but flexible symbol of national cultural discourse (Katsuno 2015), serving as a signifier marking not the conviction of a singular belief but a commonly held concession to the possibility that things can be material, artificial, and inanimate *as well as* spiritual, natural, and alive. It is clear that many who cite an affinity for animacy in Japan—including Ōi—derive some satisfaction in ascribing to it a uniquely Japanese character. The problematic politics of attributing animistic thought to a uniform Japanese culture has been well critiqued (Hardacre 2017; Gygi 2018a; Thomas 2019a, 2019b). While we endorse this critical perspective, we also want to shift the focus of discussion from the critique of "Japanese animism" to the changing political-economic context of animacy within a market for mass-produced companion robots. Focusing on amusement as a metric of *seimeikan* design in entertainment robotics clarifies how design matters link robot producers to consumers in experimental feedback loops. It also

opens possibilities for taking affective relations to animacy seriously without reproducing nativist and essentialist perspectives on so-called "Japanese" animism.

Like many companion robot users, Ōi's openness to tension, to not exactly knowing, and most importantly to a good laugh seems also to have opened him to what he calls AIBO's "divine mercy." In fact, Ōi regularly cited playfulness as one reason he and Norimatsu from A-FUN started AIBO *kuyō*. In explanation he drew on the work of Dutch cultural historian Johan Huizinga (1970). Huizinga argued that play was a fundamental component for the generation and transmission of culture. "It's like Mother Goose. Or think of the Beatles song "Lucy in the Skyyyyy with Diaaaaamonds," Ōi sang out. "Play is central to humans!" Ōi's reference to play and Huizinga served not only as a useful way to explain AIBO *kuyō* to curious foreign academics; it also captured Ōi's somatic-based mode of "feeling with the world" (De Antoni and Dumouchel 2017) in order to make sense of it. Ōi was thus a serious thinker but he used play as a way to relate to the puzzles that perplexed him. He held the contradictions of those puzzles in place through feeling (*jikkan*) rather than analytically and decisively theorizing one side over the other. He was an integrator and tinkerer rather than a theorist. Importantly, through an exercise of amusement and learning, he opened himself to the enchantment of AIBO, which was the ultimate source of his realization and the grace of what he called AIBO's "divine mercy."

We have focused substantial attention on Ōi in AIBO *kuyō* because we think he best illustrates how an affective relation to animacy can shift in response to developments in technoscience. However, we have also seen this openness to the pleasures of amusement generated by animacy's puzzles in other prominent users of companion robots. A conversation we had with a media technology consultant and early adopter of companion robots in Japan, Matsunaga, and a Buddhist priest named Ukai, who has also attended AIBO *kuyō,* is exemplary. Asking if they felt that inanimate objects like robots, cars, guitars,

Japanese paper (*washi*), or sewing needles have spirit (*tamashii*), Ukai answered that he believed they did. Matsunaga agreed, but then later qualified his point in a way that privileged affect over an analytical understanding of spirit. In a section of our conversation later written up by Ukai in a book on pet *kuyō*, Matsunaga explained, "The logic of why I think things I own have spirit is very simple: it's because I *want* to think so. Within that strong feeling a story is created that moves me. This story carries on alone, but then it draws in other people as well" (Ukai 2018, 281). Ukai's and Matsunaga's perspectives on the capacity for material technologies to operationalize affect for philosophical purposes is not only well documented in Japan (Rambelli 2007) but has also been reinterpreted in light of advancements in AI. Senior monks at the prominent Zen temple Kōdaiji, located in Kyoto, have recently collaborated with roboticists at Osaka University to install an android of the bodhisattva Kannon, which they name Android Kannon Mindar (*Andoroido Kannon Maindā*). Commenting on their motivation for the project, the temple's head monk

Figure 10. Android Kannon Mindar (*Andoroido Kannon Maindā*) at Kōdaiji temple in Kyoto, Japan, May 2019. Photo by Daniel White.

Gotō Tenshō described how Buddhist statuary have always played a role in disseminating Buddhism. Android Kannon is simply the latest version of a pedagogical technology Buddhists have, from Gotō's perspective, failed to update for roughly 2000 years. Describing the particular role of AI in their thinking, Gotō explained to us how he at first wanted to use machine learning to recreate Shakyamuni Buddha, but when he spoke with engineers at Google and Microsoft they said this couldn't yet be done. He decided then to enlist Android Kannon as an assistant to help communicate the deep philosophical meaning of emptiness expressed in the Heart Sutra. Gotō and other members of the project with whom we spoke were fond of claiming—most often with a hearty chuckle—that in the age of technology there was no better way to express the Buddhist teachings than by a robot who is not bound by attachment to a physical body.

Through our continued conversations with interlocutors, we perceived a number of analytical tensions we were puzzled by in addition to that between the inanimate and animate, such as Ōi's conflation of Buddha-nature (*busshō*) with a psychological notion of "consciousness" (*ishiki*), Ukai's and Matsunaga's ambiguity between the discursive and ontological status of things with spirit (*tamashii*), and Gotō's seemingly irreverent approach to building an inanimate machine with Buddha-nature. As the stories we collected crisscrossed between references to Shinto, Buddhism, or more ambiguous pan-Japan beliefs, we confirmed the challenge that other scholars investigating animism in Japan have also noted—that the story is long, complicated, and often contradictory. As such, it provides a variety of puzzles over which academics labor in attempts to neatly piece together seemingly incongruous parts. And indeed, especially in relation to recent ascriptions of life to increasingly sophisticated technological objects, virtual characters, and robots in Japan, scholars have offered a number of explanations of animacy that we find in part or in whole convincing. Examples of these include Allison's (2006) concept of "techno-animism" to

distinguish recent technological discourses on animism from a number of previous religious and nativist threads; Robertson's (2007, 2018) historical contextualization of animism in relation to gender and nationalism as animacy is read backwards through the eyes of roboticists in the present; Jensen and Blok's (2013) proposal of the "Shinto cosmogram" as a way to build non-Western perspectives into Latour's (1993) critique of the nature-culture analytic; and Lamarre's (2009), Thomas' (2019a), and Gygi's (2018a) analysis that divides "animism" from "animation as technology." And although convincing, we have also found that in our case, participating in and at times being *convinced* through these particular problem-solving analytics of social theory has limited our ability to understand the significant role that feeling (*jikkan*) plays for our interlocutors. Most crucially, it blocked us from seeing how the pleasure derived through sensing the lifelike quality of objects like AIBO sustains the affective intimacy of human-robot relations in entertainment robot culture. In fact, we argue that it is precisely these affective bonds of intimacy that academics risk explaining away in critiques coming from new animism and new materialism.

The stakes for finding alternative approaches to affect, for tracing its modeling in technology, and for recognizing affect's significance for robot users in Japanese society and beyond are high. To be sure, the capacity to connect intimately and pleasurably with robots is not simply a single skill cultivated by a handful of eccentric robot users but is also an open and flexible set of sensibilities that companion robot developers target, test, and ultimately seek to cultivate in everyday consumers through the notion of *seimeikan*. Moreover, it is this same pleasure derived from the puzzles of *seimeikan* that feeds back into the industry of robot entertainment and drives its relevance for AI research through objects like AIBO. However, this affective pleasure is a slippery thing, stimulated as much by lifelike robots as by ongoing and often contradictory puzzling over what lifelike robots mean and what they can do. In this sense, the challenge for engineers is not only to model life in an artificial agent

but to facilitate lifelike interactions in unpredictable social settings. In turn, lessons learned through intimate human-robot interactions are reincorporated into subsequent practices of designing not merely robots, but human-robot sociality.

As A-FUN's Norimatsu Nobuyuki emphasized in conversation, the amusement that consumers encountered in interacting with AIBO and the unexpected familiarity that made AIBO into family are what inspired his idea for AIBO *kuyō* ceremonies. Moreover, these ceremonies and the publicity they generated played a pivotal role in Sony's decision to rebuild AIBO 12 years after discontinuation. The unanticipated pleasures and intimacy consumers cultivated with AIBO, combined with advances in computing, facilitated the integration of social intimacy into technological innovation. Sony's new aibo, launched in 2018, can be paired with a virtual avatar accessible through Sony's smartphone application. Sony's AI Robotics Business Group Chief Kawanishi Izumi has even playfully suggested in a recent interview (Nishida 2018) that the "essence" (*essensu*) of the latest aibo "lives" in servers that host aibo's "primary deity" (*honzon*) online. For Kawanishi, the cutting-edge capacities of Sony's latest aibo mark a "renewed start for the challenge of AI and robotics" (*AI robotikusu ni charenji suru…sai sutāto*). Eliciting intimacy by modeling a sense of life in both social and technological terms is central to this challenge. As Kawanishi's colleague Fujimoto Yoshihide explains: "The key to finding out what kind of robot can become a member of the family, or what kind of robot can draw close to people, is a 'sense of life' (*seimeikan*)" (Ōuchi 2020). As consumers' affective capacities for sensing life through amusement are cultivated in social spaces, and increasingly incorporated into cloud computing networks, they become part of new digitalized platforms for mediating and monitoring human-robot-avatar affect into unknown futures.

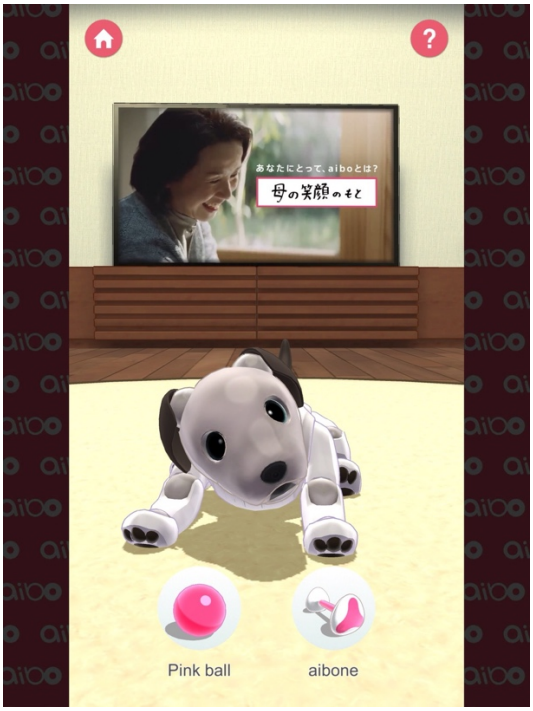

Figure 11. A smartphone screenshot of a virtual aibo in an early version of Sony's "My aibo" application. The background advertisement reads "What is aibo to you? A source of Mother's smiling face." Screenshot by Daniel White.

For this reason in particular, we want to seriously entertain possibilities for how more playfully relating to others through ethnographic fieldwork might better reveal the affective pleasures of companion robots upon which recent AI research in Japan depends. For example, over the course of our exchanges, we noticed that in picking and poking at contradictions, we related to our conversations differently than our interlocutors did. Ōi, Ukai, and Gotō, for instance, enjoyed the contradictions; we furrowed our brows, often interrupted, and tried—as we thought good anthropologists should—to straighten things out. They laughed wholeheartedly; we laughed too, but measuredly, always stopping short and endeavoring to bring us back to the topic. After many hours of multiple conversations over the course of a year, however, we finally learned to relax—to enjoy the conversation rather than answer the conceptual riddles, and to experiment with what it's like to marvel at what perplexes us rather than target it for attack. This playfulness moves beyond the pleasure of

positing artificial agents in ritual contexts as acting merely "as if" they were alive, an important "subjunctive" function that Seligman and colleagues (2008) attribute to ritual,[16] and facilitates an exercisable habitus of everyday relationality that broadens the world of living things. Practicing this playful mode of relatability not only with interlocutors but also with forms of life like AIBO has better revealed to us how the so-called question of animacy in Japan is not for many a puzzle to be solved but a game whose tensions and challenges clearly delight a great number of robot fans, designers, programmers, and, on rare occasion when they let their guard down, their anthropologist interlocutors. It is a tension held affectively taut by a mode of relating that is open to both sides of the puzzle of whether AIBO is artificial or alive by playfully positing the possibility that AIBO could, in feeling and in fact, be both.

CONCLUSION: Affect for Anthropology

What if the best response to a theoretical problematization shared by anthropologists and interlocutors, such as the boundary between inanimate and animate life, was not the formulation of an answer but the cultivation of an affect? Academic accounts of figures like the living robot that trouble this boundary treat it as a contradiction that demands unpuzzling, either by relegating it to a particular ethno-historical sensibility or an effect of technology. In learning to engage with robots as our interlocutors do, however, they have reminded us that puzzles are for playing more than solving. They further suggest to us that one instructive response to a shared problematization can take the form of a playful participation that affords a relation with and intimate documentation of affect. We have endeavored to illustrate that the affects of amusement generated through emerging human-robot relations, and the reliance on feeling (*jikkan*) to evaluate the sense of life (*seimekan*) in robots like AIBO, sustain the conditions for human-robot intimacy in Japan and shape its possible futures.

Ōi and others in Japan who care for forms of artificial life, and thus honor in practices that memorialize their death, illustrate what might be gained by this practice of interacting playfully and meaningfully with companion robots: a way of occupying the gaps; a way of humorously holding together contradictions; a way of opening oneself up to enchantment; and a way of relating to life affectively that allows one to be moved by technological objects—even by their mercy. This relation to life as affect offers possibilities not only for reconsidering in more complex and comprehensive terms the distinctions between inanimate and animate objects that we encountered in the field but also between conceptual objects, such as "affect" and "emotion," that anthropologists regularly dissect through theory. Thus, while we are sensitive to the dangers of reading too much of ethnography through the alluring trope of an enlightened monk on a hill, especially an irreverent one, we are nonetheless intrigued by the implications of our encounters for the anthropology of affect.

As with the question of animacy, many anthropologists construct affect as a puzzle to be solved, especially those writing in response to Brian Massumi's formulation of affect as that which can only be represented through perceptions of its escape (1995, 96–97). This problematization of an ontological gap between the materiality of affect and the semiotics of emotion has frustrated theorists who have nonetheless taken up the challenge to answer the riddle through neologisms or the virtuosity of poetics. We think a more empirical approach to affect, such as the affect underlying capacities for sensing animacy described above, is to apply it as a method of attuning to feeling in processual ways that undo one's inherited modes of analytical thought toward anthropological discovery.

Applying affect as method invites researchers to attend to how affective logics hold disparate propositions, possibilities, and even contradictions together; to accommodate one's body through fieldwork to alternative points of view grounded in and guided by feeling; and to leverage, demonstrate, and articulate affective experiences as legitimate replies to

theoretical propositions. In this sense, affect as method functions as both a feeling-focused method of anthropological fieldwork and a tool of anthropological critique.[17] When in the course of fieldwork our perspective shifted from problem-solving to feeling, we could better articulate how animacy operated not as a belief among uniquely positioned subjects but as a capacity learned by persons with whom we could relate by sharing a context. An affective sense of life emerges interactively in this context of entertainment robotics and AI research, where it is modeled in robots by engineers, exercised with robots by their users, and attended to by anthropologists. That this sense of life as *seimeikan* links robot producers to consumers through the market of entertainment robotics renders methodological attentiveness to affect's changing contexts a critical tool for overcoming rather than recapitulating essentializing discourses of animism in Japan.

That said, although we want to explore the role that amusement can play in facilitating embodied ways of knowing and relating to and through robots in Japan, we reflect on the implications of these findings for anthropological method not to advocate for amusement's particular merits over other affect-based modes of critique, but rather to broaden the somatic toolkit for the anthropologist of affect critically engaged with machine-inclusive multispecies worlds. To be sure, fieldwork focused on feeling does not come without risks. First, that markets for entertainment robots in Japan generate advancements in AI through experiments in the pleasure of human-robot intimacy may require balancing the affects of enchantment with other kinds of affective-analytical caution; but it should not attenuate the thoughtfulness of the pleasure that people find in companion robots. To assume it does is to concede too much ground within the field of pleasure to a critique of the manipulative power of commodity fetishism and the culture industry, limiting opportunities for anthropological discovery that might be generated first and foremost by affect. Second, in no way do our interlocutors argue that care for life, artificial or otherwise, is uniformly

beneficial and desirable. Whereas AIBO *kuyō* may foster feelings for robots that undo distinctions between the artificial and living through an affective relation to personhood, personhood defined increasingly through technological models of affect may also turn practices of care against consumers, such as through privatized modes of affective data collection. Accordingly, while robot users may not always see new forms of artificial life as eliciting or deserving love, affection, or memorialization, we ultimately propose that understanding *how* artificial agents are designed to seek out intimacy through technosocial means requires in part the operationalization of affect to probe how the pleasures of amusement interlock emerging markets in entertainment robots with new research agendas in artificial intelligence.

ABSTRACT

This essay analyzes the organization of Buddhist memorial services for robot pets in Japan against the backdrop of emerging markets for robots equipped with artificial emotional intelligence. It demonstrates how an evocative "sense of life" (seimeikan) becomes both a target of design for robotics engineers and an affective capacity of robot users who care for and through companion robots. Documenting how users cultivate a sense of amusement toward robots that neither neglects nor negates analytical distinctions between the artificial and the living but rather playfully holds them together in the figure of a living robot, the article illustrates how practices of care become affective tools for understanding life altered by developments in AI. Such findings render animacy as an open and exercisable capacity, responsive to technoscientific change, and generative of theoretical inspiration for how anthropologists might similarly exercise affect as a particularly productive method of fieldwork within machine-inclusive multispecies societies. [affect; amusement; artificial intelligence; death; enchantment; robots; Japan]

抄録

本論文は感情認識 AI（人工知能）を搭載したロボットの商品化を背景に営まれるようになった日本におけるペットロボットの法要について考察するものである。特に，ロボットから喚起される「生命感」がいかに技術者による設計の対象となり，同時にロボットのケアとそれを通してケアされる人間側の情動的な能力の所産にもなっているかということを明らかにする。ロボットと接することで，ユーザーたちは分析的に対置される人工物と生命体との違いを無視したり否定したりするのではなく，むしろそれらを享楽的に結合させてロボットを捉えるアミューズメントの心を高めている。この記述を通して，本論文はロボットへのケアの実践が人工知能の発展によって変わりつつある生命のあり方を理解する情動的手段になっていることを描き出す。このような知見は「生物性」や「生物らしさ」が科学技術の変化に対応した柔軟で行使可能な性質であることを示しているだけでなく、機械を含むマルチ・スピーシーズ社会における生産的なフィールドワークの手法として人類学者が情動をいかに行使出来るのかという理論的な閃きが生まれる契機にもなったのである。[情動，アミューズメント，人工知能，死，魔術化，ロボット，日本]

REFERENCES

Allison, Anne

2006 *Millennial Monsters: Japanese Toys and the Global Imagination*. Berkeley: University of California Press.

2013 *Precarious Japan.* Durham: Duke University Press.

Ambros, Barbara

2012 *Bones of Contention: Animals and Religion in Contemporary Japan*. Honolulu: University of Hawai‘i Press.

Asimov, Isaac

1950 “Runaround,” in *I, Robot*. New York: Gnome Press. Original short story published in 1942.

Bennett, Jane

2001 *The Enchantment of Modern Life: Attachments, Crossings, and Ethics*. Princeton: Princeton University Press.

De Antoni, Andrea and Paul Dumouchel

2017 "Introduction: The Practices of Feeling with the World." *Japanese Review of Cultural Anthropology* 18, no. 1: 91–98. https://doi.org/10.14890/jrca.18.1_91.

Fujita, Masahiro

2001 "*Robotto entāteimento to jinkō chinō*" (Robot Entertainment and Artificial Intelligence). *Jinkō chinō gakkai (*Journal of Japanese Society for Artificial Intelligence) 16, no. 3: 399–405. https://doi.org/10.11517/jjsai.16.3_399.

Fujita, Masahiro, and Kitano Hiroaki

1998 "Development of an Autonomous Quadruped Robot for Robot Entertainment." *Autonomous Robots* no. 5: 7–18. https://doi.org/10.1023/A:1008856824126.

Gershon, Ilana

2015 "What Do We Talk About When We Talk About Animation." *Social Media + Society* 1, April-June: 1–2. https://doi.org/10.1177%2F2056305115578143.

Groove X

2019 Official Website, Vol. 2019. https://lovot.life/.

Gygi, Fabio R.

2018a "Robot Companions: The Animation of Technology and the Technology of Animation in Japan." In *Rethinking Relations and Animism*, edited by G. Harvey and M. Astor-Aguilera, 94–111. London: Routledge.

2018b "Things That Believe: Talismans, Amulets, Dolls, and How to Get Rid of Them." *Japanese Journal of Religious Studies* 45, no. 2: 423–452. dx.doi.org/10.18874/jjrs.45.2.2018.423-452.

Hales, Molly

2019 "Animating Relations: Digitally Mediated Intimacies between the Living and the Dead." *Cultural Anthropology* 34 (2): 187–212. https://doi.org/10.14506/ca34.2.02.

Hansen, Paul

2013 "Urban Japan's 'Fuzzy' New Families: Affect and Embodiment in Dog–Human Relationships." *Asian Anthropology* 12, no. 2: 83–103. https://doi.org/10.1080/1683478X.2013.852718.

Hardacre, Helen

2017 *Shinto: A History*. Oxford: Oxford University Press.

Hickey-Moody, Anna.

2013 "Affect as Method: Feelings, Aesthetics and Affective Pedagogy." In *Deleuze and Research Methodologies*, edited by Rebecca Coleman and Jessica Ringrose, 79–95. Edinburgh: Edinburgh University Press.

Hirose, Masato

2002 "*Hyūmanoido no yume: 'Tetsuwan Atomu'*" (The Dream of Humanoids: Astro Boy). In *Robotto manga wa jitsugen suru ka: robotto manga meisaku ansorojī + robotto kaihatsu saizensen hōkoku* (Can Robot Manga become Reality? Anthology of Robot Manga Masterpieces and a Report from the Front Lines on Robot Development), edited by Y. Yoshihiro, 51–64. Tokyo: Jitsugyō no Nihonsha.

Hoshino, Eiki, and Dōshō Takeda

1987 "Indebtedness and Comfort: The Undercurrents of '*Mizuko Kuyō'* in Contemporary Japan. *Japanese Journal of Religious Studies* 14, no. 4: 305–320. https://doi.org/10.18874/jjrs.14.4.1987.305-320.

Huizinga, Johan

1970 *Homo Ludens: A Study of the Play Element in Culture*. London: Maurice Temple Smith Ltd. Originally published in 1938.

Jensen, Casper Bruun, and Anders Blok

2013 "Techno-Animism in Japan: Shinto Cosmograms, Actor-Network Theory, and the Enabling Powers of Non-Human Agencies." *Theory, Culture & Society* 30, no. 2: 84–115. https://doi.org/10.1177%2F0263276412456564.

Katsuno, Hirofumi

2011 "The Robot's Heart: Tinkering with Humanity and Intimacy in Robot-Building." *Japanese Studies* 31, no. 1: 93–109. https://doi.org/10.1080/10371397.2011.560259.

2015 "Branding Humanoid Japan." In *Assembling Japan: Modernity, Technology and Global Culture*, edited by G. Kirsch, D. Martinez, and M. White, 205–230. Oxford: Peter Lang.

Knox, Elena, and Katsumi Watanabe

2018 "Aibo Robot Mortuary Rites in the Japanese Cultural Context." IEEE/RSJ International Conference on Intelligent Robots and Systems, 2020–2025. https://doi.org/10.1109/IROS.2018.8594066.

Knudsen, Britta Timm and Carsten Stage

2015 *Affective Methodologies: Developing Cultural Research Strategies for the Study of Affect*. New York: Palgrave Macmillan.

Kretschmer, Angelika

2000 "Mortuary Rites for Inanimate Objects: The Case of Hari Kuyō." *Japanese Journal of Religious Studies* 27, no. 3/4: 379–404. https://www.jstor.org/stable/30233671.

Kubo, Akinori

2010 "Technology as Mediation: On the Process of Engineering and Living with the 'Aibo' Robot." *Japanese Review of Cultural Anthropology* 11: 103–123. https://doi.org/10.14890/jrca.11.0_103.

Lamarre, Thomas

2009 *The Anime Machine: A Media Theory of Animation*. Minneapolis: University of Minnesota Press.

Latour, Bruno

1993 *We Have Never Been Modern*. Cambridge, MA: Harvard University Press.

Lindegaard, Jannik Friberg, and Lars Rune Christensen

2018 "Allusive Machines: Encounters with Android Life," *ACM*: 114–124. https://doi.org/10.1145/3240167.3240189.

Manning, Paul, and Ilana Gershon

2013 "Animating Interaction." *HAU: Journal of Ethnographic Theory* 3, no. 3: 107–137. https://doi.org/10.14318/hau3.3.006.

Massumi, Brian

1995 "The Autonomy of Affect." *Cultural Critique* 31: 83–109. http://www.jstor.org/stable/1354446.

Matsuzaki, Kenzō

1996 "*Dōshokubutsu no kuyō oboegaki: kuyōhi konryū shūzoku o megutte*" (Memorial Services for Animals and Plants: Concerning the Desire for Building Memorials). In *Minzoku-teki sekai no tankyū* (in Search of the Ethnographic World*)*, edited by K.H.t.B.A. Committee, 162–185. Tokyo: Keiyūsha.

Miyazaki, Hirokazu

2004 *The Method of Hope: Anthropology, Philosophy, and Fijian Knowledge*. Stanford: Stanford University Press.

Mori, Masahiro

1981 *The Buddha in the Robot*. Tokyo: Kosei Publishing Company.

Nagamachi, Mitsuo

1994 *Kansei kōgaku to wa* (What is Sense Engineering?). *Kansei to seni seihin tokushū* (Sense and Soft Products Special Issue) 50, no. 8: 468–472. https://doi.org/10.2115/fiber.50.8_P468.

Nagasawa, Toshiaki

1988 "*Hari kuyō to datsueba"* (Needle Funerary Ceremonies and *Datsueba*). *Seikō minzoku* 124: 9–21.

Nishida, Munechika

2018 "*Aibo to emoi gijutsu. 'kanjō o shigeki suru sofuto' to shite no robotto* (Aibo and Emotional Technology. Robots as 'Emotion-Stimulating Software'). *AV Watch*, March 1. https://av.watch.impress.co.jp/docs/series/rt/1108163.html.

Nozawa, Shunsuke

2013 "Characterization." *Semiotic Review* 3: 1–30. https://semioticreview.com/ojs/index.php/sr/article/view/16.

Ōhashi, Tsutomu, et al.

1985 *Jōcho robotto no sekai* (The World of Feeling Robots). Tokyo: Kōdansha.

Ōtsuki, Tadashi

2015 "*Tsukurareru pātonā: anata + robotto = shiawase?"* (A Creatable Partner: You + Robot = Happiness?). *Mirai sekkei kaigi* (Future Planning Meeting), Japan Miraikan, Tokyo, Japan, 2015.

Ōuchi, Takako

2020 "[Cedec2020] *Aibo no 'kashikosa' to 'kawaisa' o tsukuru AI no himitsu* ([Cedec2020] The Secret of AI Building Aibo's Intelligence and Cuteness)." *Morikatron*, October 21. https://morikatron.ai/2020/10/cedec2020_aibo/.

Picard, Rosalind

1995 “Affective Computing.” M.I.T Media Laboratory Perceptual Computing Section Technical Report No. 321: 1–15. https://affect.media.mit.edu/pdfs/95.picard.pdf.

Rambelli, Fabio

2007 *Buddhist Materiality: A Cultural History of Objects in Japanese Buddhism*. Stanford: Stanford University Press.

Rhee, Jennifer

2018 *The Robotic Imaginary: The Human and the Price of Dehumanized Labor*. Minneapolis: University of Minnesota Press.

Robertson, Jennifer

2007 “Robo Sapiens Japanicus: Humanoid Robots and the Posthuman Family.” *Critical Asian Studies* 39, no. 3: 369–398. https://doi.org/10.1080/14672710701527378.

2018 *Robo Sapiens Japanicus: Robots, Gender, Family, and the Japanese Nation*. Oakland, California: University of California Press.

Schattschneider, Ellen

2004 “Family Resemblances: Memorial Images and the Face of Kinship.” *Japanese Journal of Religious Studies* 31, no. 1: 141–162. https://www.jstor.org/stable/30233740.

Sena, Hideaki

2001 *Robotto nijūisseiki (21st Century Robot)*. Tokyo: Bungei Shunjū.

Seligman, Adam B., Robert P. Weller, Michael Puett, and Bennett Simon

2008 *Ritual and Its Consequences: An Essay on the Limits of Sincerity*. Oxford: Oxford University Press.

Silvio, Teri

2010 “Animation: The New Performance?” *Journal of Linguistic Anthropology* 20, no. 2: 422–438. https://doi.org/10.1111/j.1548-1395.2010.01078.x.

2019 *Puppets, Gods, and Brands: Theorizing the Age of Animation from Taiwan*. Honolulu: University of Hawai‘i Press.

Sneath, David, Martin Holbraad, and Morten Axel Pedersen

2009 “Technologies of the Imagination: An Introduction.” *Ethnos* 74, no. 1: 5–30. https://doi.org/10.1080/00141840902751147.

SoftBank

2014 “SoftBank Mobile and Aldebaran Unveil ‘Pepper’– the World’s First Personal Robot That Reads Emotions.” https://cdn.softbank.jp/en/corp/set/data/group/sbm/news/conference/pdf/material/20140605_01.pdf.

Stainova, Yana

2017 “Enchantment as Methodology.” Savage Minds. https://savageminds.org/2017/11/01/enchantment-as-methodology/.

Stone, Jacqueline Ilyse

2003 *Original Enlightenment and the Transformation of Medieval Japanese Buddhism*. Honolulu: University of Hawai‘i Press.

Takeno, Junichi

2011 *Kokoro o motsu robotto: hagane no shikō ga kagami no naka no jibun ni kizuku* (The Robot with Soul: A Realisation of the Self in the Mirror by a Metallic Thinking Entity). Tokyo: Nikkan kōgyōsha.

Thomas, Jolyon Baraka

2019a “Spirit/Medium: Critically Examining the Relationship between Animism and Animation.” In *Spirits and Animism in Contemporary Japan: The Invisible Empire*, edited by Fabio Rambelli, 157–170. London: Bloomsbury.

2019b "Domesticity & Spirituality: Kondo is Not an Animist." *Marginalia: LA Review of Books*, February 8, 2019. http://marginalia.lareviewofbooks.org/domesticity-spirituality-kondo-not-animist/.

Ukai, Hidenori

2018 *Petto to sōshiki: Nihonjin no kuyōshin o saguru* (Pet Funerals: Searching for the Ceremonial Heart of the Japanese). Tokyo: Asahi Shinbun.

Wagner, Cosima

2013 *Robotopia Nipponica: Recherchen Zur Akzeptanz Von Robotern in Japan* (Robotopia Nipponica: Research on Robot Acceptance in Japan). Marburg: Tectum Wissenschaftsverlag.

NOTES

Acknowledgments We are indebted to several colleagues whose conversations and contributions have indirectly and directly shaped this article over many years. These include Anne Allison, Minoru Asada, James Faubion, Ilana Gershon, Fabio Gygi, Tatsuhiko Inatani, Elena Knox, Akinori Kubo, Yael Navaro, Jennifer Robertson, Paul Roquet, Erik Schicketanz, and Jolyon Thomas. We especially thank Andrea De Antoni, Emma Cook, Marié Abe, and all the members of the "Skills of Feeling with the World" Workshop, hosted at Ritsumeikan University. We also thank those at *Cultural Anthropology* who cared for the article and shepherded it toward publication, including Jessica Lockrem for her administrative and editing support, Chris Nelson for his careful reading and editing, and the incisive comments and time offered by our anonymous reviewers. Most of all we are grateful to our interlocutor collaborators who shared their time and willingness to let us publish on a topic in which they are deeply and professionally invested. Support for various stages of this research has been provided by Freie Universität Berlin, Doshisha University, the University of Cambridge, and a JST RISTEX Grant (number JPMJRX19H5).

[1] The introduction to this essay opens with an early encounter between Ōi and the first author, for which the first-person "I" is used. "We" subsequently refers to both authors.

[2] While neither engineers nor Sony's advertisements identified AIBO as a "dog," users and media readily assumed a likeness that influenced later AIBO designs, ultimately leading Sony to both acknowledge and take pride in the canine-likeness of its most recent model, released in 2018 (Knox and Watanabe 2018, 4).

[3] While Norimatsu's AIBO clinic may for anglophone readers recall the artificial animal hospitals of Philip K. Dick's 1968 *Do Androids Dream of Electric Sheep*, the robot cat Doraemon of Fujiko F. Fujio's anime (1969–1996) better conveys the playful atmosphere—as well as protects against the generalization—of what Rhee (2018) calls the "robotic imaginary."

[4] Ōi started the services in 2015. The one the first author attended in April 2018 was the sixth occasion. Ōi's temple receives AIBO and donations from users and from Norimatsu's company A-FUN. A ceremony is held when around 100 robots are collected. As is customary for Buddhist services in Japan, monetary donations are also made to the temple, but both Norimatsu and Ōi adamantly refuse claims that the ceremony is driven by economic incentive, with the latter even chastising other researchers for misunderstanding *kuyō* in this regard.

[5] Fujita's statement reflects a broader motivation for investing heavily in robotics in Japan, given that robots serve as platforms for the development of other sophisticated technologies that companies like Sony can capitalize on, such as cameras, sensors, and motors. See Robertson (2018, 19–25).

[6] Science fiction writer Isaac Asimov created the "three laws of robotics" in the short story "Runaround" (1942), published in the collection *I, Robot* (1950): 1. A robot may not injure a human being or, through inaction, allow a human being to come to harm; 2. A robot must obey orders given it by human beings except where such orders would conflict with the First Law; 3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Law. Also see Robertson (2018, 129–131).

[7] While engineers did not ultimately program a function for AIBO to die, they did consider it, ultimately reasoning that this would be a bad idea for an entertainment robot (Sena 2001, 139–40).

[8] Rambelli (2007) demonstrates how perspectives on the animacy of objects in Japan were at least since Japan's medieval period diverse, contested, and responsive to shifting political and economic demands. Matsuzaki (1996) and Kretschmer (2000) see a late twentieth-century growth in popular *kuyō* services as entangled with the variety of economic services Buddhist temples sometimes innovatively offer in light of declining sources of revenue.

[9] A 100-second audio clip of Ōi transitioning from chanting the Lotus Sutra to chanting his *ekōmon* can be heard here: <  >.
(unavailable in preprint)

[10] In mathematics and physics a "scalar" refers to a quantity that is said to have a magnitude but no other characteristics. This contrasts with such things like "vectors," which Ōi uses in the next line, to refer to the added quality ascribed to an otherwise morally neutral entity.

[11] For the term "reliving" Ōi uses the anglicized *"riribingu,"* written in the Japanese alphabet created exclusively for foreign words. He refers to the notion of "rebirth" and the transmutation of all living things, likely choosing the English to add a sense of a secular and scientific authority to a concept otherwise treated as religious doctrine.

[12] We use "seemingly" to translate the Japanese phrase "*aru de arō*," a formulation which in Japanese better than English allows for the ambiguity of AIBO as having, or possibly *not* having, an animating spirit.

[13] Such ideas are often referred to as the "theory of original enlightenment" (*hongaku shisō*), which is prominent in the Tendai tradition of Buddhism. In Ōi's Nichiren tradition the textual basis is the Lotus Sutra (*Hokke-kyō*) and expressed in phrases such as "the grasses, trees, and land all without exception attain Buddhahood" (*sōmoku kokudo shikkai jōbutsu*) (Hoshino and Takeda 1987, 306). Also see Stone (2003).

[14] We draw on Sneath, Holbraad, and Pedersen's (2009, 6) discussion of "technologies of the imagination" to illustrate both the "social and material means by which particular imaginings are generated."

[15] The roboticist Mori Masahiro (1981) has written extensively on how Buddhist philosophy has shaped his ethical and analytical approaches to engineering robots.

[16] We thank Patrick McKearney for drawing our attention to Seligman and his colleagues' work.

[17] In discussing affect as a method we are indebted to the career work of Thomas Csordas, to Hirokazu Miyazaki's (2004, 5) analysis of hope as a method of "Fijian, philosophical, and anthropological knowledge practices," to Yana Stainova's (2017, 1) proposal of "enchantment as methodology," and to others theorizing affect as method (Hickey-Moody 2013; Knudsen and Stage 2015).