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Cybernetic Funeral Systems

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***Abstract*—Using Postphenomenology (one of many methods informed by Wiener's cybernetics) as an analytical approach, this paper examines three examples of robot participation in, and mediation of, funerals. The analysis of robot mediation of funerals challenges the idea that death rituals are exclusively human performances and experiences, and instead repositions them as cybernetic systems of entanglement and impact. The paper begins with an introduction to the relevance of postphenomenological theory, then moves to the case of CARL, a robot that enables remote participation in funeral ceremonies. We argue that the [Human–Robot–Funeral] relation and its variants are both engaging and alienating, through revealing-concealing, magnification-reduction and a more generalised enabling-constraining. Technological mediation is also evident in the case of Pepper, a robot that has officiated at funerals as a Buddhist monk. We describe similarities and differences in the way CARL and Pepper manifest the [Human–Robot–Funeral] relation. The final example is AIBO, a companion robot that becomes the locus of a funeral ritual. This offers a radical case that directly challenges humans' self-proclaimed exceptional ontology.**

Keywords–Postphenomenology, robot, funeral, cybernetics

I. Introduction

Though often overlooked, the principles of Norbert Wiener's work are woven through 21st century thought via many strands, one of which is an approach to understanding the world called "Postphenomenology". Most readers will be familiar with phenomenology, but perhaps not with postphenomenology, its cybernetic descendant, so a brief introduction is warranted before moving on to a discussion of cybernetic funeral systems.

Phenomenology is a philosophy of experience, and more specifically, a philosophy of consciousness. It posits knowledge and understanding as an experiential, existential, self-conscious, and situated apprehension of the lifeworld. It is a systems theory of a sort, but the only systems it allows are human sensorial and cognitive systems. Phenomenology was welcomed by many in the middle of the twentieth century as a desirable counter to the calculative nature of the dominant epistemological approaches of the day, namely, analytic philosophy and logical positivism. The authors of this paper recognise this important contribution, but nevertheless, there are limitations to phenomenology, many of which will resonate with students of Wiener.

One is that phenomenology is irredeemably humanist and for some, idealist. Within phenomenology, phenomena are all that exist: our perceptions, our senses, and our sense-making constitute the universe. Non-humans such as machines are not permitted a phenomenology, nor are cybernetic human-machine hybrids. Phenomenology thereby delivers up the universe "for us" through the correlation between our thought and being; things-in-themselves are erased and all being and agency are located in the human capacity to perceive and to think. Human thought and being are thus inextricably linked, so we only have access to the correlation between our perceptions or thoughts of being, and being—and we have no access to one without the other. Nothing outside of the thought-being correlate is knowable [1].

Postphenomenology builds on phenomenology by allowing for non-humans to participate in both sense-making and world-making. It is an approach pioneered most notably by Don Ihde that extends the [I–World] phenomenological primitive of Husserl, Merleau-Ponty and others, to an [I–Technology–World] relation and examines variants of this relation. These variants are often expressed as "[I–Technology]–World" to denote that the human accesses the world through a human-technology hybrid, and "I–[Technology–World]" to denote that the world accessed by the human is a technology-world hybrid [2].

Postphenomenology is not the only approach to make this inclusive move. Heideggerian approaches to being [3], Actor-Network Theory [4], anti-correlationism [5], speculative or transcendental materialism [6], Object Oriented Ontology [7], and alien phenomenology [8] are all resonant approaches that explore the [I–Technology–World] postphenomenological relation to varying degrees and in varying ways, and can be traced back to Wiener's cybernetics in various ways. What these approaches hold in common with Wiener (and where they depart from phenomenology) is their recognition of the significance of technological mediation.

Drawing on the work of Don Ihde [2] and others referenced above, and through three examples drawn from our fieldwork, this paper outlines a number of ways in which the [I–Technology–World] mediation is manifest in the case of robots participating in funerals, forming a [Human–Robot–Funeral] relation. This analysis highlights the relational complexities that arise when technological systems become participants in funerary rituals, to the extent of hybridising with, or supplanting humans, in each of their traditional roles: mourner, celebrant, even corpse.

Our data was collected by attending funeral industry conventions in Australia, the US, the UK, and Japan between 2014 and 2019. At conventions, we talked to representatives from the death care industry and newer start-ups, and collected marketing materials from trade publications and products.

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II. Three Examples

A. CARL: Robot as Mourner Interface

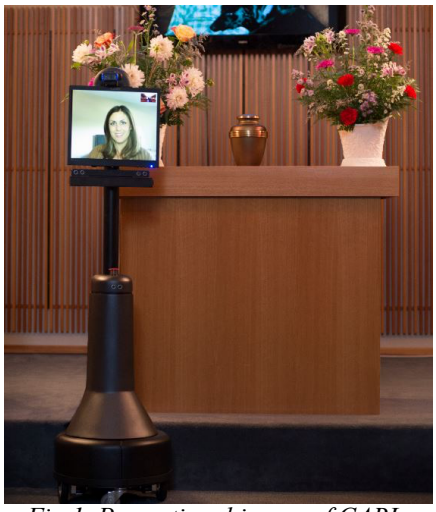


Fig 1. Promotional image of CARL, positioned at a funeral pulpit

CARL is a remote-controlled device manufactured by Orbis Electronics and was made available for lease to funeral directors in the United States in 2015. The motivation for the development of CARL and its deployment in this very sensitive setting was to enable two-way interaction and participation in the funeral at a distance, rather than simply viewing the funeral at a distance through live-streaming. The innovation problematised the situation where funerals required embodied phenomenological attendance ([Human–Funeral]), and suggested a [Human–Robot–Funeral] solution.

To achieve this, Orbis Electronics developed what is essentially a battery-powered remote-controlled machine on wheels, with a flat-screen 17-inch monitor at the top of an extensible pole. The battery compartment and motor for the wheels constitute CARL's "body", the extensible pole is the "neck", and the screen with the remote driver's face and torso visible is the "head". The typical scenario-of-use for CARL is for a remote user to use a mouse and computer to drive CARL around the funeral chapel, perhaps up to the coffin for a final viewing, perhaps moving to the front to deliver a eulogy, selectively moving in and among the other mourners, seeing those in attendance through a camera on the head, extending or retracting the neck according to whether the person in the conversation is standing or sitting, being seen through a closeup of the driver's face on the screen, being heard and addressed through microphones and speakers on the head, and thereby exchanging anecdotes about the deceased, and sharing emotions, gossip and memories.

This basic [Human–Robot–Funeral] relation can now be nuanced. From the perspective of CARL's driver, the relation is [Human–Robot]–Funeral, which is to say that it is only via human-robot hybridity that the funeral is experienced. From the perspective of the mourners at the funeral, the relation is Human–[Robot–Funeral], which is to say that it is only via the robot-funeral hybridity that CARL's driver is experienced as a fellow mourner.

The extent to which this cybernetic system delivers a satisfactory funeral experience that is comparable to embodied presence is debatable. Our research team has described [9, 10] anecdotes of where CARL has been used to create meaningful encounters between the bereaved, the wider funeral congregation, and the deceased:

"*The most meaningful use of CARL that I have experienced was the time it allowed me to offer a grieving sister the opportunity to remotely attend a private viewing for her brother. She had been considering a last-minute 1,500-mile flight in order to spend a few minutes with him, but cost and logistics were prohibitive, and she was facing not being able to say goodbye. Through CARL, we were able to give her the opportunity to attend the viewing remotely and spend some time with him. Her tears, words of love spoken to her brother and gratitude toward our funeral home were evidence enough for me that we were able to give her the tools she needed in order to walk through her loss*". (Key informant interview, Andrew Philips, Funeral Director, Farnstrom Mortuary)

In some cases, then, the [Human–Robot]–Funeral relation provides an experience of "being there" that extends the boundaries of phenomenological experience to convey intimacy at a distance. Given the efficacy and ubiquitous presence of the screen in the daily lives of so many people, this affordance appears an unremarkable claim. Billions of people interact with their world through a screen. These interactions include communications with friends and family, learning about world news and current and local events, sports, entertainment, and education, and they are experienced at least as much via screen as they are experienced viscerally. Indeed this trend is particularly notable at the time of writing due to the Covid-19 pandemic, with many people working and socializing from their home screens and attending meetings and events online, particularly through video conferencing software such as Zoom.

From a postphenomenological perspective, however, there is an existential dimension of revealing-concealing in both forms of the [Human–CARL–Funeral] relation. From the driver's perspective ([Human–CARL]–Funeral), revealing occurs in that the sights and sounds of the funeral are enabled for the Human–CARL hybrid at a very great distance, but concealing occurs as these sights and sounds are not experienced with the same fidelity as embodied presence, and of course, the robot conceals senses such as touch and smell. From the perspective of those at the funeral (Human–[CARL–Funeral]), the driver's face, torso, and voice are revealed (though not with naturalistic fidelity), while the driver's lower body is concealed. In addition to revealing-concealing, the experience of [Human–CARL–Funeral] mediation has a magnification-reduction effect, where the robot's input and output devices magnify the focal point and reduce the periphery of both sight and sound, in both forms of the [Human–CARL–Funeral] relation. In addition to revealing-concealing and magnification-reduction, there is a more generalised enabling-constraining dimension, where the robot enables some forms of sensory presence at a distance and some forms of movement, but constrains other experiences that might be gained by walking upstairs, shouting loudly to attract attention, shaking hands, hugging or kissing, enjoying the communal practise of sharing food and drink at a wake, collecting or contributing physical memorials, and other such activities enabled by embodied presence. In all of these ways, CARL is a cybernetic system that for humans is both engaging

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and alienating, for the driver as well as for the embodied attendees at the funeral.

As a postscript to this example, it is not surprising that the presence of a robot at a funeral is, for some, a disruptive distraction from the traditions of the funeral. Numerous funeral directors have expressed disquiet to the authors about the potential for CARL to distract from a focus on the deceased, and disrupt the funeral experience for those in embodied attendance. To the best knowledge of the authors, CARL has not been widely adopted by funeral directors and its future deployment in this context is unclear.

B. Pepper: Robot as Celebrant



Fig. 2. Pepper performs portions of the memorial service at ENDEX, 2017

Another stark manifestation of a [Human–Robot–Funeral] relation is the experimental deployment of Pepper in the role of a Buddhist Monk officiating at a funeral. Pepper is a robot manufactured by Softbank Robotics, who advertise it as "the world's first social humanoid robot able to recognize faces and basic human emotions" [11]. Key markets for Pepper include nursing homes, where it mediates a [Frail Human–Pepper–Aged Care] relation, electronics retailing [Customer–Pepper–Consumption], banks [Customer–Pepper–Banking Service], schools [Pupil–Pepper–Advice], and private homes [Lone Human–Pepper–Companionship]. Pepper has an appearance contrived to be cute and child-like, is equipped with microphones, HD cameras, a 3D depth sensor and a touch-screen, and most notably, is programmed to detect human emotions through voice tones and facial expressions. When deployed at the funeral convention in Tokyo in 2017, Pepper was dressed in monastic robes, chanted sutras that are traditional at Buddhist funerals, and had a mallet strapped to each arm to strike a wooden glockenspiel and bell in time with the chant. Each of these activities is traditionally performed by a human monk who performs a short recitation of sutras [9], at a cost considerably greater than the proposed charge for hiring out Pepper [12].

There are both similarities and differences between the way CARL and Pepper manifest the [Human–Robot–Funeral] relation. In the Human–[CARL–Funeral] relation, the funeral is only manifest to the human driver through the performance of the robot. No robot, no funeral for the physically absent driver. Similarly, in the Mourner–[Pepper–Funeral] relation, the funeral only exists as a funeral through the performance of Pepper as a monk. However, the [Human–Robot]–Funeral relation is somewhat different in the two cases. In the case of CARL, human–robot hybridity is quite direct and occurs in real-time. The human commands and controls some aspects of the robot's behaviour in an immediate way by moving a mouse, clicking on interface buttons, speaking into a microphone, selecting from menu items and so on. And because they comprise an articulated cybernetic system, CARL also controls some aspects of the human's behaviour, by commanding the human to move a mouse, speak into a microphone and so on, as a condition of forming a [Human–Robot–Funeral] relation. Similarly, from the perspective of mourners, the [Human Driver–CARL] relation is directly observed as it unfolds in real-time. In the case of Pepper, however, the [Human Driver–Pepper]–Funeral relation occurs at a greater distance. The "drivers" of Pepper—that is, the humans who programmed Pepper's performance as an officiating Buddhist monk—are distant in both time and space, although they are occasionally required on-site to troubleshoot the system. From the perspective of these humans (the programmers), the [Pepper–Funeral] hybrid is also very distant in time and space, and as evidence of this distance, there is every chance for the service to go wrong or fall short of human expectations (for example, Pepper is prone to overheating [9]). The mourners encounter the [Pepper–Funeral] relation directly, in the same way as mourners encountering a [CARL–Funeral] relation, but unlike the CARL case, the lack of interaction between mourners and Pepper at the Buddhist ritual means that there is no direct [Human–Pepper] relation there.

C. AIBO: Robot as Corpse



Fig. 3 A mass funeral for AIBO robots

A still more remarkable example of a Human–[Robot–Funeral] relation was evident in May 2018 at Kōfukuji, a 450-year-old Buddhist temple located in Chiba, Japan, where a memorial service for over one hundred companion-type robots, known as AIBO, was held [14].

AIBO is a robot that was designed in Sony's "Digital Creatures" lab and was manufactured and marketed from 1999 to 2006. The most popular AIBO took the form of a puppy, but others were made to resemble lion cubs, and like Pepper,

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were intentionally cute. They were essentially companion robots, able to respond to about 100 voice commands, communicate in a tonal "language" and in later models through speech, through movement and gesture and through LED display, and possessed a sensorium that functioned through cameras, microphones, range-finders, touch-sensors, heat sensors, accelerometers, and vibration sensors. AIBO won many design awards, and for a time was a very popular consumer item: 150,000 units were sold overall, and 3,000 units in a limited edition model released in November 1999 all sold within 17 seconds of launch [13]. AIBO was not a sustainable commercial success, however, and its slow death was initiated in 2014 when Sony ceased producing replacement parts and software updates for the early models; although in November 2017, Sony announced that AIBO would return with a new model that would be capable of forming an emotional bond with users [14].

Much can be said about the [Human–AIBO–Companionship] relation. In the case of companion robots like AIBO, intimate links formed between the human owners and companion robot emerge as the robot adapts to its environment, the humans train the robot, and the robot trains the humans. Here, however, we focus on the [Human–AIBO–Funeral] relation.

In 2015 Bungen Oi, head priest of Kōfuku-ji, a Buddhist temple in Isumi, agreed to conduct a funeral for about 17 AIBOs that were "organ donors": they had sacrificed their bodies to provide spare parts in order to keep other AIBOs alive. Since then, several funerals have been conducted for AIBOs, and the most recent, in April 2018, brought the total number of mourned dead robots to about 800 [13, 14]. In most respects, the AIBO funerals followed the rituals of other Buddhist memorial services in Japan, with human monastics reciting sutras, offering fruit and incense, and conducting ritual cleansing. The most recent ceremony departed from tradition, however, when the head priest deployed another, later-generation robot made by Sony to participate in the ceremony and chant sutras for its deceased robotic kin.

Where robots are performing funeral rites for other robots, a human monopoly on the funeral service in the form [Human–Funeral] must surely be brought into question. In this case, the Human–[Robot–Funeral] relation becomes a Robot–[Robot–Funeral] relation, and the [Human–Robot]–Funeral relation becomes a [Robot–Robot]–Funeral relation. In both forms, the robots are in relation, and human participation is reduced to observation.

In either case, robots are far more than tools or prostheses for human participation in funerals. Students of cybernetics will not be taken aback by this move to erase an inherent and in-principle boundary between a human way of being in the world and a non-human way of being in the world, emphasising a capacity for a hybrid relation between actors of all kinds.

III. CONCLUSION

By exemplifying the generalised [I–Technology]–World relation as a specified [Human–Robot]–Funeral relation, this paper has described the construction and performance of the human-robot in the funeral as a cybernetic hybrid. The analysis has thereby decentred the funeral as an exclusively human performance and as an exclusively human experience, instead identifying the funeral as a potentially cybernetic system. Indeed, consistent with the universal applicability of cybernetic principles (the primacy of information flows, feedback, self-governing systems and so on), such a cybernetic system embraces all Human–Technology–Funeral relations, not just those involving robots.

CARL performed as a component in a hybrid system to the extent that it had use-value and provided utility for humans attending funerals. Pepper performed as a component in a hybrid system to the extent that it was programmed by humans, and to the extent that its performance administering a Buddhist ritual is accepted as authentic by the human congregation (and perhaps the dead as well, see [9]). In each case, humans are central in the system, and through utility in the case of CARL and performance in the case of Pepper, the robots are integral to human–funeral relations. The third case of robots as *subjects* of funeral rituals is a much more radical direct challenge to humans' self-proclaimed exceptional ontology. Human exceptionalism has been challenged before, by Copernicus, Darwin and Freud, and more recently by machines [15]. Yet, as cybernetically-assembled participants and subjects of funeral rituals, robots are positioned in relation to ourselves and in relation to one another as beings with much more than use-value, enacting ontological properties and existential relations.

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