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Automated graves: The precarity and prosthetics of caring for the dead in Japan

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Abstract
Once dependent on family to bury and memorialize the dead, caring for the deceased has become increasingly precarious in the wake of a decreasing and aging population, a trend towards single households, and downsizing of social relationality—including the temple parishioner system once key in mortuary rituals. In the new "ending" marketplace emerging today to help Japanese manage this precarity, automated graves offer customers a convenient burial spot in an urban ossuary where ashes, interred in a deposit box, are automatically transferred to a grave upon visitation. Based on ethnographic fieldwork, the article examines the just-in-time delivery system at work in automated graves, arguing that the mechanism serves as a social prosthesis, propping up the allure of social caring for the dead, even for those whose ashes are never visited by human relations. With over 30 such institutions now operating in Japan, automated graves are a sign of changing sociality between the living and the dead.

Keywords
death, Japan, mortuary, singleness, sociality, technology

On a warm summer evening, I meet two Japanese friends for a drink. One, having come from her office, has stopped en route to pay respects to an aunt and uncle interred nearby. As both were single and had issues with the family over being buried in the family plot, they made plans ahead of time to be placed in a high-rise columbarium. She visits them once or twice a year and always like this: when she has another appointment in the area and has a few minutes to spare. Laughing, the other friend says she is considering the

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same arrangement for herself. Single as well, with parents now dead and an older sister who is likely to pre-decease her, she doesn't relish the idea of entering the family grave as there would be no one tending it as she does now. Going there once or possibly twice a year, sometimes with her sister, they bring flowers and incense, sweep the grave and splash water on the stones. But once she is gone, the grave will fall into disarray: an eyesore for others passing through the cemetery with no one coming to visit her. Rather than this, which makes her sad, far better to be interred in a columbarium where, for the price paid ahead of time, she would be amidst beautiful facilities kept tidy and neat. And, even if no one individually visits her, the thought doesn't bother her. At a dinner party the following summer, the conversation of new-style columbaria comes up again and a man, in his early 60s, says that this suits him to a T. Single with no interest in entering the family grave in the countryside, he has already signed up for one. He likes the feel of the place, finds it convenient and well run, and if a friend now and then stops by to pay their respects—or even if not—this seems like a good final destination. Later the same summer, I'm on-site with a clean-up crew handling the remains of what was a case of lonely death. The estranged brother of the deceased is on the premises and he is adamant about not wanting any personal belongings. When I ask if his brother is to be buried somewhere, he says, yes, he's already there: interred in a high-rise columbarium nearby. Not, I take it from his comments, a place he ever intends to visit.

The issue of changing styles and conditions for interment and care for the deceased in 21st-century Japan is what I address in this article. Specifically, I take on what I call the precarity today of what once was normative if by no means available to everyone: burial in the patrilineal family grave typically linked to the Buddhist temple where a family had been tied, for generations, as parishioners. Sutured to a genealogical principle of belonging that made the family system (*ie*) the social, legal, and political unit linking patriarchy within the household to national(ist) allegiance to emperor, all of this was officially dislodged following the war with the implementation of the democratic constitution in 1948. Making the grave now not the place to hold memorial rituals (*kuyō*) for ancestors but the place where the individual eternally rests in peace, the new civil code accompanied major sociological shifts: urban migration, downsizing of the family, a move away from agriculture to a wage-labor workforce (Mori, 2014). As more and more Japanese moved to the cities and became worker citizens, producing and consuming as post-industrial subjects, sociality became more concentrated around the nuclear family and "my home." And yet, despite these new lifestyle alignments, allegiance to the pre-war *ie* system has persisted in various real and ideological ways, including how people get buried and tend to the dead. It remains a stipulation in many cemeteries, for example, that the deceased has a successor who will pay maintenance fees and tend to the grave. Burial along familial lines, then, remains a conventional norm even when it no longer remains ideal, desired, or even available for an increasing number of Japanese. This is the tension I explore in this article. What, in the face of the family-based mortuary model coming undone (alongside an aging population, decrease in rates of marriage and childbirth, an increase of single Japanese living and dying alone, depopulation of the countryside, weakening of the family and parishioner system, economic decline, desire to reduce mortuary expenditures) (Shirahase, 2015), is coming to take its place? I am particularly interested here in the sociality of the grave where, following in the tradition of

sociologist Emile Durkheim (1965 [c1915]), I conceptualize the sacred as ties made by and for the individual with others that continue beyond the here and now. Finding a place for the dead to dwell amid the living and be attended by them both honors the deceased and confirms their “humanity”—what Thomas Laqueur (2015), in his history of *The Work of the Dead*, has said is a universal of all human societies across time.

Tending to the dead over time by designated others has long been customary in Japan. Calling this a “practice of concern” that involves a hands-on tending to the grave (on ritualized occasions over a course of 33 years) and at the household shrine (subsumed into the rhythms and space of the domestic everyday), anthropologist John Traphagan (2004) considers this more important than anything religiously doctrinaire for most Japanese regarding the management of the dead (which is the primary, or only, contact many have with Buddhism—the “religion of death” in a country where Japanese famously denounce being religious at all). This is where precarity of care arises today (Allison, 2013): from a scarcity of others to do the work of burying and memorializing the dead that the deceased can’t do (for) themselves. Religious scholar Kenji Mori calls this a crisis situation of the “non-existent other” (*tasha no fuzai*) (Mori, 2014: 152) as mortuary rituals get “emptied out” when the others who once managed these rituals no longer do so or no longer exist. Among other effects, this has led to a rise in the number of Japanese dying alone with bodies discovered sometimes months after the fact: a phenomenon called “lonely or solitary” death that is also a symptom of what some say is an erosion overall of the social in Japan’s “disconnected society” (*muen shakai*) today. But, according to sociologist Yoko Nagae, the problem in burial is more one of time, and of space: the demand that intimate others tend vigilantly to their deceased for such a long span of time (an eternity when ancestors are involved) at a permanent spot (that may be remote after families move away) unduly burdens them, as well as the land itself, particularly in the cities where land is scarce (Tsukamoto, 2019). On all these fronts—caregiving by others beyond death at a localizable site—a range of new products and services are being marketed today that, like the high-rise columbarium, redesign the sociality of managing the dead. In doing so, they also redefine the social parameters that pertained in operating the ancestral grave: one organized on a vertical principle of hierarchy, patriarchy, and property in which one belonged (or was excluded) on the basis of positionality in a patrilineal line.

How is sociality being reshaped and restaged in new designs given the dead in Japan today? I examine this through one variant of high-rise columbaria where remains, kept in a warehouse on one side, are delivered automatically to a time-share grave on the other side for viewing if or when visitors come to pay their respects. Built for convenience, in terms of both time and of space, these automated-style columbaria can hold thousands of remains and are far quicker and easier to visit than an ancestral grave in the countryside. Less expensive than an in-the-ground plot with gravestone, they are also much more accessible to enter: anyone who pays the entrance fees can be interred, independent of whether or not they have a successor, are parishioners (if the grave is part of a temple), or are Buddhist. Most also offer the additional service of “eternal memorial” (*eitaikuyō*) to be performed by the priest on staff: which is particularly welcome for those without family who would otherwise have no one to perform this for them after death. Automated graves began to appear in the mid 1990s: what Urui and colleagues—to date the only

scholars to carry out an ethnographic study of automatic conveyor-belt columbaria—call "a mixture of a gravesite, a luxury hotel, and a goods distribution warehouse" (Urui et al., 2019: 748). In this very description, one gets a sense of the confusions and contradictions involved. Are the dead here humans or things, attended to by warehouse workers or service attendants, treated as sacred or mere "goods"? And what is the role played by visitation when, set up for speeded up delivery of ashes to grave, the system neither requires, nor perhaps encourages, visits by humans at all? This is the tension I explore in my own contribution to this research on automated columbaria, which I intend to be something of a thought experiment. Based on visits to two automated graves in Tokyo and interviews there with staff members, I draw upon five summers of ethnographic research on new death practices in Japan more broadly to consider the following: what if the technology of automation in automated graves is not merely abetting, or supplementing, but actually standing in for the sociality of caring for the dead? Designed to enable and also to mimic movement that is so essential to the ritual exchanges, gift-givings, and regimens of care at work in any kind of sociality, including caring for the dead (Durkheim, 1965 [c1915]), automated graves are all ready to go: open seven days a week, 365 days a year, so visiting the grave can happen anytime. But what if it doesn't? Is the automated columbarium doing work, even social work, all by itself? And if so, might that mean that sociality itself is becoming technologized?

This is the thesis I consider using the concept of the prosthesis: a device, external or implanted, that substitutes for or supplements a missing or defective part of the body. The automated grave works as a social prosthesis, I will argue, performing Buddhist memorial rituals in place of family for those who lack the kin to do so, but also by simply instantiating the grave system itself with its gears turning *as if* for visitation even when that doesn't literally take place. Stretching different temporalities—rooted in a mortuary system from the past, moving towards something different in the future—this is a treatment of the dead in the midst of becoming. It echoes what Peter Boxall (2020) has said about making face prostheses that struggle over either reproducing a visage now lost or crafting another, familiar but new. The task, as he says of the prosthetic surgeon, is to produce a living face: to animate the wearer by bringing her into a relation with moving time, with "time still to come." Animation, in the context of the automated grave, is keeping the dead alive in some sense of the social, but perhaps a very altered and changed one. Precisely how this works, not only for those who are buried there, but also for Japan at a moment of shrinking sociality and anxieties over abandoning the dead, is what I undertake to explore in this article.

A visit to an automated columbarium

First, an introduction to an automated-style columbarium, based on my own visit to Sennichidani Jōen in Tokyo. Out from the train station, down a hill, traffic bellowing from the highway, construction everywhere; the building is barely noticeable. I can't imagine this is the place. But a kindly woman assures me it is. And up close, it augurs another world. There is a sloping roof, slanted low with slate tiles, and a front facade of interspliced wood and glass strips with plaques on either side of the door—Sennichidani Jōen and Ichigyōin (the name of the temple). Inside, the elegance continues. The walls

are covered in handmade paper from Nepal, the carpet bubbles with small pebbles as if a stream, and the entire interior is built with hundred-year-old cedar trees from Yamaguchi Prefecture. The famous Japanese designer Kengo Kuma designed everything here and selected the materials. And it is as breathtaking as it is incongruent, this tranquil, high-end temple to the dead situated in the heart of urban traffic.

The lobby hosts small tables and chairs. A visitor enters here then taps their member's card on the monitor on the counter (the "prayers' buzzer"), which will direct them to a designated viewing booth on the second floor. If just there for a visit, they can immediately go up in the elevator, encountering no staff and possibly no one else, in the process. But in my own tour of the place, I am shown the main hall of the temple (*hondō*) on the first floor, which is beautifully spare with wooden floors, altar tables, seats, and the golden Buddhas that survived the Tokyo air raids during the war. The temple is Jōdo (Pure Land) Buddhist and Kuma was commissioned to design the "Sennichidani Jōen" project to commemorate the 400th anniversary of the temple.

But one need not be Buddhist to be interred here, I am told in my interview with Ueno-san, the director of Sennichidani Jōen, who works for Hasegawa, the conglomerate that manages it under the banner of the temple. As I know from other joint ventures, many Buddhist temples are in danger of shutting down these days due to loss of parishioners and the revenues they brought in, and are turning to innovative techniques in order to stay afloat. These include establishing the service of *eitaikuyō* (eternal memorial ritual) open to anyone who, for a fee, can be interred there as members and receive eternal *kuyō* from their Buddhist priests. The same is true of Sennichidani Jōen which, also offering *eitaikuyō*, advertises itself as a "peaceful, indoors, grave park."

Effusive about what Kuma has wrought here as a designer sanctuary for the dead, Ueno points out his handiwork in our tour. But even more of a source of pride to Ueno is the high-tech delivery system. Here, it only takes 40 seconds for remains to be transported from storage to the gravestone after triggering the system with the buzzer downstairs. Urns are put into black storage boxes (called *nōkotsu shūzō zushi*) stenciled with the family name on the outside and come in two sizes, large or small. For 900,000 yen (about $8,000), up to eight deceased can go into the larger container, but only if they fit. Efficiency reigns here too, as Ueno explains. Remains can be powdered and the amount reduced in order to accommodate more deceased. Plenty of ancestors could be included by keeping just a few of their ashes; an entire ancestral grave, he chuckles.

As a researcher, I have been generously allowed to see the warehouse though it is typically off-limits to visitors. Striding down the row of six graves on the second floor, Ueno opens the door at the end into what is a high-rise storage container. With its metallic rows, sub-divided into tiny units, this is the under-belly of the whole place, which operates using mechanical cranes and a conveyor-belt system (*konbeyabun*). On being asked to demonstrate, Ueno's assistant presses a buzzer on the wall thereby triggering a set of hydraulic arms that fetches the designated box, brings it four floors down, and inserts it into the back of the waiting gravestone where the engraved name of the deceased shows on the other side. Smoothly efficient but otherwise unremarkable, this is a warehouse like any other except for the human ashes it contains. But the appearance of this side is strikingly dissonant from the style of the rest of the place, which is the only part of the automated columbarium that most visitors will see. The row of glistening black

graves, each with fresh flowers in place, incense electronically burning, and wooden screens that can be pulled shut to assure privacy during visitation. It is here, 40 seconds after the prayers' buzzer has been triggered downstairs, that the remains of the deceased will be waiting in what becomes their temporary grave. To the right of the booth is an electronic display, a computer operating system where data of the departed loved one (photos, name and any personal data the family has inputted) can be called up on an interface. Personalized for the duration of the visit, the grave is made to feel special and is also kept immaculately glistening and clean. But once the visitation is done and the buzzer pressed, the grave once again is emptied, and readied for the next set of remains.

As Ueno tells me, Sennichidani is open 365 days a year, from 10 a.m. to 6 p.m. every day. Arranged for convenience, visitors can drop in at any time without calling ahead. And, as no flowers or incense need to be brought here, nor the grave tidied and cleaned up, visits tend to last only minutes. But *hakamairi* (grave visit) and *kuyō* (Buddhist memorial rites) in essence essentially still depend on human labor, Ueno explains. Given how conveniently arranged things are here, I wonder what this entails. Well, walking up the hill from the train station and making the effort in the first place, he suggests. But there is only one group visiting the day I am there, and no one at all at the other automated columbarium I visit. Yet in both cases, business is good with the clientele including parishioners with long-standing ties to the temple, but far more of the new-style users, who pay a one-off fee to be interred. And, rather than requiring a familial unit and successor to (financially and ritually) maintain the grave, as required by the family-grave system, the members' service is utilized by a range of customers: singles, married couples or others choosing simplicity in burial/visitation, and families seeking to move their ancestral grave here from the countryside.

Just-in-time delivery for the dead

Aring from the conditions in which people exist, technology comprises the tools deployed to better make life or to accommodate the dead. As Benjamin understood, technology enchants by slipping w-fangled inventions into already established conventions (Buck-Morss, 1989), thereby promoting change by mitigating the loss of what is being left behind. In doing so, technological design not only tweaks, but also remakes the world and the ways we inhabit it in a political ontology that brings forth new possibilities for what it means to be alive (or, alternatively, dead) (Escobar, 2018: x). As feminist theorists Berenice Fisher and Joan Tronto (1991) have put this, caring can ve viewed "as a species activity that includes everything we do to maintain, continue, and repair our 'world' so that we can live in it as well as possible. That world includes our bodies, our selves, and our environment, all of which we seek to interweave in a complex life-sustaining web" (Fisher and Tronto, 1991: 40). And, as extended by feminists like Maria Puig de la Bellacasa (2017), care is feeling and feeding the liveliness of all things, and also animating what otherwise becomes uncared for as inanimate or dead.

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Technological innovation led Japan on its path of recovery following the war. Out of the trauma of military defeat and devastation, Japan rebuilt itself by recalibrating national

strategies and strengths. Committed now to domestic production, the country focused on manufacturing and services geared to lifestyle: consumer electronics such as Mitsubishi televisions and Toyota automobiles. To fill the jobs concentrated in the cities, people flowed from the countryside in what was a huge urban migration. Leaving village society behind, city dwellers adopted new rhythms of work, now devoted to the company and to family life, shored up with industriousness on everyone's part. This output, based on the efforts of citizen-workers, relied upon both the individual and a nuclearized family (rather than an extended family as in the countryside). Rooted in a home run by a gendered division of labor (the woman running the home, the man bringing in the paycheck, and child(ren) studying hard to reproduce these roles), this also constituted a consumption unit filled with the latest domestic appliances.

A source of national pride, Japanese manufacturing catapulted gross national production to record highs in the 1970s, making Japan a global power and its economy the second largest in the world by the 1980s. Investing in new technology and management styles, Japanese industry became known both for the quality of their products and innovativeness of their production methods. First adopted by Toyota, "just-in-time" production (called Toyotism), was one of these. Updating Taylorism, deployed by Henry Ford to make car manufacturing as scientifically efficient as possible, Toyotism replaced Fordism's mass-scale production with a more flexible synching up between production and demand. Rather than storing raw materials ahead of time or stockpiling already-assembled cars, production waits for customer demand before the process begins. Reducing waste in terms of space, Toyotism also accelerates the time within production as well as the response time from suppliers to customers. By implementing a post-Fordist strategy of rotating workers and making them multiply skilled, Toyotism better responds to market shifts, enabling a business to repurpose and redesign its lines of manufacturing with relative ease. Considered a linchpin of Japan's "economic miracle," aspects of Toyotism became studied and adopted worldwide, including by many US automobile companies by the end of the 1980s.

Established in 1957, Daifuku is a material resources company that built its business on making conveyor belts for Toyota's just-in-time delivery system. By the 1990s, however, and in response to changing times including the bursting of the Bubble economy, triggering a nagging recession and industrial downturn, it innovated its operation. Now calling itself a "logistics solutions" company, it entered a new market: Japan's aging/dying population facing reduced social care to which Daifuku attempted to give a technological solution. In 1996 it designed the first mechanism implemented in Japan for automated columbaria. By retaining the conventional grave in form but circulating remains in and out on a just-in-time basis according to the demands of visitation, the number of graves needed (as well as the cost and labor involved to inter and visit the deceased) was significantly reduced. Built in conjunction with Banshyōji Temple as the first "automatic delivery style columbaria" (*jidō hansōshiki nōkotsudan*) in the country, there are now over 30 nationwide. The largest of these, an expansion of the one at Banshyōji Temple, houses the remains of 12,000 deceased. Interment within buildings is not new. Both outside and inside columbaria have long been part of cemeteries and an updated model, called "locker-style" (*ro-ka-shiki*), started to appear in urban centers in the late 1980s (Ukai, 2016). But in introducing the mechanics of just-in-time demand,

automated graves also implemented something different: a gap between two distinct states and statuses of dwelling (matter in a storage containers versus remains in graves visited by others) and a mechanism to bridge this, if only prosthetically.

The inspiration, as Daifuku lays out on its website, comes from current strains in the sociological landscape for the dead. As it states, there is a shortage of supply and land for cemeteries in Japan these days. But equally pressing are the challenges of visiting a grave, what is called *hakamairi* and should take place at least twice a year (on Obon and Ohigan) and on important anniversaries of death. Alongside keeping a Buddhist (or Shinto) shrine in one's home with a picture and *ihai* (memorial tablet) of the deceased given daily offerings, visitations to the grave (where the ashes are interred) are critical in the relations the living maintain with the dead. By maintaining the grave, and memorializing the dead with incense, flowers, and prayers (*kuyō*), the living are said to do something that both pleases the dead and helps them in their 33-year passage to the other world (at which point they become a Buddha, an ancestor, or both). And yet, with Japan's aging population, those of the generation most likely to visit graves are becoming less and less able to make what are often long, and expensive, journeys to ancestral graves (*bodaiji*) far away. Further, the system of burial and caring for the dead that relegates maintenance, memorial rites, even ownership of the deceased (and their grave) to the "ritual successor" who, by cultural logic (and law) should be the patrilineal offspring (Mori, 2014), is coming undone on many fronts. These include a weakening of the parishioner system that, with ties to the same temple that would be passed down from generation to generation, entail annual tithing and costly "offerings" for mortuary expenses that Japanese are less willing (or able) to pay these days in times of economic restraint. All of this is exacerbated by demographic trends; in Japan's high aging, "mass death" society, with more deaths than births every year, the overall population has been declining since 2008. With a decrease in the rates of both marriage and childbirth, and a rise of single households (a quarter overall, including for "high seniors" over the age of 75), more and more lack a successor (or possibly any kin) to handle their mortuary arrangements or care for their spirit upon death (Shirahase, 2015).

Of course, the succession principle has always exerted its own ideological format for belonging. Based on the primogeniture system, only first sons are allowed burial in the ancestral (*honke*) grave, leaving second and further sons to establish their own (*bunke*) graves. And, with its patriarchal logic, daughters are expected to marry and be buried in the graves of their husbands' families. Not only does this leave single and divorced women particularly at risk of "disconnection" (*muen*), as feminist Haruyo Inoue (2012) has pointed out, but it also positions women as hierarchically subordinate even in the grave. As she has discovered in her alternative burial practice, some married women choose to be buried in their own plots rather than enter those of their husbands' families so as to be liberated from serving a husband or mother-in-law in the grave. She calls this "post-death divorce" (*shigo rikon*). But here, too, the issue still remains of care: who will tend to the dead in the absence of a designated chief mourner, successor, or grave-attendant? This is the problem that the technology of just-in-time delivery system is meant to address. As Daifuku puts this on its website, the trend in Japan these days is "graves without a successor" (*ohaka no kieshōsha ga inai*) by which it means stranded dead

without a caregiver. This can arise, on the one hand, from the dying out or moving away of a family line, which leaves the ancestral grave now untended with annual maintenance fees unpaid. Such "empty graves" now dot the countryside. On the other hand, the absence of a successor can also keep a deceased from having a grave in the first place: the situation of what is a growing phenomenon particularly, if not only, in the cities of "lonely or solitary death" (*kodokushi, koritsushi*). While 80% of such cases are un(der) employed men, in their 50s or 60s, and long estranged from family, the possibility that any single dweller could die alone leaving a body that goes undiscovered for up to several months is a specter gripping the national imaginary these days (Danely, 2019). As reflected in the attention given such stories in the mass media as well, this is a state that conjures up considerable anxiety: a sign of what Shunsuke Nozawa (2015) calls "troubled sociality." Particularly when the fear is that, without someone providing memorial rites (*kuyō*) or care, the spirit will be deprived of a peaceful resting place and destined to wander endlessly as a disconnected soul (*muenbotoke*). As is well known, this is what happens to those who die without plans made for burial and without anyone to claim their remains or accept responsibility for making mortuary arrangements: remains that wind up, collectively and anonymously, intermixed in the local cemetery's plot for the disconnected (*muenbo*). This is also the fate of the remains left in empty ancestral graves. Once, a grave has been neglected, with fees in arrears for a certain period of time (as little as one year or as much as five), the cemetery has the right to remove the remains and rebury them in a collective grave for the disconnected.

Automated columbaria offer a system of interment that is highly compacted in every sense, and built to respond to the needs and lifestyles of contemporary Japanese. Making an efficient usage of space, they tend to be close to subway stations and designed to minimize the time and fuss needed for visiting a grave. According to the head priest of a Jōdo Shinshu temple that built a six-floor urban columbarium in densely trafficked Shinjuku in 2014: "We'd like people to come here as part of the light feeling of shopping in Shinjuku rather than for the express purpose of visiting the grave" (quoted in Ukai, 2016: 96). By subsuming grave visitation into such everyday routines as daily consumerism, the hope here is to stimulate communication as much among the living as between the living and the dead: an objective Ueno-san mentioned to me as well. In contrast to the emptying of the landscape as symbolized by the rising numbers of abandoned houses, graves, and lonely dead, the new high-rise columbarium becomes the sign of social redesign. The dead, rather than neglected, are to be incorporated into a lifestyle more personal, portable, and relaxed. And, in keeping with the trendiness of Japanese consumerism, the automated grave is crafted to be stylish. Not only are the premises aesthetically state-of-the-art, but the graves are of the highest quality, and kept both glistening clean and well-appointed with flowers and incense just as dutiful family members would maintain them. Further, for everyone interred there, the price includes the service of having Buddhist memorial rites (*kuyō*) conducted by the staff priest which, as *eitaikuyō* (eternal memorial rites), compensates for those lacking kin to do this for them. Thus, all those dwelling here are assured of these basics: receiving memorial rites, never being disposed of, and having their grave (albeit, just a time-share) kept perpetually clean. An automatic columbarium thus promises eternal care no what matter one's ties (or lack thereof) to anyone else post-death.

Redesigning care of the dead with prosthetic sociality

In 1996, the Japanese toy company Bandai released *Tamagotchi*: an egg-shaped toy on a key holder with a liquid crystal screen used to raise virtual pets as a portable game. A global hit, it was designed by a young engineer who, moved by a commercial where a boy tries to pack his turtle in a suitcase for an upcoming trip, was inspired to make a more portable pet. Much like Akio Morita, whose invention of the Sony Walkman arose from his desire to incorporate music-listening into the everyday walk acts by wiring sound to accompany the moving body, Akihiro Yokoi aimed to reshape the conduit for raising a pet into a digital, handheld device. Carried everywhere, pulled out whenever one wanted, Tamagotchi served as both fashion accessory and game by which a pet was hatched and kept alive through continual caregiving (feeding, playing with, cleaning up its poop). Fans reported feeling intensely attached to these critters, finding the sensation of being relied upon uncannily like the bond between human and animal-pet. For the sense of presence it generated, commentators also praised Tamagotchi for its socially palliative effects/affects. Mothers of lonely children, and isolated adults as well, called this a companion. What was said of the Walkman pertained here too: it "works not as a prolongation of the body . . . but as a built-in part or, because of its intimacy, as an intrusion-like prosthesis" (Tōru and Hosokawa, 1988: 176). And, as I too came to see in my research on the subject, Tamagotchi acts as a social prosthesis by at once mimicking but also transforming an interaction between self and other. The game feels social, but remains dictated by the self: the one who starts, stops, resets the game at will. "Sociality" of this kind is something akin to, but decidedly different from, face-to-face companionship as I argued in my earlier work (Allison, 2006).

So, too, as I propose here, prosthetic sociality has entered into the new market for deathcare in Japan (*shūkatsu*). It does so by standing in for, but also altering, the model of sociality that once was conventional, and is now fading, of a family's ritualistic care regime for the dead: practices of concern that were at once intimate and long-standing. Stretching over time and to others outside the moment of death, the singularity of the deceased and their organic remains is what conjures up the movement I take to be essential to sociality. This prevents a stasis that would be asocial: relegating the dead to less human than thing which is the specter of abandoned graves and disconnected souls. On all three of these fronts—care by others, lasting beyond death, at a localizable site—a range of new products and services is being marketed today that, like the automated grave, redesign the sociality of managing the dead along what could be considered prosthetic dimensions.

One trend is offering surrogates, a prosthesis of sorts, to perform the caregiving in place of those once expected to do so: family members or the priest from the temple where one's family has been parishioners for generations. These range from paying service workers to maintain an ancestral plot (by visiting, tidying, and refreshing flowers and incense) in place of family members too busy or distant to do so to "rental" priests who can now be contracted on Amazon, for as little as 35,000 yen ($325), to perform mortuary sutras as the parish priest once did for parishioners (AERA, 2017; Ukai, 2016). While transactional care is hardly new, in the 21st century, the forms it now takes are ever more pitched towards convenience, speed, and automation. For example, remains

can now be sent directly from a crematorium to burial through the mail, where a priest, commissioned online, could be waiting to give memorial rites: displacing the human hands needed, twice over. Not coincidentally, the Amazon service is called “priest by post” (*obōsanben*), and includes priests taking cellphones with them to record or Facetime the rituals so those who hired them can be virtually present. And, while not yet on the market, the possibility that a machine could carry out this work has also been raised, with a test pilot carried out using Pepper, Softbank’s humanoid robot that performed mortuary sutras at ENDEX, the annual convention for those in the ending business,[1] in summer 2017. Given its popular reception there and the fact that robots have figured otherwise in the death market—with Sony’s AIBO (a companion robot) now being given funerals at a Buddhist temple in Chiba—one can safely assume, I would say, that robotics will be playing a role in post-death management in Japan’s future.

Another trend in the ending marketplace today is, rather than outsourcing care to a stand-in, remaking the dimensions of both space and time that go along with a permanent resting place, aka a columbarium or grave. Scattering ashes (*sankotsu*), for example, dispenses with retaining ashes altogether by dispersing them over mountains or at sea. But it is often accompanied by another practice, retaining a small amount of ash in portable memorial goods (*temoto kuyō hin*), that are kept “close at hand” (*temoto*). Not unlike Tamagotchi, these can be worn or carried on the body, doubling as a fashion accessory and a personal portal for continual interaction with the deceased. One brochure for this calls it a device that ensures one is never lonely: a sociality with the dead that is also a pendant worn around one’s neck. Another new product is a mini-sized grave and stone pedestal downsized to fit a small home, or even a room. Called a “home grave” (*takubo*) and affordably priced, this moves interment inside the home, where visiting the grave can take place virtually anytime. One sees new fashions as well in the household shrine that has been a site not only for honoring the dead but also for communing with them on a daily basis. Fenestra, a “digital Butsudan,” invented by engineer/anthropologists Urui and Okude (2010), for example, utilizes a disc-play photo frame by which images of the deceased are triggered by the attached candle holder, thereby inviting the living into a continued interactive relationship with the dead. It is also portable and compact: suitable for a family “but also younger people living alone, unmarried women, anyone.”

In the case of automated-style delivery columbaria, one sees aspects of both the above trends: a reconfiguring of the temporal and spatial alignment of the grave, as well as a service that facilitates the social performance of visiting and memorializing the dead. By rotating the dead in and out of a small number of graves, and by keeping them otherwise on the shelf, these facilities can hold a high volume of deceased yet also offer the illusion of a beautifully appointed “gravepark.” Its just-in-time technology makes for something both efficient and ready-to-go; supremely convenient for those using it, including families who have moved ancestral graves here from the countryside to prevent their plots from emptying out and leaving ancestors stranded as wandering ghosts. As I was told by the staff I interviewed at the two automated columbaria I visited and as Urui et al. (2018) report from the ethnographic study of the subject, some of the deceased interred in their facilities have visitors who come often and stay for hours. But, as the latter report and I have learned in my fieldwork as well, the opposite is also true: there are dead who are interred here then never visited at all. Yet families, as well as the to-be-deceased

themselves who increasingly are the ones making their (own) mortuary arrangements, including to be interred at a high-rise columbarium, feel "reassured" (*anshin*)—as I heard time and time again in the course of my research—when arranging for a final resting place that gives a semblance of being well run, lasting into the near future, and providing memorial rites. The automated grave also projects a semblance of sociality. Set up *as if* for visitation (even if that were to never occur), it conjures up a sense of security and peace of mind for those anticipating the future anterior when they will be dead. Further, everyone is provided with memorial rites here with a temporality that promises to be "eternal," just what a family would accord ancestors. And, even if only sitting in a box in the warehouse, the deceased's name is written on the front sparing them the fate of disconnected dead (*muenbotoke*) in a cemetery.

In what is now a booming marketplace of initiatives and businesses devoted to management of death (*shūkatsu*), the precarity of lonely death or facing pre- or post-death as socially single is continually dangled as goad to making arrangements while still alive (*seizen seiri*). In workshop after workshop I have attended on everything from inheritance to wills, conducted in community centers, funeral facilities, and coffeeshops, the emphasis is on preparing for the end in the present. Led, for example, by one peppy 40-year-old who identified as a bachelor with "no one else to depend upon" (*miyoriga nai*), as he assumed was true of most of us in the audience, the message of these workshops is temporally mixed; aimed at death, it is about making plans now. In recognizing how widespread anxiety is about how/where/whether we'll all have a final resting place at death, the recommendation made is to handle these arrangements right away in order to enjoy life more fully until death. Particularly for those who truly have "no one else to depend upon," the incentive is to handle these preparations oneself, for oneself. But even for those who do have a successor, or partner, or someone else they may be able to rely upon, increasingly the trend these days is for mortuary plans to be made by the to-be-deceased: the height of a neoliberal ethos of self-responsibility (and personal choice) now extends from life unto death. And care, even when it has the aura of coming from another (as in being given memorial rites after death), is being orchestrated here by the self. Self-sociality.

The self becomes both subject and object: making plans by, and for, the self. But when this entails making arrangements for dwelling-at-death, one can only do this in an anticipatory timeframe, by doing it while still alive. Doing in the present, for the future, by engineering social acts involving movement with others. This is a major appeal, I argue, for the automated-style delivery columbarium where, rather than relying on someone else to fulfill the duty of caring for oneself as dead or falling prey to becoming a disconnected soul, one can make arrangements for and by oneself in advance. Just-in-time, as it were, with graves set up for visitation *as if* intimate others will be giving one attendance (even if they never materialize). A potential that one will be socially cared for once dead that reassures the to-be-deceased in the present. Something similar was related to me by a number of Tamagotchi fans about the prosthetic potential of their toys as friends. As one girl fondly related, even when her Tamagotchi wasn't turned on, she would recall the last pet she had "hatched" and know that starting another one was just at her fingertips. Meanwhile, the toy had reverted to an inanimate thing, shoved to the back of a drawer. But the animism it could generate, with a pet that simulated life, made her feel

both happy and never entirely alone. This tallies with what Peter Boxall says of the prosthesis that, rather than a portrait that preserves a person at a set moment of time, it is a "conduit that brings its user into a relation with moving time" (2020: x). It is this movement, a circulation between the living and dead that moves the latter beyond the biological/singular individual into a temporality and world of others beyond, that animates the prosthetic sociality I have been excavating in this article.

Conclusion

Technology figures variously in relations between the living and the dead. And it both compensates for humans, and shifts the latter in various ways when assigned the work of caring for the dead/remains. As with the Tamagotchi that is animated *as if* alive while a player expends labor but converts to a mere thing once the interaction stops, this also raises questions about the parameters of life and the dynamics of interpersonal interaction. *Can* a machine ever stand in for the sociality of human–human interactions and, even if so, what are the ethics, politics, and ontological implications for doing so? That children came to think of their personal Tamagotchi as entities they could bring to life or kill at will (as in the deathsites that some kids posted for their pets online) was one of the critiques raised against them: that the toy was desensitizing children to the humanity of life (Allison, 2006).

But there is a different way of reading the ontological implications of such technological designs: that they offer a semblance of humanity to those already, or at risk of being, treated as inanimate for lack of social recognition or care. This is the argument I make for the automated grave. That, due to a model of mortuary care dependent on intimate others that more and more Japanese are precariously without, there is a gap in care of the dead that technology aims to address. It does so with what I am calling a social prosthesis that is also quite provisional, the sign of something in the state of becoming-otherwise that reflects the particular temporality of the times. Like Michael Fisch who, in his research on Tokyo's commuter train system, also discovered a gap (between undersupply of trains and overdemand of commuters, meaning that trains continually run overcapacity), I see the "techno-social apparatus" constituted by automated graves as, at once, anticipating and managing precarity. As Fisch describes the schematized program utilized by the train system, it is an "ontological entanglement where processes human and machine intersect with the time and space of institutionalized regularities to produce provisionally stable techno-social environment of the everyday" (Fisch, 2018: 5). So too, I would argue, does the design of automated graves work to juggle the disconnect between, in this case, undersupply of care providers and overdemand of dead in need of such care. By erecting a mechanical system to simulate/facilitate visitation by intimates, the columbarium orchestrates a prosthetics of sociality.

This design, however, also shifts the calculus of what it means to be human post-death: pushing this in different directions by borrowing from, but redesigning, those conventions and practices once counted on for caring for the dead. No longer demanding a successor or kin to give care, or a grave-in-the-ground to be tended to for 33 years, or even that the deceased assume a discrete individuality,[2] the dead today are being variously reconceptualized, as is the sociality entwining them, by new mortuary designs in

Japan such as the automated grave. While feeding a booming marketplace, this impulse is also being fed by something else: a desire for not mere management of the remains of the dead but for something that also accords a semblance of humanity to the deceased in the process. The automated delivery system columbarium is one model for doing this.

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Notes

1. This is called *shūkatsu* in Japanese which translates as ‘ending activity/marketplace’.
2. Today, intermixing ashes with others in collective graves or interring ashes directly into the earth (called *jumokusō*, or tree burial) are becoming more acceptable customs and practices (see Boret, 2014).

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