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To cite this article: James Wright (2018) Tactile care, mechanical Hugs: Japanese caregivers and robotic lifting devices, *Asian Anthropology*, 17:1, 24-39, DOI: [10.1080/1683478X.2017.1406576](https://doi.org/10.1080/1683478X.2017.1406576)

To link to this article: <https://doi.org/10.1080/1683478X.2017.1406576>



Published online: 04 Jan 2018.



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Tactile care, mechanical Hugs: Japanese caregivers and robotic lifting devices

James Wright

Hong Kong Institute for the Humanities and Social Sciences, University of Hong Kong, Pokfulam, Hong Kong

ABSTRACT

This article explores the attempted introduction of a lifting robot called “Hug” into an elderly care home in Japan. As demand for institutional elderly care in Japan escalates due to population aging and a move away from familial care, the shortage of professional care staff is also intensifying. Attributing this shortage partly to carers’ endemic back pain, the Japanese government and corporations have poured resources into developing high-tech robotic lifting devices. Yet contrary to their expectation, many Japanese caregivers seem reluctant or even hostile to the idea of using such devices. I use fieldwork data to explore why this is the case, and find that lifting is situated within a practice of tactile, joking care aimed at ensuring *anshin* (安心; “peace of mind”) for both care staff and residents. Mechanical replacement of this tactile connection was strongly resisted as “disrespectful” by care staff.

KEYWORDS

Care; robots; Japan; touch

Introduction

At 6am toward the end of the night shift, in a public elderly nursing home¹ in Kanagawa prefecture in Japan, Tanaka, a gregarious male carer² in his early thirties, woke and greeted Mrs. Yamamoto (who was lying down in her bed) by rubbing her arms and cheeks, and telling a joke. He pulled her empty wheelchair over, and positioned it next to the bed. He then put one arm around her neck and shoulder and the other under her knees, and raised her into an upright sitting position at the edge of the bed. He remarked that elderly bodies are stiff and bent, but also very fragile, so he needed to shift Mrs. Yamamoto to her side first as she could not straighten her body. He then asked her to hold onto him, and putting both arms around her, bent his knees, lifted her up and swiveled to maneuver her into the wheelchair in one fluid motion. After this, he removed her outer shirt and replaced it with a fresh cardigan, and then put on her socks and slippers. Throughout this encounter, he talked and joked with Mrs. Yamamoto – he claimed that residents love his black humor and crude jokes, and indeed Mrs. Yamamoto was no exception, chuckling throughout their interaction.

Every day in elderly care homes across Japan, carers manually lift the cared-for elderly in a manner similar to that described above. Lifting³ is a mundane activity that epitomizes the “burden” (*futan*; 負担) of care in contemporary Japanese society, placing its weight squarely

on the backs of caregivers, and performing both the literal and metaphorical closeness and dependence of the care relationship. It represents the sharp end of the care profession, and endemic back pain, reported by a majority of carers and directly attributed to lifting,⁴ is one of the main reasons for the job's reputation as “3 K” (*kitsui, kitanai, kiken*; きつい・汚い・危険; or “difficult, dirty, and dangerous”). As a result, back pain due to lifting has been identified as a major contributing factor to the large and increasing shortage of care workers in Japan.⁵

Unlike several other post-industrial countries including Australia, New Zealand, the UK, and the US, Japan lacks a nationwide “safe patient handling”⁶ policy, which is intended to prevent the need for care staff to lift care recipients manually, by implementing mechanical lifting equipment and procedures for its use. Prof. Matsumoto Yoshio, the head of a robotics research group at AIST⁷ in charge of a major national robotic care project (discussed below), states that:

It's strange that there is some regulation [that] we cannot lift more than thirty kilograms' weight in the Japanese working environment, but it is not clear that humans are one of the objects that it applies to. Originally it was a regulation for laborers working at ports or in mining ... But it's obvious that most people are heavier than thirty kilograms even in Japan. But so far, the government doesn't really clearly say that it's in regulation or not ... Injury is not really regarded as an accident in the care workplace in Japan. Many people suffer from back injuries. They complain but just ... [laughs, shrugs shoulders]⁸

Some efforts have been made by public organizations to introduce occupational health guidelines related to manual lifting in care.⁹ However, rather than implementing a national safe patient handling policy using existing, relatively low-tech mechanical devices such as hoists, Japanese government action has instead focused on high-tech robots.

Across several different ministries, the government has spent over 15 years planning and funding large-scale public technology research projects and investing in the domestic service robotics industry (Wagner 2010), most notably in the ongoing ¥12.5bn (approx. US\$112 m) “Project for the development and promotion of the introduction of robot care devices” (*robottokaigokikikaihatsu, dounyuusokushinjigyou*; ロボット介護機器開発・導入促進事業), run by AIST under guidance from AMED¹⁰ from 2013–17. This substantial level of investment represents a significant governmental commitment to the transformation of care in Japan in a new technocratic configuration combining elements of welfare systems in Europe and North America with the efficiency of high-tech robotic technology used in Japanese factories and research institutes. Decisions to pursue policies promoting the development of robotic care devices appear to be driven by the dual imperatives of nurturing an industry targeting both the domestic market and international exports, based on Japan's existing research environment and engineering and manufacturing capabilities (Wagner 2010, 2013), and of maintaining and showcasing Japan's dominance in the field of service robotics, which is being increasingly threatened by China and South Korea.¹¹ The latter aim is particularly pertinent in the run-up to the international platform provided by the 2020 Tokyo Olympics. Both ambitions are demonstrated by the Japan-led development of an international standard for “personal care robots” (ISO 13482), which was implemented in 2014. This was accompanied by the construction of a large robot safety-testing center (the only one in the world at the time of writing) in Tsukuba designed to certify robotic care devices to this new standard. The global aspirations of this project are further signaled by the fact that it was initiated by METI (the Ministry of Economy, Trade and Industry), which oversees AIST – rather than, for example, the Ministry of Health, Labour and Welfare, which might be expected for a project

aimed at improving care. A 2015 national robot strategy document produced by the Headquarters for Japan's Economic Revitalization, headed by Prime Minister Abe, brings together some of these strands. It projects a sales target of ¥50 billion for nursing care robots by 2020, presents plans to encourage the widespread adoption of ISO 13482, and "[b]y using robots for moving the infirm, aim[s] to reduce caregivers' risks of suffering from lower-back pain to zero" (The Headquarters for Japan's Economic Revitalization's 2015, 89).

Japan's welfare system remains primarily "familialist" (Ochiai 2013), and is heavily reliant on informal female care labor. However, like other rapidly aging countries, intrafamilial care provision continues to diminish, despite state encouragement. Fewer women are willing to provide informal care to aging parents and parents-in-law, and more women spend a greater number of years in the formal workforce, while the state continues to expand both the quantity and variety of formal paid care (Campbell 1992; Ochiai 2013; Long 2012). A proliferation of high-tech robot care projects accompanies the development of a burgeoning market in private care products and services created by the implementation of the national Long Term Care Insurance (LTCI) system in 2000 (Long 2012). One of the goals of government and companies involved in developing robotic care products is to release such devices into this marketplace over the coming years.

By advancing high-tech robotic solutions to the seemingly technical problem of lifting, government technocrats also hope to encourage greater numbers of female and older carers into the formal care industry while facilitating informal familial care at home, thereby mitigating the ever-growing demand for institutionalization. After all, Japan is still known as the "robot kingdom" (Schodt 1988), and studies have indicated a relatively high level of "acceptance" of robots in Japan (Broadbent, Stafford, and MacDonald 2009), with industrial robots widely used in factories – so why should the field of care be any different?

"Robot"¹² lifting devices tend to be divided into two categories: wearable and non-wearable. Wearable devices are exemplified by machines like Cyberdyne's "HAL" (Hybrid Assistive Limb) exoskeleton, which is worn by carers and uses electrical motors to augment the weight that a user can normally lift. Other types of power suit use compressed air or elastic material to transfer loads from the lower back to the knees and thighs. Non-wearable devices include machines such as Fuji Machine Manufacturing's (henceforth "Fuji") "Hug," and "Robear," a product developed by the RIKEN research institute in association with the Sumitomo Riko Company, which both work by using robotic arms to lift users. Both categories of device are included in the national robot care project mentioned above, as well as in various prefectural subsidy schemes.

Yet these devices, far from being gratefully embraced by beleaguered caregivers as anticipated by government strategists and robotics engineers and researchers,¹³ have instead met with considerable, albeit tacit, resistance¹⁴ from carers and care home managers. Despite the recent proliferation of the types of lifting aids available (in addition to relatively low-tech and low-cost hoists which have been commercially available for decades), they are far from commercially successful and have so far failed to make a significant impact in Japanese elderly care. Yet, at the same time, other countries in Europe and North America have embraced lifting aids as integral to the implementation of safe patient handling policies. Indeed, even Japanese care homes which have robotic lifting devices or hoists rarely use them.¹⁵ There seems to be a disconnect between the techno-scientific understandings of care among robot engineers and government officials, and those of care workers at the

actual site (*genba*; 現場) of care – but what is the nature of this disconnect? Why does there seem to be so much resistance from carers to adopt these devices and save their backs?

In this article ethnographic data, collected over seven months of engagement with a Japanese care home which was introducing several robotic care devices, is used to argue that Japanese carers' current rejection of lifting technologies is not simply a result of Luddism, lack of education, resistance to change, or perceived inconvenience caused by using these devices – all of which were rationales provided to me by both carer and robotics engineer informants. Rather, there is something deeper at play which is rooted in carers' understandings and practices of institutional care, which becomes clearer through qualitative research.

Care technologies have started to receive increasing attention as part of the material culture of care and a greater emphasis on the body in social studies of aging (e.g. Long 2012; Mol, Moser, and Pols 2010; see also the 2015 special issue of *Anthropology and Aging* entitled "Aging the Technoscape"), with more research exploring elderly technology use and cyborgism (Loe 2010), and technologies of self-care (e.g. Mol 2008). However, the majority of such studies are based on research conducted in Europe and North America, and less attention has been focused on how these technologies mediate the relationship between carer and care recipient. This article aims to contribute to this area of scholarship by exploring how meanings of care are negotiated through tactile entanglements of bodily techniques, technologies, and interpersonal relations, while further decentering such research from western cases. This decentering is significant: for example, whereas much technological development and academic discourse is currently focused on self-care and technologies of independence, which are gaining increasing prominence in Europe and the United States, many Japanese robotic devices (such as the Hug, on which this article focuses) are predicated on maintaining current institutional care practices in high-tech form. This is partly due to the rising number of dependent elderly people who require a high level of institutional care in Japan, which is an issue that will increasingly affect other aging developed nations in the coming decades despite discourses of "active" or "healthy" aging.

As Japan moves to globalize its care robotics industry, establishing standards through international regulatory frameworks such as the International Organization for Standardization, and building an international export market for care robot devices, questions about the impacts and implications of such technologies on care extend far beyond the immediate local context. Post-industrial societies in much of the world continue to age, and the need for transfer (for example, from bed to wheelchair) increases as the absolute number of frail super-aged people in all rich countries who require institutional care continues to grow. Moreover, as political movements in countries such as the US and the UK aimed at reducing immigrant labor have gained ground in recent years, robotic solutions to problems which have previously been addressed by immigration may appear increasingly politically – and economically – enticing (see, for example, Strauss 2016). In Japan itself, recent attempts to import greater numbers of care workers from Southeast Asia via Economic Partnership Agreements (EPAs) have been ambivalent, with workers entering the country in numbers far below what would be required to deal adequately with the increasing care labor shortage, and significant hurdles have been set to discourage them from permanently settling in Japan (Świtek 2016). The case of how robotic care devices in Japan are being developed, introduced, accepted, and rejected is thus significant both domestically and globally in providing a deeper understanding of how such new technological artifacts

mediate and change care relationships and care practices, and indeed in considering their impacts in other service industries.

Sakura public elderly nursing home

Between October 2016 and May 2017, I conducted fieldwork at a public elderly nursing home, part of a larger welfare facility which I call “Sakura,”¹⁶ in Kanagawa Prefecture in Japan. Sakura is a mixed facility, encompassing a small daycare center for children in the basement, a day service for non-resident elderly visitors on the first floor, and a public elderly nursing home on the second and third floors. The focus of my research was the latter section of the institution, which housed around 80 residents¹⁷ (mainly permanent, with some short-stay residents¹⁸), and employed about 37 care staff, comprising an almost equal mix of permanent and temporary or part-time staff.¹⁹ Following regular (approximately fortnightly) initial visits and contacts with staff, I began attending the care home for an average of five days per week, across all shifts, from the start of March 2017 onward. Data was gathered through semi-structured interviews and informal conversations in Japanese with staff and residents, as well as observation of care practices including the lifting of residents (for example, the encounter described at the beginning of this article). At the start of my fieldwork I also conducted questionnaires involving all care staff.

My contact with this care home began in October 2016, when I met its manager, X, by chance at an exhibition of care technologies at the Tokyo International Exhibition Centre (also known as Tokyo Big Sight) in Odaiba, Tokyo. We met, fittingly, in front of a display of PARO, a soft toy-like robot shaped as a seal – in many ways the iconic Japanese care robot, which was developed at AIST in 1999 and shortly thereafter awarded the title of “the world’s most therapeutic robot” by Guinness World Records. X said that he wanted to introduce various robotic devices in order to modernize Sakura and project a high-tech vision of the future to staff, residents (and prospective residents), and their families. After many discussions and meetings, we agreed that I would be given access to the care home and would assist in and study the implementation of a number of robotic care devices, while also observing care and interviewing staff and residents. These devices included PARO, Pepper (a humanoid robot rented by SoftBank, a large Japanese telecoms company), and the Hug, a lifting robot (see Figure 1). In this article, I focus on the attempted implementation of the Hug and its relationship to the lifting which took place at the home.

At Sakura, elderly care can superficially resemble a repetitive logistical operation. Events take place according to a predetermined, cyclical timetable – what carers refer to as the *nagare* (流れ) or “flow” of daily life and work at the home. This timetable unfolds in the same way every day: residents are woken at 6am and put to bed at 8.30pm; meals are served communally at 7.45am, 11.45am and 5.45pm, with tea and snacks at 11.15am and 2.45pm; communal exercise, recreational activities, and baths are also carried out at set times. Throughout the day, carers are constantly moving residents between their beds, toilets, communal living room, and bath, and these movements often involve lifting. Out of 80 residents across both floors at Sakura, 49 required transfer. According to data gathered by carers at the start of April 2017, counting every single instance of lifting across the two floors comprising the public elderly nursing home,²⁰ carers performed approximately 408 lifts over a 24-hour period. On average, each resident requiring transfer was lifted around eight times each day. The majority of these lifts were concentrated in the morning (from 6am–9am) and



Figure 1. The Hug in action. The carer on the left who is operating the Hug is wearing a support belt after suffering a herniated disc, which he attributed to transferring residents. Photograph by James Wright.

evening (7–8pm), and, unsurprisingly, carers frequently referred to these times as the most difficult of the day, particularly as they coincided with the lowest staffing levels.

The burden of transfer seemed to be reflected in the results of a survey of all 37 care staff which I conducted in March 2017, prior to introducing the Hug. Eighty-six percent of all staff reported some form of back pain, with an average pain intensity level of 4.2 on a scale of 1–10 among these carers.²¹ Although transfers were carried out using “body mechanics” techniques – standardized ways of lifting intended to minimize the risk of injury to either the carer or resident being lifted – several carers stated during interviews that their back pain had increased over the years of working at Sakura. Carers who had been doing the job for a longer period of time and suffering from a greater level of back pain were more likely to have developed means of dealing with the burden of lifting. This primarily included using a lumbar support belt (a wide belt around the waist that supports the back muscles and spine), but also extended to taking painkillers. Two male carers had suffered herniated discs while working at Sakura, which they attributed to lifting, although according to X, during his 10 years as manager of Sakura, no staff member had complained to him directly of significant back pain or injury, and no staff member who quit their job gave back pain as a reason for their departure.²²

These figures broadly correspond to the results of larger studies of back pain among institutional elderly care workers in Japan. According to a report by the Japan Association of Certified Care Workers that surveyed 174 care staff at several types of elderly care institutions, 75% complained of back pain (Takeda and Takagi 2016). In a larger questionnaire

involving 1925 institutional care staff, 57.5% reported back pain, a figure which rose to 81.4% when including those who had experienced it in the past. In terms of pain intensity, 54.8% reported that they “sometimes feel a light pain” (Ueda et al. 2012). More broadly, in 2016 catastrophic back pain (*saigaiseiyoutsuu*; 災害性腰痛, defined as leading to more than four days off from work) accounted for the vast majority of workplace injuries among workers in the health and hygiene industry (including carers) – 1423 out of 1540 according to the Ministry of Health, Labour and Welfare (Ministry of Health, Labour and Welfare 2016). It also seems highly likely that there are many more unreported cases or cases that fail to meet the threshold of “catastrophic” back pain.

Yet tactile contact with residents also had many positive connotations at Sakura. Carers talked of the importance of touch in building and maintaining a trusting relationship (*shin-raikankei*; 信頼関係) with users, to become “like family” (*kazoku mitai*; 家族みたい). Several carers told me that this was particularly important when caring for residents with heavy dementia or those who could not communicate verbally – touch became a technique for affective communication, conveying familial closeness. Over months of observation, I often witnessed carers hugging, patting, rubbing, tickling, nuzzling, and massaging residents, occasionally putting their arms around residents whom they were feeding at meal times, giving little touches as they passed by, and generally sharing a great deal of bodily contact, which carers referred to as “skinship” (*sukinshipu*; スキンシップ).

This level of physical contact requires some explanation, particularly since in Japan physical touch between adults – even between close friends or relatives – tends to be avoided. Diana Tahhan writes about the importance of skinship and touch between parents and young children, which generally ends at around the age of five (Tahhan 2014). She argues that touch and emotional closeness continue to exist in the form of “touching at depth” – a non-physical form of intimacy which lingers in the tangible “inhabited” space between people, particularly family members, enabling a continuation of intimacy. However, elderly care at Sakura involved a return to the importance of skinship and intimate touch in old age – touch evoking kinship – which carers told me contributed to “peace of mind” (*anshin*; 安心) among care recipients.

Residents seemed greatly to enjoy this physical contact and responded with smiles and happy noises. The sense of familial closeness was further enacted by both carers and residents using kinship terms (such as “father,” “mother,” “older brother,” and so on), as well as informal language with those they felt closer to – as Bethel notes in her study of an elderly care institution based on research conducted in 1985–86, “[a] discourse of family creates an aura of intimacy” (Bethel 1992, 113). Male carers tended to use more informal language and share jokes almost exclusively with female residents (who were in the vast majority at the home; male residents tended to be treated with more formality), while (particularly younger) female carers generally used slightly more formal language. Joking worked in conjunction with touch, putting residents at ease and helping to overcome any embarrassment caused by intimate touch or the vulnerability and dependence revealed during transfer, and transforming the meaning of physical contact which, though intended to create *anshin* (安心; “peace of mind”), could potentially also signal unfamiliar, unwanted, or coldly clinical intimacy. During my time at Sakura I observed carers joking about themselves, for example, lamenting their losses at pachinko (a mechanical gambling game popular in Japan) to the gently disapproving yet amused tuts and chuckles of their elderly audience. They also joked about the residents, at times pretending they shared a romantic relationship, or occasionally

addressing a resident in a tongue-in-cheek way as *sensei* (“teacher”) and asking for some words of wisdom. A joking, tactile relationship, combining the verbal and nonverbal, during individual time spent one-on-one between carer and resident was inseparable from other elements of care provided at the home, and several carers I interviewed told me that the main thing they enjoyed about the job was making the residents smile and laugh, and sharing a familial relationship with them.

Lifting is a significant part of this tactile care, reflecting a complex bond between the vulnerable and dependent bodies of care recipients and those of caregivers. The moment of lifting and being lifted can reveal physical discomfort as well as fear of inflicting or receiving injury for both carer *and* resident, particularly if someone is not used to the operation or if the carer doubts his or her own strength. The exact form of lifting varied according to residents and their physical abilities, and sometimes involved two carers lifting together. On multiple occasions, Tanaka and other carers stated that there is a gap between how transfer is supposed to be done according to the textbook and how it is done in real life, partly because elderly bodies come in many forms which often do not correspond to textbook examples. Carers have to respond to (often nonverbal) signals from residents in order to transfer comfortably and safely. In this way transfer can be understood as a skilled bodily technique dependent on perception, touch, and empathy, while taking into account knowledge of the individual characters of residents (for example, whether they might strike out while being lifted, as a small number of residents suffering from dementia frequently do).

Introducing the Hug

The Hug is a mechanical lifting device (see Figure 1) weighing 65 kilograms and measuring 56 cm x 72 cm x 100 cm, which was brought to market by Fuji in 2016. The name “Hug” seems to refer both to the way in which the user “hugs” the robot, putting their arms around the lifting pads and gripping the handle on the other side, and to how the machine in turn “hugs” the user back with its padded robot arm. The name implies an intimate, caring relationship between user and technology somewhat at odds with its industrial appearance, which even the company representatives admitted “scares eighty to ninety percent of elderly people at first.”²³

The Hug is straightforward to operate. The carer first positions the Hug toward the resident so that the arms of the robot extend under the armpits of the user, and then gently pushes the user forward until they are leaning on the Hug and gripping the handle at the front, with their knees resting on a knee guard at the base of the device (as shown in Figure 1). A simple control pad is then used to operate the robot arm on the Hug: first the arm rotates and tips the user further forward until most or all of their weight is resting on the Hug, and then it lifts them up to a near-standing position. The resident’s weight is supported by the Hug, and distributed across their armpits, their arms gripping the handle, and legs, to the extent that a resident can take any weight on the legs. The carer can then wheel the Hug to position the resident over the wheelchair, bed, or toilet seat, and then go through the same operation in reverse to complete the transfer. The whole process takes about 90 seconds. Fuji claims that Hugs are in use in around 50 institutions, mostly located in Tokyo. At the time of writing, it was purchasable at a cost of ¥1.44 m (approximately US\$13,000) over five years.

X first brought the Hug to the attention of his staff by means of a demonstration-cum-training session carried out by Fuji at Sakura in December 2016, which lasted about an hour and

was attended by 20 carers. A survey was carried out on staff attendees immediately after the session. The feedback from the survey was strikingly negative: while 60% of staff members involved in the trial thought that the Hug was easy to operate, and 80% thought that it could help reduce the burden on their backs, only 15% thought it could be used with peace of mind (*anshin*; 安心) by residents, and a mere 5% thought that many residents could use the Hug. Out of those who provided a response to the question “Do you want to use the Hug for transfer?”, seven out of 17 (41%) said that they did not want to use the Hug; only four (24%) said they wanted to use it, with six (35%) not sure and three non-responses.

A later survey of all care staff at Sakura prior to the introduction of the robotic devices revealed many of the same concerns as the earlier Hug survey, with more interest in “socially assistive” robots such as PARO and Pepper, particularly from female respondents. Despite a few positive comments about care robots in general, the majority of comments were critical or at least skeptical of lifting robots such as the Hug. These survey responses provided several reasons for this “unease” (*fuan*; 不安) – a term which carers used repeatedly in the questionnaire comments to describe their feelings toward the Hug. In interpreting these responses, it is useful to refer to the distinction drawn by Nicholas Sternsdorff-Cisterna, in his analysis of food standards in Japan after Fukushima, between *anzen* (安全; “safety”) and *anshin* (安心; “peace of mind”). As he notes, “*anzen* speaks to a system based on rationality and consistency in its standards. This is underscored by the fact that *anzen* works as an adjective to describe a condition of being. *Anshin*, however, speaks to questions of the heart” (Sternsdorff-Cisterna 2015, 458). In a similar way, while care staff were told by Fuji representatives that the Hug was safe to use, nevertheless they revealed a lack of *anshin* in relation to their perception of it both before and after its actual use.

Carers’ concerns, expressed both in the questionnaire and in individual interviews, included the physical movement and comfort of using the robot (“because [robots] can’t make fine movements, it’s a worry for things like transfer”; “it wasn’t comfortable to ride”; “my underarms and chin hurt”), and fears that they might end up depending on robotic devices too much and losing their own care skills (“I think I’m anxious that [we’ll] get to depend too much on robots, and the quality of one’s own care will fall”). Many staff members argued that use and acceptance depended on the differential abilities and views of residents, highlighting care recipients as individuals rather than the generalized and abstracted elderly often referred to by robotics engineers or in government policy documents on the aging population.

Many carers also saw using the Hug as requiring a great deal of time and, somewhat paradoxically, effort: “it may be physically more comfortable, but there’s no time to use it in a leisurely (*nonbiri*; のんびり) way”; “some tasks could probably be reduced, but thinking of the process of using it makes me think it’s a waste of time”; “I have the sense that things that will reduce the burden on care staff will take effort, so I feel like in the end we’ll stop using them.” Another stated, “transfer robots are big and it takes time to prepare it every time you use it. We can’t use it in our current work routine.” The idea that the Hug would reduce the “burden” (*futan*; 負担) on carers, referring primarily to physical exertion, yet increase the “effort” (*tema*; 手間), referring mainly to time, problematizes the idea of robots as “labor-saving” (*shouryoku*; 省力) devices, and suggests that carers prioritized having more time for care over exerting more physical effort in lifting.

Finally, possible negative reactions of residents to the Hug were brought up as a concern, and some carers felt that using robotic devices with residents would be “disrespectful”

(*shitsurei*; 失礼) to the “elders” (*daisenpai*; 大先輩; here choosing to reject the more transactional language of 利用者 (*riyousha*) or “service users”), arguing that care was and should be fundamentally about people caring for people (*ningen tai ningen*; 人間対人間). One carer wrote:

to begin with, using robots, in relation to doing care, if anything my feeling is almost opposed to the idea. I still have the feeling that [care is] after all about people [caring for] people, and it’s disrespectful to our elders.

Another wrote:

I wonder whether it is appropriate to use robots when a person requires support due to physical problems. It needs to be people supporting people I think. In the manufacturing industry it is common to use robots, but in this industry it has to be people helping people. It’s disrespectful for those who have helped build Japan. Personally if my grandmother or grandfather were to be taken care of by a robot I wouldn’t like it.

The relation between respect, care, and manual effort was further highlighted by other respondents:

I think people [i.e. carers] with back pain can use transfer robots, but because I like connection and interchange between people (*hito to hito to no kakawari, fureai*; 人と人の関わり・ふれあい), and am doing this job, I feel like I don’t want to rely on robots. I want to assist with my own hands (*jibun no te de kaijo shitai desu*; 自分の手で介助したいです).

Notably at no point during the trial did any staff member express worries about robots taking their job – a common concern in North America and Europe. During interviews, carers explained that they did not feel threatened by robots primarily because of the huge labor shortage in the care industry.

These concerns, and the general sense of unease, *fuan* (不安) among staff, were largely disregarded by X, who told me that he thought staff resistance was the result of lack of education, together with the relatively advanced age of carers (the average age of carers at Sakura was 44); for him, successful implementation was a question of getting them used to the devices. As a result, he pushed ahead with a pilot of the Hug, and a trial model was borrowed from Fuji for a period of six weeks from the start of April to mid-May 2017. Over the first few days, the Hug was demonstrated to care staff at daily meetings, and they were encouraged to try it for themselves before it was used on several residents.

At first, the attitude of staff toward the Hug (repeated more or less verbatim by several carers) was: “we won’t know until we try it.” However, in actual use, the physical realities of individual residents problematized the apparently universal usability of the Hug, which had been emphasized in its advertising materials and by company representatives. A female resident without the use of one hand, who could only use her other hand to grip the Hug handle, started to complain of pain as she began to be lifted, so the operation was immediately stopped. Another resident also complained of slight discomfort. A third said that she felt comfortable, and after being lifted by the Hug a number of times over the next couple of days, she said that she had “become used to it” (*mou naremashita*; もう慣れました). Users’ differential weight, ability to grip or stand, body shape, and other physical characteristics all seemed to result in different levels of ability to use the Hug comfortably.

After several days, the Hug had been more or less relegated to the worker room. Care staff said that the Hug had not been well received either by carers or residents, with several complaining of discomfort or slight pain under the armpits as they were lifted. Those users who were hardest for staff to lift (for example, those with partial paralysis or those who were

unable to grip or support themselves at all) also seemed least able to use the Hug. However, staff based these conclusions on only a handful of uses of the Hug by residents, several of whom said that it was comfortable to use. Many staff again brought up problems of lack of time and the effort required to use the Hug as reasons not to test out the machine further. As one care worker said when asked about using the Hug, “I just had no interest in it” (*kyoumi ga nakatta*; 興味がなかった).

Analysis

Despite ongoing techno-orientalist characterizations of Japan as a futuristic high-tech society (Morley and Robins 1992), actual adoption of new high-tech devices has often been tempered by conservatism, revealing complex patterns of acceptance and rejection. While Japanese *keitai* (携帯) cell phones were world-leading in the 1990s, the consumer technology industry was late in transitioning to the now-ubiquitous smartphones epitomized by Apple’s iconic iPhone. Japan was the first country to popularize hybrid electrical vehicles, yet many businesses still rely on fax machines, and personal computers were slow to be adopted in the 1990s. Could the lack of acceptance of the Hug be another instance of reluctance to adopt new technology?

Care homes are, of course, already technological biomedical facilities. Almost every aspect of life at Sakura is both technologically and medically regulated and mediated to some extent, from food (prepared and served according to the instructions of a professional on-site nutritionist) to medicine to bowel movements (carefully monitored and recorded by care staff, and reviewed by nursing staff) to movements across space. The latter took numerous technological forms: elevators, wheelchairs which could be self-wheeled, wheelchairs which could only be pushed by a carer, walkers, walking frames and walking sticks, beds which could be electronically adjusted to sit the user up, and chairs, which carers often pushed forward under tables as a way to gently restrict the movements of residents with dementia who might fall over if they tried to get up. Lifting therefore involves transferring residents from one technological device (wheelchair, toilet, and bed) to another. In this environment, electronic lifting machines could be seen as just another technology for moving bodies across space.

However, the intended transition at Sakura from a bodily technique to a robotic technology of lifting appeared to be a failure. Beyond the mixed results of the initial uses of the Hug, the majority of care staff were clearly not keen on the machine to begin with, and did not seem interested in trying to make a success of its implementation. Yet this did not appear due to a generalized aversion to or sense of alienation caused by technology. Care staff were curious about and interested in the robotic devices, and immediately started using PARO with residents on a daily basis without prompting from managers. Residents too said that they enjoyed playing with PARO and having recreation sessions with Pepper. Similarly, other high-tech devices, such as iPad tablet computers for recording medical notes, and large wheelchair-accessible bathing machines, had been quickly adopted without significant resistance when they were introduced in recent years.

The seemingly practical rationales of “not having time” and “being too busy” to use the Hug were more complex and intangible than immediately apparent. Using the Hug did indeed take additional time to position and operate; in fact, wider-scale implementation of the Hug would seem to create more work for carers rather than threatening their jobs.

However, these rationales implicitly appealed to the national media discourse about the lack of carers while providing space for individual staff members to make their own decisions about what kind of care to give, as well as enabling tacit resistance to the imposition by management of new technologies or routines which were perceived unfavorably. While using the Hug would have added time to transferring residents, carers also frequently took time or “made time” to talk to and joke with residents in as unhurried a fashion as possible. In fact, on average, when not using the Hug, the actual lifting element of these interactions with residents took about 15 seconds out of a total of around five minutes per resident for transfer from bed to wheelchair. The rest of the time was spent helping residents change clothes, checking their mobile toilets, chatting, and joking.

Use of the Hug with every resident would have meant restructuring daily care practices such as waking up, serving meals, and taking residents to the toilet – a somewhat disruptive yet feasible adjustment. Using the rationale of “no time” seemed a way to conceal other reasons for rejecting the technology as well as preserving the status quo. Through the use of such rationales, Japanese carers at Sakura, despite holding jobs which are perceived as relatively low status in contemporary Japanese society, perhaps surprisingly also held a significant degree of power over the adoption of robotic devices by the home. This suggests that the government’s strategy of promoting robotic devices directly to managers in the care industry, and providing financial subsidies for care homes to purchase such devices, may alone not be sufficiently effective to encourage their widespread adoption.

The reasons for not using the Hug seemed complex, and closely related to the care relationship, which has frequently been overlooked by engineers.²⁴ It was clear from speaking to staff, and from observing transfers taking place, that lifting constituted an integral part of the intimate care delivered by carers. Transfer provided close bodily contact, as well as being part of a routine of talking, joking, and performing everyday sociality with residents. In fact caring with one’s own hands, human to human (*ningen tai ningen*; 人間対人間), was identified by care staff as perhaps the single most important characteristic of good care, expressed as respecting the elders (*daisenpai*; 大先輩). As discussed, touch plays an integral role in establishing and communicating *anshin* (Tahhan 2014), co-creating a close familial relationship between carers and residents while also acknowledging the vulnerability inherent in the bodily nature of care practices – a vulnerability that cuts both ways.

Jason Danely argues with regard to Japanese informal carers that “by learning compassion, [they] are able to construct meaningful narrative subjectivities that transform personal suffering into the basis for connecting to others and to transcendent or transpersonal modes of encountering the world” (Danely 2016, 178). Among Sakura’s professional carers, compassion was similarly important, and the “co-suffering” (Danely’s term) embodied in the performance of transfer, including the back pain that might result, was accepted by many (though not all) carers as part and parcel of the job. Thus manual transfer as a bodily technique for communicating and doing care provides symbolic meaning to the physical act of transferring a patient and establishes the value of care labor. As one carer told me with regard to care jobs at Sakura, “no-one does it for the money.”

Technological mediation of this social and tactile care relationship was perceived by carers as disrupting the “connection and interchange between people” which most of them valued. The nature of the “disrespect” from using robots to care involved not being able to respond to elderly care recipients as individuals both physically, in terms of respecting individual bodily peculiarities that did not answer to textbook models of elderly bodies, and adjusting

tactile contact according to their perception of elderly residents' affective reaction to touch; and socially, in terms of treating each resident respectfully as an individual with their own personality.

It is common in academic and industry discourse about robotics to distinguish “social” robots (such as PARO and Pepper) as a discrete category separate from supposedly non-social and “functional” or instrumental devices such as the Hug. Yet this categorization masks the extent to which such devices have social effects and impacts on the socially constructed meanings and practices of care. As robotic devices such as the Hug continue to be developed, introduced, and promoted for use across Japan and the rest of the world, it will become increasingly important to understand these impacts and how they are transforming care.

Notes

1. This is a *tokuyō* (*tokubetsuyougroujinhōmu*; 特別養護老人ホーム), one of several types of elderly care facility in Japan established under the 1963 Law for the Welfare of the Elderly, and is funded through the Long Term Care Insurance system. Although the direct translation is closer to “special elderly nursing home,” I have translated it as “public elderly nursing home” in order to avoid possible confusion that might arise from the use of the word “special” (it is in fact a common type of care facility), and to emphasize the fact that the home is publicly funded.
2. The term “carer” is used here to refer to institutional care staff (*kaigoshokuin*; 介護職員) at the home. Carers are responsible for duties such as helping residents to dress, taking them to the toilet, helping them wash and take a bath, serving them meals, entertaining them, giving out medicine, and doing transfers (see note 3). It is important to differentiate carers from nurses (*kangoshi*; 看護師) at the home, whose job includes arranging and checking the medicine to be given out, monitoring blood pressure and other vital signs, and assisting the doctor on his rounds.
3. In this article I use the terms “lifting” and “transfer”; the Japanese terms used by carers are *toransu* (トランス), *ijou* (移乗) and *idou* (移動). Transfers involve lifting elderly care recipients and transferring them between wheelchair, bed, and toilet, and may be done by one or two carers (in cases of a heavy resident or one who is difficult to carry). Lifting can also include lifting residents who are slumped in their wheelchair into a more upright position.
4. See, for example, a report by a publicly financed organization, the ATA (The Association for Technical Aids 2015). Although my survey did not specifically ask carers to specify the cause of their back pain, all carers I asked linked their back pain to the lifting of residents.
5. Cf. The Association for Technical Aids 2015.
6. Formerly often referred to as “no lifting” policies. The first such piece of legislation was passed in the UK in 1992 in the form of the Manual Handling Operations Regulations, which obliges employers in all industries to avoid or reduce the need for employees to manually lift any load where there is a risk of injury. This is interpreted, for example, on the website of the UK’s Royal College of Nursing (as of 6 June 2017), as follows: “No-one should routinely manually lift patients. Hoists, sliding aids, electric profiling beds and other specialized equipment are substitutes for manual lifting. Patient manual handling should only continue in cases which do not involve lifting most or all of a patient’s weight.” An ISO standard for “Ergonomics – Manual handling of people in the healthcare sector” (ISO/TR 12296:2012) was created in 2012, which further aimed to provide guidelines on identifying risks and problems associated with patient handling and applying strategies to address them.
7. The National Institute of Advanced Industrial Science and Technology, a leading Japanese public research institute.
8. Interview, 5 June 2015.
9. For example, both the Japan Industrial Safety and Health Association and the National Institute of Occupational Safety and Health, Japan, have published guidance documents on preventing

back pain among carers. However, these efforts have met with limited success, as most care homes in Japan continue the practice of manually lifting residents.

10. AMED (the Japan Agency for Medical Research and Development) is a recently created cross-ministry agency in charge of all state medical research projects.
11. This is based on interviews I conducted with robotics engineers at AIST in 2016.
12. The term “robot” is applied rather loosely in this context by government agencies such as METI, and in fact there is no universally accepted definition in Japan.
13. As envisaged, for example, in the 2007 government strategy paper Innovation 25 and its accompanying science fiction story of the “Inobe” family’s embrace of robots, or in books such as “Robots are friends!” (ロボットは友達だ!) by Kobayashi Hisato (1999) and “Robots will save Japan” (ロボットが日本を救う) by Nakayama Shin (2009) (as in Robertson 2007; Wagner 2010, 2013).
14. “Resistance” here is used in the vernacular sense and is not intended to refer specifically to more specialized usages or theorizations of the term in political anthropology or STS.
15. Interview, Prof. Matsumoto Yoshio 11 May 2016.
16. The names of the care home, carers, and residents are pseudonyms to protect anonymity. All translations from Japanese are my own.
17. Staff use the term “users” (*riyousha*; 利用者), equivalent to “service users” in English, to refer to care recipients at the home. However, due to the potential ambiguity of the term “users” in the context of introducing technological devices which are used by both residents and staff, I mainly refer to them in this article as “residents.”
18. Permanent residents are those who live in Sakura continuously for the rest of their lives; short-stay residents visit temporarily during periods when relatives are unable to care for them.
19. The exact number of residents and staff at Sakura fluctuated slightly during my fieldwork period.
20. This includes lifting from bed to wheelchair, wheelchair to toilet, toilet back to wheelchair, wheelchair to bath, and so on, as well as lifting residents up in their chairs.
21. This is a rough scale intended only to provide an indicative level of back pain.
22. It is important to add the caveat that staff members may not have felt that back pain alone was an “acceptable” reason to give for resigning.
23. Interview, 27 March 2017. This interview was conducted at Fuji’s offices with members of the business development department during meetings to arrange the lending of a trial model of the Hug.
24. I base this conclusion on separate fieldwork I conducted at AIST for three months in 2016, as well as the numerous academic papers by robotics engineers on robot care which frequently do not mention caregivers.

Acknowledgement

I would like to thank both X and the care staff and residents at Sakura, as well as Prof. Matsumoto Yoshio and the robotics engineers at AIST, without whose kind assistance my research would have been impossible. I would also like to thank Profs. Gonçalo Santos and Izumi Nakayama at the University of Hong Kong, the STS PhD workshop group organized by Wakana Suzuki at Osaka University’s Anthropology Department, and Russell Henshaw, for their helpful comments on earlier drafts of this article. The anonymous reviewers also provided many invaluable comments that greatly improved my manuscript.

Disclosure statement

No potential conflict of interest was reported by the author.

Funding

This work was supported by the Hong Kong University Grants Council under [grant number PF13-15136].

Notes on contributor

James Wright is a PhD candidate at the University of Hong Kong. His research focuses on the development and use of robotic devices for elderly care in Japan.

References

- Bethel, Diana Lynn. 1992. "Life on Obasuteyama, or, Inside a Japanese Institute for the Elderly." In *Japanese Social Organisation*, edited by Takie Sugiyama Lebra, 109–134. Honolulu: University of Hawaii Press.
- Broadbent, E., R. Stafford, and B. MacDonald. 2009. "Acceptance of Healthcare Robots for the Older Population: Review and Future Directions." *International Journal of Social Robotics* 1: 319–330.
- Campbell, John Creighton. 1992. *How Policies Change: The Japanese Government and the Aging Society*. Princeton, N.J.: Princeton University Press.
- Danely, Jason. 2016. "Learning Compassion: Everyday Ethics among Japanese Carers." *いのちの未来 [The Future of Life]* 1:170–192.
- Loe, Meika. 2010. "Doing it My Way: Old women, Technology and Wellbeing." *Sociology of Health & Illness* 32 (2): 319–334.
- Long, Susan. 2012. "Bodies, Technologies, and Aging in Japan: Thinking About Old People and Their Silver Products." *Journal of Cross-Cultural Gerontology* 27 (2): 119–137. doi:<https://doi.org/10.1007/s10823-012-9164-3>.
- Ministry of Health, Labour and Welfare. 2016. 業務上疾病発生状況等調査 [Survey on Matters such as how Work-related Illnesses Occurs]. Accessed 1 December 2017. www.mhlw.go.jp/bunya/roudoukijun/anzeneisei11/h28.html
- Mol, Annemarie. 2008. *The Logic of Care*. London and New York: Routledge.
- Mol, Annemarie, Ingunn Moser, and Jeannette Pols. 2010. *Care in Practice: On Tinkering in Clinics, Homes and Farms*. Bielefeld: Transcript.
- Morley, David, and Kevin Robins. 1992. "Techno-Orientalism: Futures, Foreigners and Phobias." *New Formations* 16: 136–156.
- Ochiai, Emiko. 2013. "Care Diamonds and Welfare Regimes in East and Southeast Asian Societies." In *Transformation of the intimate and the public in Asian modernity*, edited by Emiko Ochiai and Leo Aoi Hosoya, 164–189. Leiden, Netherlands: Brill.
- Robertson, Jennifer. 2007. "Robo Sapiens Japonicus: Humanoid Robots and the Posthuman Family." *Critical Asian Studies* 39 (3): 369–398. doi:<https://doi.org/10.1080/14672710701527378>.
- Schodt, Frederik L. 1988. *Inside the Robot Kingdom: Japan, Mechatronics, and the Coming Robotopia*. Tokyo: Kodansha International.
- Sternsdorff-Cisterna, Nicolas. 2015. "Food after Fukushima: Risk and Scientific Citizenship in Japan." *American Anthropologist* 117 (3): 455–467. doi:<https://doi.org/10.1111/aman.12294>.
- Strauss, Delphine. 2016. "Robots Could Replace Migrant Workers, Says Think-Tank." *The Financial Times*, July 4. www.ft.com/content/a1614f98-4123-11e6-9b66-0712b3873ae1?mhq5j=e7
- Świtek, Beata. 2016. *Reluctant intimacies. Indonesian Eldercare Workers and National Imagination in Japan*. New York: Berghahn.
- Tahhan, Diana Adis. 2014. *The Japanese Family: Touch, Intimacy and Feeling*. London and New York: Routledge.
- Takeda, Keiko 武田 啓子, and Naomi Takagi 高木 直美. 2016. "介護福祉士の腰痛に関する研究 - 勤務年数4群からの検討 [Research on Back Pain Among Care Workers - An Examination of a Group Who Have Been Working for 4 Years]." 介護福祉士 [The Japan Association of Certified Care Workers] 20–21.
- The Association for Technical Aids. 2015. 介護ロボットの開発状況と活用推進について [On the State of Development and Promotion of Use of Care Robots]. Accessed 1 December 2017. www.mhlw.go.jp/file/05-Shingikai-12201000-Shakaiengokyokushougaihoukenfukushibu-Kikakuka/0000076872.pdf
- The Headquarters for Japan's Economic Revitalization. 2015. New Robot Strategy: Japan's Robot Strategy. www.meti.go.jp/english/press/2015/pdf/0123_01b.pdf

- Ueda, Hisatoshi 上田 喜敏, Ito Shin-ichi 伊藤 伸一, Sato Katsuya 佐藤 克也, and Fujisawa Shoichiro 藤澤 正一郎. 2012. “介護作業中の腰痛調査とベッド介護負担評価：富山県腰痛予防対策推進研究会腰痛アンケート結果から考えられるベッド介護作業負担の評価 [Lower Back Pain Survey During Care Work and Bed Care Load Assessment].” 福祉のまちづくり研究 [Journal of the Japanese Association for an Inclusive Society] 14 (2): 9–17.
- Wagner, Cosima. 2010. “‘Silver Robots’ and ‘Robotic Nurses’? Japanese Robot Culture and Elderly Care.” In *Demographic Change in Japan and the EU. Comparative Perspectives*, edited by Annette Schad-Seifert and Shingo Shimada, 131–154. Düsseldorf: Düsseldorf University Press.
- Wagner, Cosima. 2013. *Robotopia Nipponica - Recherchen zur Akzeptanz von Robotern in Japan* [Robotopia Nipponica - Research on the Acceptance of Robots in Japan]. Marburg: Tectum.