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# The Technological Utopia: *Mimamori* Care and Family Separation in Japan

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## Abstract

Japan is undergoing a significant demographic upheaval, and the Japanese government is formulating policies for stimulating technological advances based on the assumption that they will solve issues such as labour shortages and elder care. The government argues through policy initiatives that technology will decrease the care burden on Japan's workers, families, and itself. Although the domestic media show awareness of changing family patterns in Japan, newspapers are following a similar pattern of technological utopianism. However, this article posits that the proposed policy reforms rely on a conservative ideal of the extended family that ignores changing patterns in Japanese households. Moreover, it argues that, rather than facilitating a return to the ideal of an extended family, technology is exacerbating separation among families that have been growing apart for some time.

## Keywords

aging – demography – family – Japan – public policy – technology

## 1 Introduction

In a conspicuously utopian fashion, the Japanese government is currently promoting the advancement of technological innovation to solve problems

resulting from demographic shifts. In effect, technology is proposed as a way to alleviate social ills (Robertson 2018: 44) such as a growing elderly population and shrinking workforce.<sup>1</sup> This argument is especially ubiquitous in the Japanese care industry, where jobs offer 'low wages, low prestige, and tough working conditions', making it an unattractive industry for potential workers (Vogt 2018: 18). Facilitating this turn to technology, companies are developing long-distance care systems using what is called *mimamori* technology. These systems are aimed at families, local governments, and care workers responsible for the care of the elderly. In popular discourse, the systems are described as protection for the elderly, and in official policy initiatives similar systems are portrayed as facilitators of the traditional ideal of an extended family. This potential for technology to solve larger social issues is frequently presented as a natural truth in both popular and official discourse in Japan. In reality, however, far from enabling families to create an environment of personal care as such portrayals might suggest, *mimamori* technology is exacerbating the decline of the extended family ideal by spurring on the growing separation between family members in Japan.

Around the world, varying perspectives are offered on the advantages and disadvantages of relying on technology to create 'smart' communities. As explored in this special issue, the concept of the 'smart community' has different meanings. The Japanese government, for example, uses the concept of a 'super-smart society': an integrated society of devices (explored below). Although a comprehensive review of this complex concept is outside the scope of this article, it is necessary to understand the binary perspective that permeates global discourse on technological advancements and subsequently the smart communities that they are supposed to produce: utopian and dystopian. One case in point is the promise of social media such as Twitter (2019) to 'spark a global conversation' or to 'give people the power to build community and bring the world closer together', as Facebook (2019) promises—very utopian, indeed. Yet both platforms have led to large divisions in the world, and they have facilitated crime on every level, from invasion of privacy en masse (Rosenberg, Confessore, & Cadwalladr 2018) to serial murder (*Japan Times* 2017), proving quite the opposite effect. Therefore, there is a practical need to be more critical when exploring how technology functions in society and investigating efforts at developing smart technology to address larger social issues. Isolating technology as though it were developed and implemented in

1 Jennifer Robertson, for example, shows how robots are used as an imaginary vehicle 'to usher in both a social and industrial revolution' (2018: 44).

a vacuum impedes a proper understanding of how it operates. Investigations into smart communities and the rapid advancement of technology need to be interspersed with an exploration of contemporaneous social developments.

In Japan, demographic changes over the past few decades have strongly affected the role played by the family in caring for the elderly. In 1970, only 7.07% of the Japanese population was age 65 and older. This segment of the population grew rapidly in the following decades, reaching 17.37% in 2000 (OECD 2019a). Moreover, in 1970 an estimated 23.9% of the population was under 15 years old (OECD 2019b). A provisional estimate in January 2019 shows that the percentage of those over age 65 has risen to 28.2% while the population under age 15 has declined, to 12.2% (Statistics Bureau MIAC 2019), signifying strong demographic shifts in the country. Although a rapidly ageing population is not an issue particular to Japan, it is the member country of the Organisation for Economic Cooperation and Development (OECD) in which this trend is advancing most rapidly (OECD 2019a). This has major consequences for the labour force. As elderly workers start retiring, and the number of young people attending school decreases, there will be a sharp decline in potential workers able to support the greying population (Statistics Bureau MIAC 2018). To counter these shifts, the government has attempted policy reforms. Central to these reforms is the idea that using technology will decrease the 'burden' on Japanese society of these demographic changes in terms of care and financial impact. This article analyzes the relevant policy-making by first exploring developments in Japanese families and juxtaposing them with the official discourse on technology. In addition, this article analyzes two national newspapers to compare how the official and popular discourse reflect on the role of technology in Japanese families. Specifically, this article shows that technological innovation does not necessarily augment the family ideals expressed in the official discourse; rather, it can have just the opposite effect: driving further family separation.

## 2 Labour Shortages and the 'Traditional' Family under Pressure

The Japanese government is currently attempting to address growing labour shortages in the country by proposing a more gender-equitable workforce. However, these policies not only fail to address the underlying institutional processes that make the implementation of change unlikely, but they consistently reinforce the patriarchal extended family ideal even though such contradictions between policy and practice impede effective reforms in Japan

(Boling 1998: 188). Children are unable to take on the care burden of their parents by reproducing the extended family structure,<sup>2</sup> and an ideological shift in family values among different generations makes it even less likely that the government will achieve this ideal. Although this study does not try to comprehensively address all the factors that affect the changing structure of Japanese families, some key points coalesce with the progression of technology. Together these developments highlight important flaws in the assumption of a technological solution to changes in Japan's demographics that somehow support the extended family ideal.

Emiko Ochiai (1994: 141) showed in the early 1990s that the extended family ideal has been in decline since the 1970s, with kin networks disintegrating as birth rates stabilized at around two or three children per household between the 1950s and 1970s, leaving children with fewer siblings. Meanwhile, Japanese women, who have been consistently underemployed and marginalized as wage workers in the post-war era, became a prime public policy target for increasing the working population in the 1980s, evidenced by the ratification of the United Nations' Convention on the Elimination of All Forms of Discrimination against Women on 25 June 1985 (UN Treaty Collection 2019) and the implementation of the Equal Employment Opportunity Law in 1986 (e-Gov 2017). The current administration is targeting a female participation rate of 30% in every sector by 2020 (Assmann 2014: 1, 7). Policy initiatives aimed at increasing women's participation attract media attention, although the actual goals have been accurately criticized as unachievable (Miura 2015: 53, 66-67). The women joining the ranks of Japan's workforce cannot at the same time be full-time homemakers. Although this logic seems easily deducible from the fact that a person can occupy only one place at a time, and the working hours coincide with the time a woman would be expected to carry out this homemaking responsibility (including child care), this contradiction seems to have escaped the notice of contemporary policymakers.

According to what Mari Miura calls a 'statist family ideology' (ibid.: 53), a strong contradiction exists between the drive for women to join the formal workforce and the 'traditional' role that they are supposed to play in Japanese society: that of the child-rearing homemaker. Ochiai explains that in the decades after the war ended, 'the state of being a housewife became so strongly normative that it was practically synonymous with womanhood' and the 'idea of the family came to mean by definition, the mother devoting herself to the

2 In 2017, around 55.7% of households in Japan were nuclear families, and 34.6% were one-person households. See Ministry of Internal Affairs and Communications, Statistics Bureau (2017).

care of two or three children and lovingly nurturing them with her own hands' (1994: 35, 50).

Despite the measurable failure of earlier policies that resulted in, among other things, a 'significant increase in low-end households' in Japan (Inoue 2018: 7-8) and the inherent flaws in Prime Minister Abe Shinzō's proposed policy reforms, these new policies are highly likely to be implemented, because of 'effective marketing' and the gradual erosion of popular resistance (Kojima, North, & Weathers 2017: 1). These initiatives are popularly bundled as 'womonomics'—a play on Abe's economic policy called 'Abenomics'. However, the flashy nickname does not reverse the inherent contradictions that make implementation of the policies unrealistic (Miura 2015: 53, 66-67).

This is not to imply that only initiatives under the current administration revolve around the conservative family ideal, as the statist version of the traditional Japanese family is already institutionalized in several ways. One of the most far-reaching of these institutions is the *koseki* 戸籍 (family register) system in which citizens are registered. According to Karl Jakob Krogness (2011: 88), this system is more than simply 'an objective record of individual civil status data', as this registry and the design of the forms reflect the traditional ideal of a married couple with children. They fail to mirror a growing gap between generations with regard to perceptions of family legitimacy.

Ekaterina Hertog (2011: 106) explores this in her description of the pressure that daughters face from their parents if they conceive a child out of wedlock. Although some women remain unfazed by pressure from those outside the family, such as judgement in the workplace, many still struggle with confronting their parents after they have decided not just to have such children but to raise them. In response, some parents even attempt to keep their official family registrations 'clean' by pressuring their daughters to marry the father or abort the foetus (ibid.: 105). Such attitudes relate directly to the invention of Japanese domesticity, in which the home and the intertwined patriarchal family system (*ie seido* 家制度) and the 'housewife as its spiritual center' play a large role in discourses on family values (Sand 1998: 205).

Even with past changes to the system, a person's *koseki* still shows whether a child is born out of wedlock, influencing perceptions of family legitimacy (Krogness 2011: 80-81). Moreover, the institutionalized dependence on men in this system places women in a disadvantaged social position, and the state has consistently articulated the expectation that women give birth to replenish the workforce (Ochiai 1994: 145). Consequently, the idea that these women will retire from the workforce after they are married is part and parcel of hiring policies in Japan (Boling 1998: 181). As late as the 1990s, large companies viewed young female employees 'mainly as a pool of potential marriage mates

for their up-and-coming young male employees' (Brinton 1994: 158). In fact, most women remain under the impression that continuing work while raising a child is impossible because of the difficulty of balancing work and family, and the idea persists that mothers need to dedicate themselves to the care of their children full-time (Nagase 2006: 51). This shows that the conservative family ideal remains strong in Japan.

This does not mean that Japanese women lack agency in how they interact with these values. For example, social class and an impending awareness of downward social mobility significantly affect the strategies used by single mothers in raising their children (Ezawa 2010: 217), showing that they are able to negotiate their position within Japanese society. What it does show, however, is that the institution of the traditional Japanese family has been instrumental in inculcating particular values. One such value is the intergenerational transmission of male dominance in the traditional home (Hidaka 2011: 119). In Japanese the male head of the traditional family is referred to as the *daikokubashira* 大黒柱 (lit. central pillar of the house) (ibid.: 123-125). This concept expresses the importance of the man as the main support holding up the family (ibid.: 119-120). Not surprisingly, the well-documented gender imbalance in employment (Ogasawara 1998: 4) neatly aligns with the conservative position of women in the household and the male need for reaffirming one's masculinity within the *daikokubashira* ideology (Hidaka 2011: 126). One responsibility that has historically been associated with this role is that of parental care (ibid.) in an economic sense, which means to succeed in a family business. In addition, there is 'historically underdeveloped government support for the care of the elderly', which in the past has led to an environment in which intergenerational cohabitation was desirable and, in the context of insufficient alternatives, seemingly practical (ibid.: 116). The eldest son was expected to remain home with his parents while younger siblings were able to move out in pursuit of jobs elsewhere. This system survived in several forms in the post-war era (Ochiai 1994: 67), but it is currently affected by declining birth rates and sibling poverty, resulting in fewer children remaining home.

Jordan Sand (1998: 206) shows that this family construction was invented during the Meiji (1868-1912) period and became ubiquitous in the imagination of the traditional Japanese home, and he posits that the cooperation between official institutions and the media gave rise to this specific narrative of domesticity. This structure subsequently became embedded in popular narratives of the family in the post-war era, as though it were the 'standardized' version of the Japanese household (Ochiai 1994: 43). In the late 1980s and early 1990s, an increasing body of scholarly work emerged concerning the deconstruction of this image, most often explored within the framework of failed or failing

policy reforms (Boling 1998: 188). Moreover, valid predictions showed that the *ie* system would continue to slowly dissolve (Ochiai 1994: 151-152), while the number of nuclear-family households would keep growing, after the post-war baby boom generation came of age (Sand 2003: 372).

Placing this shift in the context of the labour market and the multiple roles that women are expected to fulfil in this ideal family makes it clear that this ideal is unsustainable. Moreover, contemporary Japanese families are already deviating from the traditional household ideal that the state institutionalizes and officially promulgates. Although these values seem to have been asserted by the state more strongly in the past, they are entrenched in policy proposals even now, as shown in the analysis below.

### 3 Method and Data

This article analyzes the official and popular discourse on technological innovation and its role in caring for the family with a qualitative discourse analysis. This analysis covers the period between 1 June 2007 and 31 December 2017. The starting date was chosen because this is when the first Abe administration formulated its goals for technology in its Innovation 25 policy initiative, which is elaborated on more extensively below.

The concept of discourse used here follows Norman Fairclough's definition that it is an 'ordered set of discursive practices associated with a particular social domain or institution ..., and boundaries and relationships between them' (1995: 12). Simply stated, it is a system of statements that are produced in specific settings. These statements are interconnected, and Michel Foucault argues that in order to 'describe all the relations [between statements] that emerge in this way' it is necessary to set up an 'initial region of analysis' which at times will be 'demolished' and when necessary reorganized (1989: 32). As he explains (*ibid.*: 31):

we must grasp the statement in the exact specificity of its occurrence; determine its conditions of existence, fix at least its limits, establish its correlations with other statements that may be connected with it, and show what other forms of statements it excludes.

Stuart Hall adds that statements and discourses 'can be produced by many individuals in different institutional settings' (1992: 292). Discourses are not closed, nor do statements have to continuously reproduce one another. As Hall elaborates, discourses concern 'relationships and differences' among various



statements that are ‘regular and systematic’ (ibid.) Moreover, Fairclough argues that there are ‘orders of discourse’, adding, ‘there may be a dominant (“normal”, naturalized) practice and dominated (marginalized, “alternative”) practices’ (1995: 12). In turn, Hall posits that dominant discourses establish a specific sense of ‘truth and scientific objectivity’ that lead to the construction of ‘regimes of truth’ (1992: 299). As Foucault (1980: 131) explains:

Each society has its regime of truth, its ‘general politics’ of truth: that is, the types of discourse which it accepts and makes function as true; the mechanisms and instances which enable one to distinguish true and false statements, the means by which each is sanctioned; the techniques and procedures accorded value in the acquisition of truth; the status of those who are charged with saying what counts as true.

To examine the Japanese setting, the analysis below looks at government documents in order to investigate which ‘techniques and procedures’ are used to establish a regime of truth through official statements. This is feasible, as Ruth Wodak, for example, argues that ‘a policy paper on combating unemployment, is a manifestation of certain rules and expectations according to social conventions’ (2008: 17). She posits that by using ‘certain textual devices, the contents follow certain ideological concepts put forward by a specific political group’ (ibid.). Accordingly, as this paper analyzes the official and popular discourse, it focuses on government and media statements.

The data for this analysis were collected from the Japanese government’s white papers on technology, published by the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) and the Ministry of Economy, Trade, and Industry (METI). Including these white papers, the Japanese cabinet publishes its strategies on the website of the Prime Minister’s office (Cabinet Office, Government of Japan). Two policy proposals deal specifically with Japanese care technology and the family, namely, the Innovation 25 proposal (Cabinet Office 2007) and the 2016 ‘super-smart society’ white paper (MEXT 2017a).

The analysis of popular discourse relies on Japan’s two largest national newspapers, *Asahi shimbun* and *Yomiuri shimbun*. They both have daily editions and were chosen because newspapers tend to reflect the social mainstream (Mautner 2008: 32). Articles were collected from the Kikuzō and Yomidasu Rekishikan databases using a cyclical top-down corpus building process (ibid.: 35).

The data were analyzed in the original language, Japanese. Although the limited translations available also offer an interesting perspective, for the sake of linguistic consistency, they were not used. The translations, however, do

include visual material, such as drawings and illustrations of statistical data. When possible, they were used in place of the original Japanese versions.

#### 4 The State, Technology, and Caring for the Family

The government of Japan is attempting to offer a counterweight to the uncertainties of demographic change by proposing a broad solution in very simplistic terms: technology. Cabinet directions are published by the relevant ministries (MEXT, METI) in the form of white papers to articulate the administration's perspective. The solution that technology offers enables political actors to avoid pursuing alternative solutions to worker shortages, most notably that of encouraging migrant workers (Robertson 2007: 391). One advantage for the state enabled by technology is the perpetuation of conservative family values (ibid.: 380).

Japan still lacks any significantly level of migrant workers (Vogt 2018), as they are often considered undesirable from the politically dominant conservative perspective, whereas technological innovations, such as robots, seem acceptable and promising solutions to Japan's demographic problems from the government's perspective (Robertson 2007: 391). This is expressed, for example, in the Innovation 25 policy initiative extensively explored by Jennifer Robertson in her book *Robo Sapiens Japonicus*, specifically in the chapter 'Families of Future Past' (2018: 50-79). This policy is an attempt to persuade the public that technology will reduce stresses in life and sustain the 'traditional' extended family. Portraying the family in this manner, with the addition of a domestic robot taking care of household chores, the Innovation 25 proposal, according to Robertson, is actually a 'nostalgic dream' that perpetuates the 'patriarchal extended family' ideal (ibid.: 77). She concludes that such policy places 'advanced technology in the service of traditionalism' (ibid.: 79), with the Innovation 25 initiative presenting 'political, social, economic, and historical problems as technological problems requiring technological and robotic solutions' (ibid.: 78). The family in Innovation 25 is not the latest attempt at such rhetorical sublimation.

A more recent expression of this rationale comes from a 2016 policy document detailing the benefits of the 'super-smart society' (*chōsumāto shakai* 超スマート社会) (see Figure 1). The document contains several scenarios of a Japanese family's daily activities, from buying a new car to daily health-care management. The family name is Masuda, an (incomplete) anagram of the Japanese pronunciation of 'Dartmouth' (*dātomasu* ダートマス), the university where artificial intelligence (AI) was first introduced as a concept in 1956.

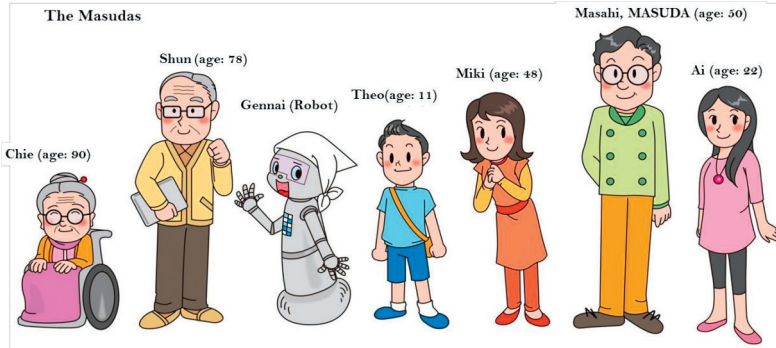


FIGURE 1 The Masuda family  
SOURCE: MEXT (2017B: 53)

The family consists of Masashi, the father and head of the family; Miki, the mother; Ai and Theo, their two children; Shun, Miki's father; and Chie, Masashi's mother, who lives in a nursing home near Masashi's older brother. The family is imagined as a three-generation household with the addition of a family robot named Gennai (MEXT 2017a). With the exception of Chie, the family lives together in this 'super-smart society' in the same house in Tokyo in 2035. Chie lives in a nursing home because she requires nursing-care assistance in her daily activities following an accident. Masashi's older brother is presumably the oldest child in the family.

The robot Gennai is responsible for most of the household, measuring and controlling energy consumption, the lights, the indoor temperature, and the temperature of the bathwater, and keeping tabs on the location of every family member, recording and analyzing their behavioural patterns to predict their personal preferences (MEXT 2017a: 46). Robertson (2018: 82) posits that 'robot gender effectively reproduces a sexist division of gendered labor among humans and humanoids alike'. This is reflected in Gennai's role in the Masuda household as a sexist division of labour is reproduced between Miki and Masashi, and there are similarities between Gennai's and Miki's household responsibilities, reinforcing this division. For example, Gennai has an overview of the family members' physiological status, analyzes past data on meals eaten by the family, and has data sent to it from wearable technology (*ibid.*: 47). In one scenario, Gennai asks Masashi what he wants to eat for dinner. Following an analysis of the physical condition of each family member and concluding that Masashi's stomach is sensitive at the moment, Gennai advises a meal based on fish and vegetables, even advising at which farm to buy them (*ibid.*).

This scenario does not include Miki, but the writers go out of their way to mention that she is usually the one who makes the final decision on what to eat: 'Miki has the habit of having the final say, but today she is absent because of work' (*ibid.*), indicating that she works part-time outside the home. In fact, an entire section is dedicated to normalizing Miki's role as the family's food procurer. It explains that Miki develops a cooperative relationship with the farm that supplies the family with vegetables and describes the decision-making process for picking the produce to be used at home (*ibid.*: 48):

Vegetables that satisfy Miki's preferences ... Agricultural chemicals that Miki worries about ... Miki likes produce that has been grown in soil while bathing in sunlight.

This section signifies Miki's responsibility for the family's meals: the text is intended to portray Miki as the main decision-maker in procuring food for the family. By ignoring other family members—Miki's 'preferences' and 'worries' are given priority—the text both invokes and reinforces the idea of the housewife as the homemaker.

Moreover, reifying the idea of the male head of the family in contrast to the housewife, the burden of choosing dinner does not fall directly onto Masashi when Miki is not present because of work. This role is delegated to Gennai: the robot is coded female and therefore assumed to be more suited to housework. The inherent contradiction between Miki's 'normal' role as homemaker and her job outside the home, making clear the double role expected of her, is dealt with through this substitution. Gennai, and technology more generally, facilitates the housewife's multiple roles in life while leaving intact the husband's marginal role in maintaining the household. Using such strategies, the text strongly encourages the gendered divide in the home.

Again, in contrast to Miki, her father Shun also has very few responsibilities in the home. Shun's presence highlights a trend towards living with the wife's parents, instead of the husband's parents, which began to develop in the 1980s (Ochiai 1994: 157). This shows that the writers are aware of the changing nature of Japanese households, yet the nuclear-family scenario effectively avoids the issue of declining cohabitation with parents and the continuous decrease in the responsibilities of the eldest sibling as the family successor. Instead, Shun represents the older generation of Japanese citizens, and a variety of health-care scenarios are described using him and his friends as the main subjects. Intentionally, the elderly are used to signify Japan's main care burden, and the repetitive use of this trope to describe health technology in official documents

is predicated on the idea that the growing population of the elderly will enjoy most of the benefits from technological developments (MEXT 2017a: 48):

Miki's father, Shun, wakes up in the morning with graphs and numbers projected from the bed unto the ceiling jumping into his line of sight. These are his blood pressure and heart rate from while he was sleeping. Among other things, his breath is analyzed for diabetes, giving him peace of mind [*anshin* 安心] when the results give positive numbers. ... The fact that Shun can sleep comfortably is thanks to the bed adjusting to his turning and body position.

Various other tests are also taken throughout his daily routine. These include excrement analysis on the toilet, and an analysis of allergens by the vacuum cleaner, washer, and bed, or via wearable devices (ibid.: 48-49). The rest of the family members are only briefly mentioned following this scenario. The focus is on Shun, showing that the goal of the text is to convey how the elderly depend most on medical technology to achieve a certain quality of life. Evidently, only Shun requires such attentive medical care, and by ignoring the role of other family members in this scenario and having human care substituted by technology, Shun's family is completely relieved of the care burden.

This reliance on medical technology for 'peace of mind' is reinforced by another example, written as though it happened a few months earlier. One of Shun's friends had a medical emergency during the night. After the house system automatically detected it, his bed made an emergency call, and the friend was quickly transported to the hospital in an ambulance. Because he lived alone at the time, he was—at least according to the scenario—saved in time by the devices, the quick communication and data-processing abilities of the AI in place, and his willingness to allow emergency workers to enter his home without his immediate consent (ibid.: 49). The fact that he lived alone is only briefly addressed: 'there are also occasions where elderly persons live alone' (ibid.). Again, the text immediately 'solves' this problem using technology as a rhetorical device: the 'bed with sensors attached' (*sensā tsuki no beddo* センサー付きのベッド) again makes an appearance (ibid.: 49). The limited role of the person in the text and the extensive role of technology are evidence of how the idea has become normalized that technology will address any and all medical concerns, thus decreasing the human care burden.

The main trope used to establish this narrative is the interconnectedness of all devices. In the Masuda household, the interconnected system is centralized and controlled by Gennai, who emits and receives information from other devices, companies, and data centres, keeping a record of energy consumption,

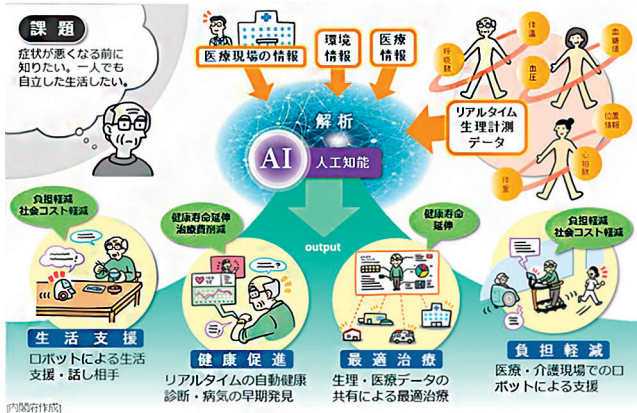


FIGURE 2 Depicting the future of medical care  
SOURCE: CABINET OFFICE (2016)

health, food intake, physiology, location, and behavioural patterns. These are then all measured, analyzed, and recorded for future reference. This is referred to as big data (*biggu dēta* ビッグデータ), and it is processed using AI. AI is used as the turning point towards the super-smart society, making it possible to connect devices and services and making life very comfortable for users. This potential is strongly emphasized in the health-care scenarios, which are repeated in public policy efforts, as shown in Figure 2, taken from a Japanese Cabinet Office proposal on the future of medical care.

An important aspect of using AI and big data is the possible benefit from technological integration. These benefits are not limited to human well-being: in the lower-left- and right-hand images, Figure 2 refers to the possibility of reducing the general ‘burden’ and the financial burden on society (*futan keigen shakai kosuto keigen* 負担軽減社会コスト軽減). The image and the text in the figure focus on the consumer, an older man using technology in his daily life. The image omits the complex workings needed to develop technology. The agents of change remain unnamed. Only the results are given with high modality (the sentence structure leaves out any verbs that might indicate alternative effects of the proposed technology, other than positive outcomes), leaving no doubt as to what the image and text intend: they convey the many ‘benefits’ of technology for elderly consumers and, consequently, for society as a whole.

These themes and their vocabulary recur in official statements. For the Masuda family, the financial aspect of the super-smart society is also frequently repeated, in the energy-saving possibilities of AI as well as in health care. Masashi, for example, wishes to maintain a healthy lifestyle because doing so will result in lower insurance premiums. This normalizes the notion

that insurers require direct access to data on his dietary habits and personal activities (MEXT 2017a: 50), and that this access is willingly given for financial benefit:

However much devices can help, it is difficult to continue to monitor health, but he has the data on his own behaviour sent to the insurance company and he is happily striving towards having his health premiums become cheaper. Shun feels that the development of science and technology considerably contribute to lowering medical fees and nursing fees.

The issue of broadly accepted access to personal information and the home is a fundamental aspect of this utopian super-smart society. Shun has his data sent to the insurance company, making him a passive actor in the processing of his health information, and this is causally linked to lower health premiums. The next sentence also convincingly insinuates causality, specifically that it is 'science and technology' that will lead to lower medical and nursing fees, despite the presence of the initial statement that there is a limitation to the help that 'devices' can provide. Again, a key theme is the eventual decrease in the care burden that elderly persons represent through Shun and his friend. The text only fleetingly mentions the issue of private information, choosing instead to focus on potential benefits. Free access to personal information is framed as beneficial to the well-being of the elderly in Japan.

Chie lives apart from the Masuda family, and because her children seem to have busy lives and limited time to take care of her, Chie has full access to the Masuda family living room to compensate for her lack of mobility (ibid.: 51). By using a robot replacement and 3D projections (see Figure 3), she is able to attend her grandson's wedding as though she were physically present (ibid.: 51):

The other day Chie attended the wedding of the son of Masashi's older brother and his wife, in other words, her grandson. ... This is also thanks to a robot. ... The grandson was delighted: 'I was happy, it was like grandmother was really here.'

The goal of the text is to convey the benefit of relying on robot technology to connect the family, even in situations where one family member, here Chie, cannot travel. The emotional vocabulary drives this point home: 'thanks to' (*no okage de aru* のお蔭である), 'delighted' (*yorokobareta* 喜ばれた), and 'happy'



FIGURE 3 Chie attends her grandson's wedding as a robot  
SOURCE: MEXT (2017B: 60)

(*ureshikatta* うれしかった). These positive emotions are causally linked to the robot's role, impressing on the reader the idea that robot technology is good. Evidently, allowing devices complete access to one's personal life is a matter of allowing yourself and your family to be happy.

Access is not limited to livestreaming a living room to one's nursing home or sending a robot as a physical replacement to a grandson's wedding. In fact, access is more widely distributed across a community of actors, including care workers, doctors, data specialists and big data centres, emergency services, and companies, as these scenarios show. For Chie, this means that her care worker and attending physicians have constant access to her physical status. In addition, she is aided by high-tech devices, such as a robot proxy (see the right-hand corner of Figure 3). The use of robotics is thus normalized using emotional language to emphasize the benefits of relying on technology. These texts express an underlying conviction that the almost-complete forfeiture of privacy leads to communal and family participation and comprehensive health-care solutions, with no effort made to argue otherwise.

This family has striking similarities to the one introduced nine years earlier in the 2007 Innovation 25 strategy. First, the addition of the robot helper is identical. Again, the house robot is given responsibility for keeping tabs on the family's food intake, physiological well-being, current location, and so on.



Second, we once again see a patriarchal, heterosexual extended family. Not surprisingly, the family is described starting with the father, Masashi, who has taken the role of head of the household, a reiteration of the *daikokubashira* ideology. In Innovation 25, a scene is described in which the daughter in the family walks outside and spots all manner of surveillance; she ponders whether ‘there are privacy issues, but no one can argue about the increased safety’, dismissing any potential contrary arguments.<sup>3</sup> This aspect of privacy is also conveniently elided in the Masuda family scenario. The description of necessary access in case of an emergency, as described in the case of grandfather Shun’s friend, is as close as the document comes to addressing the privacy implications of this new super-smart society. Consistently, however, the happiness that robotic technology will supposedly bring, is predicated on the idea that complete access is both required and voluntarily provided. To portray a sense of natural causality, the scenarios describe a well-established family that maintains its current form through the use of technology. Therefore, the focus is on the potential benefits of technological integration and big data analysis using AI. Although this scenario is set in 2035, the access to personal information as depicted here is not unrelated to contemporary developments. A recent innovation that resembles this technology and is becoming more widely established in Japan is called *mimamori* 見守り.

## 5 *Mimamori*, the Family, and the ‘Burden’

The term *mimamori* is a generic concept that includes a recent technological innovation with a growing presence in popular discourse (van der Veere 2018: 8-9). *Mimamori*, a combination of *miru* 見る (to watch) and *mamoru* 守る (to protect) can be translated as ‘watching over’, keeping in mind the subtle positive load to its meaning (Watanabe et al. 2003: 2508). In newspapers, the term has undergone some semantic evolution over time. In 2007, when the Innovation 25 plan was first introduced, *mimamori* was still associated with child protection (*Asahi shimbun* 2007):

Starting in October, Iwamizawa City will initiate the ‘children’s *mimamori* system’ in order to ensure children’s safety and to make sure they are not involved in criminal activities while going to or coming back from school. Using emails, schools will send parents (guardians) information on the children’s movements.

3 Katsuhiko Eguchi, as quoted in Robertson (2018: 78).



FIGURE 4 IC tag attached to the backpack of a child in Iwamizawa City

SOURCE: ASAHI SHIMBUN (2007)

Schools are able to track, record, and update parents concerning the location of their children by tracking the movements of students using IC (integrated circuit) tags. These tags use global positioning system (GPS) technology and can be worn around the neck or attached to clothing or backpacks (see Figure 4).

Location tracking is described as protection for children, rather than as monitoring activity. The quotation also insinuates that safety is necessarily about preventing children from engaging in ‘evil criminal activity’ as well (*akuhanzai* 悪犯罪) (ibid.; see also, *Yomiuri shimbun* 2007a). Distressingly, the role of the parents is marginalized to observer status with the need for this technology indicating their absence in the children’s trip to school, already showing how families use technology to facilitate separation in otherwise joint activities.

For the elderly, the timeframe of observation is dramatically expanded, to twenty-four hours a day. However, the goals of observation differ. Instead, the goal of GPS location tracking is to avoid sudden illness and accidents (*Asahi shimbun* 2008). For similar purposes, it is also possible to install a system to track the use of utilities in the home. Energy companies started developing such ‘*mimamori* services’ several years ago, designed to measure energy and water consumption (*Asahi shimbun* 2009):

The Denryoku Chūō Research Institute, which invented a system that checks the well-being of elderly persons by recognizing changes in the usage of energy, will hold an interim report meeting on the 12th.

The system is operating well, and the elderly persons being monitored also hold a favourable opinion, stating that ‘I have a sense of security’. The city is aiming for ‘zero solitary deaths’ and is hoping to introduce the system next year. The next issue will be how to deal with emergency situations.

In this article, two consumers are described: first, the elderly person who now feels more secure, and, second, the local government of Komae, a city that is attempting to address the issue of ‘solitary deaths’ (*kodokushi* 孤独死) (*Yomiuri shimbun* 2007b).<sup>4</sup> This is an important term, as it forms the justification for implementing this measurement system throughout the city.<sup>5</sup> Nevertheless, technologies such as these do not appear to be in wide use, especially when comparing the period between 2007 and 2014 to recent years. In this earlier period, *mimamori* as an act of ‘watching over’ the elderly was largely performed by so-called local community networks, not technology.

These community networks consisted of several actors, from local governments and volunteers to companies (*Yomiuri shimbun* 2012a, 2012b).<sup>6</sup> Only gradually has the concept evolved to include technology. Beginning in 2014, a shift occurs in which *mimamori* becomes more frequently associated with commercial services that generally include the installation of one or more sensors in the home. These sensors are connected to a terminal (*tanmatsu*) that collects data for transmission to a company server and communication with connected devices which can be held by anyone, from family members to government employees (*Yomiuri shimbun* 2014).<sup>7</sup> The data collected are then processed at data centres and analyzed for abnormalities. One requirement for proper functionality is that the installed sensors retrieve a trove of personal information, such as a person’s whereabouts in the home, water use, electricity use, the opening and closing of doors, temperature, and vital statistics. Logically, then, as the Japanese population is ageing rapidly and more of these systems are installed, this information is gathered primarily from those who

4 Interestingly, this concept is articulated in a single word: *kodokushi*. A combination of the words ‘loneliness’ (*kodoku*) and ‘death’ (*shi*), this phenomenon is so well-known that it warrants the creation of such a neologism and so widely understood that it needs not explanation.

5 *Yomiuri shimbun* used this concept and connected it to measuring energy consumption technology two years before *Asahi shimbun* did.

6 See, e.g. the thirteen-company collaboration described in the 2012a article; and the cooperation and proactive engagement with the issue of local officials in the 2012b article.

7 These include both commercial and government-run data centres.

are elderly. They often require assistance in their daily activities, especially because they are more prone to illness or degenerative conditions, such as dementia.

The increasing number of people requiring assistance is linked to *mimamori* technology in news coverage, using the inescapable ‘dementia threat’ to Japanese society (in other words, an increasingly large portion of the population will be afflicted with dementia), and dementia patients are a prime target for long-distance monitoring. Companies started developing these technologies for domestic use, utilizing this particular trope. In the narrative of the dementia threat, this technology was introduced through observational and information-gathering devices that are installed primarily for security purposes, with the term *mimamori* used in newspapers to name and describe such systems. It is important to note is that *mimamori* carries a more positive connotation than other words that imply protection, such as *keibi* 警備 (guarding). Unsurprisingly, *mimamori* technology serves the purpose of constant monitoring. This supposedly creates a sense of security among the users by checking the well-being (*anpi* 安否) of a continuously observable subject, reducing the various burdens (*futan* 負担) on the (actual) user, the observer. Underlying this development is one of the most commonly recurring expressions in this theme: that of family who live far away. It is often the parents who are described as living far away, not the children (Morita 2016):

Even though you worry about your elderly parents who live far away, it is difficult to frequently contact them or return home. For such people there is the handy *mimamori* system targeted at the elderly. By installing specialized devices in the home of your parents, you can check their well-being [*anpi*] simply by carrying a small device with you. Parents are also able to use it for emergencies.

In addition to the parents living far away, children are ‘unable’ to return home frequently, implying that they have little time for taking on care responsibilities. However, by placing sensors in the parents’ homes and making the data accessible, family members can check on the current condition of the observed subject from a distance. In the text, the core beneficiaries of *mimamori* technology are not the elderly (and, often, demented) parents. The primary consumers are the children, who can use this technology to achieve a sense of security (*anshin* 安心) by checking on their parents, assuaging personal care concerns while omitting a solution for the source of the problem: the inability

to take on the care burden. This also explains the turn towards interventions by non-family members (Wakayama 2017):

For watching over [*mimamori*] elderly persons living alone, a system will be introduced using a tablet-terminal with communication abilities. This will be started and seriously implemented from this year onward. By having elderly persons touch the screen on the terminal that has been lent to them, it is possible to ensure their well-being [*anpi*].

Here, again, technology is used to replace a personal care network, with the potential benefits generically articulated (Suzuki 2017):

*Mimamori* services for the elderly that use information technology are increasingly spreading. If, for example, one falls in the home, it can immediately assess that there is an emergency situation, improving daily life. There is also the effect of reducing the care burden [*futan*].

The advantages of using IT in *mimamori* technology are described using the 'emergency' scenario, with the same rhetorical devices as the Japanese government in its policy proposals. Simply put, the argument is that the quality of one's daily life is improved by having hastened emergency services, although the correlation between the two is not articulated. Again, a reference is made to reducing the care burden, albeit haphazardly. By now, the concept of the 'burden' is a familiar theme (Kikuchi 2016):

Compared to GPS, it is lighter and costs less, and is expected to be even more effective. ... According to statistics by the National Police Agency, the number of missing persons due to dementia in 2014 was 444, meaning that since these statistics were implemented starting in 2012, there has been a continuous increase. Takami Kunio, representative chairman of the 'Demented Persons and Their Families Association' (Kyōto City), has stated that 'all people who carry a smartphone can partake of *mimamori* without increasing their burden. This will add a great deal to the sense of security for the families of demented elderly'.

Some points should be noted here. First, the people suffering the burden are not those afflicted with dementia but the families and those who normally partake of *mimamori* activities. Second, the use of smartphones is given as a simple solution to the problem of dementia patients who go missing. Here

again, technology serves as a promising solution to large social problems. This is also seen in the case of care worker shortages, for which technology is similarly seen as the solution (Suda 2016):

With the goal of creating a support system for domestic nursing care, nursing homes, hospitals, municipalities, emergency services, and the police are working together to introduce a *mimamori* system that uses nursing-care robots. It is expected that the implementation will serve as a countermeasure to the care industry's labour shortage, advance the robot industry, and will help increase the autonomy of nursing-care patients.

The text provides few alternatives, and the high modality of the text (“it is expected that ... and will help increase”) shows no hesitation or doubt in its expectations: implementation of this technology will certainly provide the solution. This excerpt aptly reflects the current discourse on technological solutions in a society in the midst of demographic transition: the integration of all the services described in the implementation of the *mimamori* system implies broad support for such strategies in Japan. Not only is it implied that technological integration will help solve pressing labour shortages, but it will have economic benefits by advancing the robot industry while helping patients to become autonomous. And, finally, the family now plays only a small role in the solution, being unable to take on much of the care burden, so the responsibility shifts to society and, more specifically, technology. Alternative solutions, such as accepting migrants as care workers, are sparingly addressed in describing these technologies, with newspapers opting instead for a utopian technological solution to Japan's demographic concerns.

## 6 Conclusion: a Technological Utopia?

In the 2007 Innovation 25 proposal, it is apparent that technology is being used, at least rhetorically, to combat labour shortages. The family values expressed in this initiative still rely on the extended family ideology even as they exploit the potential of technology. More than ten years later, these values are still being propagated through policy initiatives that include examples of the Japanese family, such as the Masuda's, showing how little has changed in domestic policy-making. The Masuda family is imagined as a traditional three-generation household, with the father as the head of the family and the mother responsible for homemaking. In addition, the care of elderly parents is

conveniently addressed by technology, making it possible to avoid the issue of growing health costs and the increasing care burden. The integration of AI into every aspect of daily life in this imaginary super-smart society of the future ignores any possible solution other than a technological one.

Using technology as a rhetorical device in this manner, the Japanese government is pursuing various policies in an attempt to counter the inevitable changes due to demographic shifts. An important aspect of these reforms is the increasing participation of women in the workforce in an effort to create a larger labour population. However, the institutions currently regulating the family structure are impeding effective changes. Despite the signs of ideological shifts between generations concerning family values, formal institutions such as the *koseki* system hinder development away from traditionalist family values. On top of this, informal institutions such as the *dai-kokubashira* ideology continue to inform policy initiatives, even though they are unsustainable in the long term. Realistically, responsibility for caring for the elderly can no longer be centred on the extended family, as evidenced by the increasing number of nuclear families and one-person households and the disintegration of sibling networks. As such, the values embedded in policy reforms have not caught up with contemporary developments, resulting in a gap between the state's promulgated ideal family and the actual state of Japanese households.

The same idealization of technology is repeatedly expressed in newspapers. Technology in the home is framed as a broadly supported phenomenon, with everyone from parents to (local) government(s) and companies participating in the creation of long-distance care that, using *mimamori* technology, ensures the safety of communities by protecting children and, more emphatically, the elderly. The declining role of the family in care is a necessary, though not clearly articulated, condition of this shift towards technology. Unlike the state's ideal traditional family structure, there is a clear awareness in newspaper coverage of the growing changes in Japanese households. This includes the inability of parents to constantly protect their children, thus requiring GPS technology to track their whereabouts. In the same vein, grown children need to watch over their elderly parents but are unable to do so, thus they are in need of technology that enables them to take on at least some responsibility for their parents' care, relieving their personal anxiety by establishing remote access to an always observable subject.

This analysis focuses on the meanings conveyed and their implications. However, omissions can at times be as valuable in terms of informing a certain understanding as describing something overtly. In the official and popular discourse on technology, the issue of data security is conspicuous

by its absence. Neither the government nor the newspapers examined comprehensively address the issue of private information being processed by commercial entities, let alone how this data is processed. Vague concepts such as AI and big data are used to obfuscate a deeper understanding of what is required to make the 'super-smart society' possible. Although personal information, such as health status, condition, and location, requires vast access into one's personal life, the actual processing and securing of the data are not mentioned.

Moreover, actors are described passively, omitted, or downplayed through dry descriptions. More concretely stated, very little attention is paid to the political and economic aspects of technology production. Why is the government pursuing technology, instead of allowing migrant workers or enabling true female emancipation? How are companies trying to exploit an already fragile care system, and how does this intersect with the values that policy makers expressively pursue in their official statements? Moreover, are these new technologies accessible in terms of affordability? Despite having no clear answer to these questions, policy makers tout technology as a solution to the issue of demographic change, the ensuing labour shortages, and the ever-growing problem of Japan's ageing society, conveniently ignoring alternative solutions in their rhetoric.

Rather than re-establishing the extended family, therefore, technology accelerates an already growing divide between family members. Parents are able to check the location of their children as they come and go from school, and families are able to see whether their elderly parent is still alive and healthy by checking up on their location, health status, and well-being, all from far away. This is possible without being physically present or facilitating care beyond emergencies. The government presents technology as a utopian solution to the social ills of Japanese society, one that enables the perfect traditional family to be maintained. In reality, families have been growing away from this traditional ideal for decades, and it seems as if new technology is only worsening the resulting family separation.

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## Works Cited

- Asahi shimbun* (2007, 27 September), 'Haiteku de jidō mimamoru tōgekō jōhō tagu de kanchi iwamizawa de raigetsu kara (Watching over Children Using High-Tech: Sensing Information on the Path to and from School Using a Tag Starting Next Month in Iwamizawa)'. 30.
- Asahi shimbun* (2008, 11 April), 'GPS de kōreisha mimamori Isahaya-shi, hojo seido byōki, jiko ni kyūkō (Watching over Elderly with GPS. Isahaya City Support System. Quick Response to Illness, Accidents)'. 29.
- Asahi shimbun* (2009, 22 April), 'Kōreisha 'anshin dekiru' shiyō denryokuryō no henka de anpi kakunin, Denchūken to Komae no jisshō jikken (Elderly Persons "Can Relax". Possible to Check Well-being by Measuring Changes in the Use of Energy. Denchūken and Komae Doing Verification Experiment)'. 31.
- Assmann, Stephanie (2014), 'Gender Equality in Japan: The Equal Employment Opportunity Law Revisited'. *Asia-Pacific Journal*, 12(45), 1-24. Retrieved 5 May 2018 from <https://apjjf.org/-Stephanie-Assmann/4211/article.pdf>.
- Boling, Patricia (1998), 'Family Policy in Japan'. *Journal of Social Policy*, 27(2), 173-190.
- Brinton, Mary C. (1994), *Women and the Economic Miracle: Gender and Work in Postwar Japan*. Berkeley: University of California Press.
- Cabinet Office (2007), 'Inobēshon 25 (Innovation 25)'. Retrieved 5 May 2018 from <https://www.cao.go.jp/innovation/index.html>.
- Cabinet Office (2016), 'Society 5.0 arata na kachi no jirei (iryō, kaigo) (Society 5.0 An Example of New Values (Medical Care and Nursing Care)'. Retrieved 5 May 2018 from [http://www8.cao.go.jp/cstp/society5\\_0/medical.html](http://www8.cao.go.jp/cstp/society5_0/medical.html).
- e-Gov (2017), 'Koyō no bun'ya ni okeru danjo no kintōna kikai oyobi taigū no kakuho nado ni kan suru hōritsu shikō kisoku (Ordinance for the Enforcement of the Act on Securing Equal Opportunity and Treatment and Etcetera of Men and Women in the Field of Employment)'. Retrieved 5 May 2018 from [http://elaws.e-gov.go.jp/search/elawsSearch/elaws\\_search/lsg0500/detail?lawId=361M50002000002/](http://elaws.e-gov.go.jp/search/elawsSearch/elaws_search/lsg0500/detail?lawId=361M50002000002/).
- Ezawa, Aya (2010), 'Motherhood and Class: Gender, Class, and Reproductive Practices among Japanese Single Mothers'. In Hiroshi Ishida & David H. Slater (eds.), *Social Class in Contemporary Japan: Structures, Sorting and Strategies*. Abingdon, UK: Routledge, pp. 197-220.
- Facebook (2019), 'Company Info'. Retrieved 30 May 2019 from <https://newsroom.fb.com/company-info/>.
- Fairclough, Norman (1995), *Critical Discourse Analysis: The Critical Study of Language*. London: Longman.
- Foucault, Michel (1989), *Archaeology of Knowledge*. Translated by Alan M. Sheridan Smith. London: Routledge.

- Foucault, Michel (1980), *Power/Knowledge: Selected Interviews and Other Writings 1972-1977*. Edited by Colin Gordon. Translated by Colin Gordon et al. New York: Pantheon Books.
- Hall, Stuart (1992), 'The West and the Rest: Discourse and Power'. In: Hall, Stuart & Gieben, Bram (eds.), *Formations of Modernity*. Cambridge, UK: Polity Press, pp. 275-331.
- Hertog, Ekaterina (2011), '“I Did Not Know How to Tell My Parents, So I Thought I Would Have an Abortion”: Experiences of Unmarried Mothers in Japan'. In: Ronald, Richard & Alexy, Allison (eds.), *Home and Family in Japan: Continuity and Transformation*. London: Routledge, pp. 91-111.
- Hidaka, Tomoko (2011), 'Masculinity and the Family System: The Ideology of the ‘Salaryman’ across Three Generations'. In: Ronald, Richard & Alexy, Allison (eds.), *Home and Family in Japan: Continuity and Transformation*. London: Routledge, pp. 112-130.
- Inoue, Shin (2018), 'Inequality and Precarity in Japan: The Sorry Achievements of Abenomics'. *Asia-Pacific Journal*, 16(6), 1-13. Retrieved 10 November 2018 from <https://apjif.org/-Sachie-Mizohata--INOUE-Shin/5126/article.pdf>.
- Japan Times* (2017, 2 November), 'Zama Serial-Murder Suspect Used Twitter to Prey upon Young Suicidal Women'.
- Kikuchi, Shinji (2016, 19 February), 'Mimamori tanmatsu sumāto-ka kōreishayō burūtūsu dōnyū (Mimamori Terminal. Smart-ization. For Use by Elderly Persons. Introduction of Bluetooth)'. *Yomiuri shimbun*, 29.
- Kojima, Shinji, North, Scott & Weathers, Charles (2017), 'Abe Shinzō's Campaign to Reform the Japanese Way of Work'. *Asia-Pacific Journal*, 15(23), 1-17.
- Krogness, Karl J. (2011), 'The Ideal, the Deficient, and the Illogical Family: An Initial Typology of Administrative Household Units'. In: Ronald, Richard & Alexy, Allison (eds.), *Home and Family in Japan: Continuity and Transformation*. London: Routledge, pp. 65-90.
- Mautner, Gerlinde (2008), 'Analyzing Newspapers, Magazines and Other Print Media'. In: Wodak, Ruth & Krzyżanowski, Michał (eds.), *Qualitative Discourse Analysis in the Social Sciences*. Basingstoke, UK: Palgrave Macmillan, pp. 30-53.
- MEXT (2017a), 'Heisei 28-nenban kagaku gijutsu hakusho (Heisei 28 Version Science and Technology White Paper)'. Retrieved 5 May 2018 from [http://www.mext.go.jp/b\\_menu/hakusho/html/hpaa201601/detail/1371168.htm](http://www.mext.go.jp/b_menu/hakusho/html/hpaa201601/detail/1371168.htm).
- MEXT (2017b), 'White Paper on Science and Technology 2016 (Provisional Translation)'. Retrieved 5 May 2018 from [http://www.mext.go.jp/component/english/\\_icsFiles/afieldfile/2017/04/14/1384513\\_007.pdf](http://www.mext.go.jp/component/english/_icsFiles/afieldfile/2017/04/14/1384513_007.pdf).

- Ministry of Internal Affairs and Communications, Statistics Bureau (2017), *Statistical Handbook of Japan 2017*. Retrieved from <http://www.stat.go.jp/english/data/handbook/cou17.html>.
- Miura, Mari (2015), 'Shinjiyūshugi-teki bosei: 'Josei no katsuyaku' seisaku no mujun (Neo-Liberal Motherhood: "Women's Participation" Policy's Contradictions)'. *Jendā Kenkyū: Ochanomizu joshidaigaku jendā kenkyū-sentā nenpō*, 53-68.
- Morita, Etsuko (2016, 6 February), '(Teku no seikatsu nyūmon) kōreisha o shisutemu de mimamoru sumaho de itsu de mo anpi o kakunin ((Introduction to the Tech-Life) Using a System to Watch over Elderly. Always Able to Check on Well-Being Using a Smartphone)'. *Asahi shimbun*, B11.
- Nagase, Nobuko (2006), 'Japanese Youth's Attitudes towards Marriage and Child Rearing'. In: Rebeck, Marcus & Takenaka, Ayumi (eds.), *The Changing Japanese Family*. Abingdon, UK: Routledge, pp. 39-53.
- Ochiai, Emiko (1994), *The Japanese Family System in Transition: A Sociological Analysis of Family Change in Postwar Japan*. Tokyo: LTCB International Library Foundation.
- OECD (2019a), 'Elderly Population (Indicator)'. doi:10.1787/8d805ea1-en.
- OECD (2019b), 'Young Population (Indicator)'. doi:10.1787/3d774f19-en.
- Ogasawara, Yuko (1998), *Office Ladies and Salaried Men: Power, Gender, and Work in Japanese Companies*. Berkeley: University of California Press.
- Robertson, Jennifer (2007), 'Robo Sapiens Japonicus: Humanoid Robots and the Posthuman Family'. *Critical Asian Studies*, 39(3), 369-398.
- Robertson, Jennifer (2018), *Robo Sapiens Japonicus: Robots, Gender, Family and the Japanese Nation*. Oakland: University of California Press.
- Rosenberg, Matthew, Confessore, Nicholas & Cadwalladr, Carole (2018, 17 March), 'How Trump Consultants Exploited the Facebook Data of Millions.' *New York Times*.
- Sand, Jordan (1998), 'At Home in the Meiji Period: Inventing Japanese Domesticity'. In: Vlastos, Stephen (ed.), *Mirror of Modernity: Invented Traditions of Modern Japan*. Berkeley: University of California Press, pp. 191-207.
- Sand, Jordan (2003), *House and Home in Modern Japan*. Cambridge: Harvard University Press.
- Statistics Bureau MIAC (2018). 'Chapter 25 Education'. Retrieved 30 November 2018 from <http://www.stat.go.jp/english/data/nenkan/67nenkan/1431-25.html>.
- Statistics Bureau MIAC (2019), 'Monthly Report'. Retrieved 30 May 2019 from <http://www.stat.go.jp/english/data/jinsui/tsuki/index.html>.
- Suda, Seiki (2016, 5 September), 'Kaigo robotto ikashita, kōreisha shien o saguru sangaku kan'i torikumi Atsugi (Making Use of Nursing Robots, Investigating Support for Elderly Persons. Simple Industry-Academic Initiative in Atsugi)'. *Asahi shimbun*.
- Suzuki, Yuriko (2017, 7 September), 'Kōreisha mimamori, hirogaru IT katsuyō oto de ijō sacchi, kangoshi ga anpi kakunin (Watching over Elderly Persons, the Growing Use

- of IT. Using Sound to Detect Abnormalities, Nurses Can Check Well-Being). *Asahi shimbun*, 26.
- Twitter (2019). 'About'. Retrieved 30 May 2019 from <https://about.twitter.com>.
- UN Treaty Collection (2019), 'Chapter IV Human Rights: 8. Convention on the Elimination of All Forms of Discrimination against Women'. Retrieved 30 May 2019 from [https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=IV-8&chapter=4&lang=en/](https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IV-8&chapter=4&lang=en/).
- van der Veere, Anoma P. (2018), *Presenting Domestic Care Technology and Elderly Care in Japanese Newspapers*. Leiden: LeidenAsiaCentre.
- Vogt, Gabriele (2018), *Population Aging and International Health-Caregiver Migration to Japan*. Hamburg: Springer.
- Wakayama, Tetsurō (2017, 6 June), 'Taburetto de kōreisha mimamori Yunomae-chō, 11 setai ni muryō kashidashi kaoiro mo kakunin (Using a Tablet to Watch Over Elderly Persons. Yunomae Town, Free Loans for 11 Households. Also Checks the Colour of One's Face)'. *Asahi shimbun*, 29.
- Watanabe, Toshiro, Skrzypczak, Edmund R. & Snowden, Paul (2003), *Kenkyūsha's New Japanese-English Dictionary [Shin wa-ei daijiten]*, 5th ed. Tōkyō: Kenkyūsha.
- Wodak, Ruth (2008), 'Discourse Studies—Important Concepts and Terms'. In: Wodak, Ruth & Kryzyżanowski, Michał (eds.), *Qualitative Discourse Analysis in the Social Sciences*. Basingstoke, UK: Palgrave Macmillan, pp. 1-29.
- Yomiuri shimbun* (2007a, 6 November), 'Jidō mimamori shisutemu kaishi Shingū, Ōji, randoseru denshi tagu tsuke (Initiating a Mimamori System for Children. Shingū, Ōji, Electronic Tag Attached to Elementary School Bags)'. 33.
- Yomiuri shimbun* (2007b, 30 July), 'Denki shiyōryō de anpi kakunin, Komae-shi ga dokkyo kōreisha mimamori jikken (Checking Well-Being with Energy Usage, Komae City Is Experimenting with Elderly Persons Living Alone)'. 33.
- Yomiuri shimbun* (2012a, 20 June), 'Kōreisha mimamori 13 jigyōsho to kyōtei Hirado-shi, shimbun hanbai-ten nado (Watching over Elderly Persons. Agreement among 13 Offices. Hirado City, Newspaper Dealers, etc.)'. 29.
- Yomiuri shimbun* (2012b, 24 April), 'Koritsushi bōshi no hinto mo Ōyama danchi jichitai kaichō ga hon (Tips to Prevent Solitary Deaths. Book by Housing Complex Self-Governing Committee Chairman Ōyama)'. 32.
- Yomiuri shimbun* (2014, 13 March), 'ICT katsuyō kōreisha mimamori suidō, gasu mētā de ijō kanchi (Utilizing ICT. Watching over Elderly Persons. Sensing Abnormalities through Water and Energy Metres)'. 33.