

Maja Hojer Bruun • Ayo Wahlberg  
Rachel Douglas-Jones  
Cathrine Hasse • Klaus Hoeyer  
Dorthe Brogård Kristensen  
Brit Ross Winthereik  
Editors

# The Palgrave Handbook of the Anthropology of Technology

palgrave  
macmillan

---

# Imagineerism: Technology, Robots, Kinship. Perspectives from Japan

## Kinship

*Jennifer Robertson*

Technology tends to be regarded as a domain of innovation and invention that is forward-looking and focused on the future. I draw from my ethnographic and archival research in Japan to show that advanced technology, in particular robotics, and progressive values should not be conflated; the two are not automatically congruent. Idioms of family and kinship have been deployed to imbue Japanese technologies (or engineered artefacts) with uniquely Japanese character, and even to frame them as nostalgic by-products of Japanese uniqueness.<sup>1</sup> Yet Japan is also regarded as the go-to site for futuristic discourses, images, and forecasts of human-robot relations. I argue that these images are actually outdated and these forecasts backward-looking. Japan serves as a case study of imagineerism, or of the consequences of techno-nationalism as a declinist narrative; that is, imagining a robotised society of the future involves the reimagining of past society as an ideal to resurrect.

### KINSHIP TECHNOLOGY

Kinship practices are usefully understood as a technology that produces ontologies, or, as frameworks that describe, represent, and create human relationships. These relationships are produced on several levels, from the individual

---

J. Robertson (✉)  
University of Michigan, Ann Arbor, MI, USA  
e-mail: jennyrob@umich.edu

© The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2022

449

M. H. Bruun et al. (eds.), *The Palgrave Handbook of the Anthropology of Technology*, [https://doi.org/10.1007/978-981-16-7084-8\\_23](https://doi.org/10.1007/978-981-16-7084-8_23)

and familial to the communal and the national. They are biological, as flesh-and-blood humans are the nominal subject, but they are not necessarily genetic (or genomic) in their relationality. Although a rhetoric of 'blood' ties, or biogenetics, may inform the functional structuring of kinship systems, social and cultural considerations, including individual sexual and gender orientations, have considerable symbolic and semantic importance. David Schneider (1968) broke new ground in kinship studies by demonstrating that Euro-American kinship was a system of symbols and meanings, and not simply a network of biogenetically interrelated, heteronormative nuclear familial roles. Kath Weston (1997) further challenged the heterosexist and procreational basis of kinship presented as self-evident by many anthropologists. She showed that many Americans, including African-Americans, lesbians, and gay males, do not actually hold to a strict biogenetic interpretation of kinship, and instead exercise agency in choosing their families and kin.<sup>2</sup> Not mentioned by Weston but within her ethnographic framework are objectum-sexuals, individuals who forge intimate relationships with objects that might also become marriage partners and families of choice (Frizell 2015; Objectum-Sexuality Internationale 2015). Additionally, although they did not openly critique the Eurocentric blinders of human exceptionalism, early ethnographers of non-Western societies and cultures reported many examples of non-human referents in kinship systems and lineages (e.g. Evans-Pritchard 1950, p. 362). More recently, bio-artists have experimented with creating novel kinships between humans and non-human agents (Kac 2009 [2007]).

Kinship thus provides a framework for human-robot and human-object relationships by activating and engaging a diverse range of affinities transacted among humans, animals, organic, and inorganic things without assuming a priori their inherent goodness or badness, naturalness or unnaturalness. The term 'neo-kinship' has been used to describe fluid and complex forms of kinship practices, such those between humans, wildlife, and objects, enabled by biotechnology and robotics that are incorporated into or replacing the nuclear family (Campbell 2010; Neo-Kinship 2017). However, the use of 'neo' is presentist, as if the interface (or kinship) of human and non-human (whether organic or inorganic) were a very recent phenomenon made possible by companion bots and digital assistants. Likewise, the technology aspect of kinship is neither limited to nor monopolised by new assistive reproductive technologies like in vitro fertilisation (IVF). In her insightful work on IVF, Sarah Franklin (2013), shows how technology has created the ability to 'culture biology in vitro' and to enable the emergence of new biological relatives. At the same time, however, IVF, modelled on biogenetically based systems of family formation, technologically reproduces dominant Euro-American kinship patterns. IVF's logic is recursive; it 'goes forward by going backward' (Mathiason 2015, pp. 221–222)—a trajectory that figures centrally in my association of advanced technology with a declinist narrative. To recognise kinship itself as a technology is to understand and appreciate how manifold relationships and affinities among diverse agents are forged and transacted. Kinship activates and engages

a network of relatedness, bonding, and obligations that enables the transmission of property and knowledge across generations through a classification of different agents and actors. This conception of kinship and relatedness underscores that they are social and cultural constructs and, to reiterate, do not map directly onto biogenetic relationships.

In this chapter, I focus on Japan as a case study illustrating how the technology of kinship structures human-robot relationships. That kinship is deployed both metaphorically and materially to structure (gendered) personhood and communities alike is well understood in the social sciences. That kinship informs the actual development of newly engineered technologies, such as household robots, is less understood. The imagined uses of technology—and here I include kinship—can structure the political framing of technological research and influence the physical development of technologies, such as robots (Müller and Tworek 2016, p. 106). ‘Imagined uses’ augments Raymond Williams’ oft-cited observation that specific institutional forms do not follow from the character of technology per se, but from the predominant political and economic institutions of different societies (Williams 1981, p. 236).

### IMAGINEERING VERSUS IMAGINEERISM

Japan is often characterised in the global mass media and Japanese policy papers alike as a ‘robot superpower’ (*robotto taikoku*). The country is imagined as the go-to site for images and (mercantilist) discourses of post-industrial forecasts about techno-national futures in multiple senses of new markets, economic security, resource sustainability, and social stability. Techno-nationalism may focus primarily on the new fields of robotics, artificial intelligence and machine learning, quantum computing and information systems, energy storage, and semiconductors (Capri 2020, p. 6), but, as I argue in the case of Japan, the imagined futures they occupy are not forward but backward-looking. That is, the *imagining* of a robotised society of the future is informed by the *reimagining* of past social structures and relationships (Robertson 2018a, b). These structures and relationships centre on notions of kinship and the alleged uniqueness of the Japanese cultural character. The enthusiasm for and embrace of advanced technologies, like robotics, should not be conflated with progressive thinking on the part of political leaders or engineers (cf. Zaidi 2008, p. 64).

I coined the term ‘imagineerism’ to describe what I have observed as a dominant mode of the political framing that structures the imagined uses of technology, including the technology of kinship. As a cognitive process, imagination is not value free; rather, it is constrained by experience and learned orientations, such as those fostered by upbringing and kinship practices. Imagineerism is an ideology and doctrine that advocates, endorses, and sanctions a techno-nationalist agenda of ‘future-as-idealised-past’. The political and socio-cultural framing of research on human-robot interaction is mostly, perhaps inevitably, conservative and anachronous. As an ideology, imagineerism is less about ‘innovation’ and more about ‘renovation’; that is, it does not

advocate *new* values but rather the *renewal* of old values (Robertson 2008, 2018b, p. 35). Imagineerism incentivises ‘conceptual conservatism’ by imagining future social institutions, such as the household, as technologically improved and idealised versions of past ones.

As defined by philosopher of science Moti Nissani (1994), conceptual conservatism is the human tendency to cling to strongly held beliefs long after these beliefs have been decisively discredited or refuted. Think of present-day subscribers to flat-earth theory. Such behaviour is not simply an expression of wilful ignorance or emotional instability but also a product of ‘purely cognitive aspects’ of ‘the failure to accommodate new ideas’, as Nissani enumerates (1994, pp. 307–308).<sup>3</sup> Thus, imagineerism, as I define it, is a doctrine of stodgy banality, far from the ingenuity and resourcefulness associated with words like ‘innovation’ and ‘imagination’. Although nearly identical, imagineerism must not be confused with ‘imagineers’—persons who imaginatively engineer new types of technology—or ‘imagineering’.<sup>4</sup>

I began this chapter with a discussion of the technology of kinship. In the context of imagineerism as a backward-looking deployment of advanced technology, I will now broaden my definition and use of ‘technology’ before returning to kinship as a framework for techno-nationalist discourse as well as for human-robot relations and robo-ethics. Technology also refers to the technical means or tools, both imagined and actually created, that are applied to affect a community’s or society’s ability to shape and adapt to a variety of environmental forces. Thomas Hughes (2005), a historian of science, points out that the Indo-European root of ‘technology’ is *teks*, meaning to fabricate or weave; the Greek *tekhnē* referred to an art, craft, or skill. Both of these early meanings, he observes, ‘suggest a process of making’ and creating, thereby suggesting an overarching definition of technology that emphasises creativity and control. In Europe and the United States, the word ‘technology’ was mainstreamed in the late 1950s as a more inclusive term than ‘engineering’, which it subsumed. Today, the word is also often used anachronistically to name things that in the nineteenth century were simply called machines (Hughes 2005, pp. 3–4).

Hughes’ definition of technology corresponds to one advanced by Kenkichi Satō, a Japanese historian of technology and ecoethics. Satō emphasises that, fundamentally, ‘technology (*gijutsu*) is learning from doing’ or, literally, ‘experience-based embodied practices’ (*keiken kara mi ni tsukeru*). Technology is, he further explains, the ‘actualization of the process of a successful series of perfected skills’ (*seikō shita waza no rensa ga sugureta tekiyōryoku sunawachi ‘gijutsu’ o jitsugen suru*) (Satō 2008, pp. 51–52). Combined, Hughes’ and Satō’s definition of technology can be summarised as both a process and product of imagineering, that is, imagination plus engineering.

In the 1990s, the word *monozukuri* (lit. thing-making) was coined to describe Japanese manufacturing technologies and is widely used in advertising within Japan to emphasise the ‘unique’ character of Japanese imagineered products (Monozukuri 2016; Pringle 2010; Robertson 2018b, pp. 57–58).

The Japanese expression, ‘Galápagos Syndrome’ (*garapagosuka*, lit. Galápagosisation), refers to *monozukuri* products, especially mobile phones and tiny cars, designed exclusively for the fickle Japanese market. Although these are not made by traditional methods, they are specially crafted for Japanese consumers. The iPhone may be the best-selling smart phone in Japan, but close to half of all cell phones purchased in Japan are specially designed Japanese-made flip phones redolent of an earlier era of telecommunications (Byford 2017; Kawabata 2019; Stockwin and Ampiah 2017, p. 130). These examples of *monozukuri* illustrate the ways major industries foster cultural nostalgia through made-in-Japan-for-Japanese products (Shoji 2020).<sup>5</sup> On its own, nostalgia-tinged imagineering is a benign exercise. It is when transposed as cultural chauvinism, however, that the rhetoric of mystified nostalgia is easily manipulated to promote a conservative, backward-looking social order. As I will elaborate below, techno-nationalism and imagineerism go hand in hand.

### ‘BLOOD’ AND *KIZUNA*

At this juncture, a review of the historical context for the formation of Japanese techno-nationalism is in order. In the late nineteenth century, when feudalism was supplanted by a modern constitutional monarchy established under the Meiji Constitution (1889), kinship was invoked and exploited as a cipher for the nation, or ‘family state’ (*kazoku kokka*), a conflation of ethno-nationalism and culture. The introduction of universal education, conscription, national newspapers, and a household registration system (*koseki seido*) unified the Japanese people as members of a national household. In the words of the *Imperial Rescript on Education* (1890) memorised by students, the Japanese people were unique in constituting a filial family sharing the same ‘blood’ and ethnicity, presided over by the patriarch-emperor and his unbroken Imperial lineage.

As imagined in the twinned contexts of modernisation and imperialism, the technology of kinship reinforced a chauvinist ideology that fuelled Japan’s emergence as an imperial power. A post-war constitution, promulgated in 1947, abolished the peerage but retained the emperor as a cultural symbol, granted universal suffrage, included a bill of rights, and outlawed the right to declare war. Although individual sovereignty is encoded in the constitution, the *koseki* (household registry) system was never dismantled. The ‘family state’ was thereby effectively preserved although the imperialist term *kazoku kokka* has been replaced by the folksier term *kizuna* (kin-like ties and bonds). Voted the ideograph (*kanji*) of the year in 2011, *kizuna* was widely used in government campaigns to promote national solidarity in the wake of the devastating trifold disaster (earthquake, tsunami, nuclear reactor meltdown) of 11 March 2011 and more recently in public safety announcements during the Covid-19 pandemic. The *koseki* system sustains deeply entrenched definitions of Japanese nationality, ethnicity, gender roles, and family structure as intrinsically linked primarily through the primacy of ‘blood’ or descent.

Despite references to ‘blood’ in Japanese nationalist discourse, households may include individuals who are ‘dominant ethnic’ Japanese citizens but not genetically related to a given family. Pragmatism dictates that there is no premium on biogenetic membership per se. If a married couple is childless or if their adult children are not competent, then a successor can be adopted. The adoptee, usually male, then assumes the family’s surname and is added to their *koseki*. These adopted members add depth and strength to the household, which, ultimately, is an economic, corporate entity that must be reproduced in perpetuity—the members are generational custodians.<sup>6</sup> The *koseki* has also been used to demonstrate ‘kintimacy’ between humans and robots, even those that are not humanoids. In November 2010, Paro, a harp seal robot that has seen international success as a therapy animaloid, was granted a household registry (*koseki*). The inventor was recorded as the seal-bot’s father. Media coverage of Paro’s *koseki* was favourable (Robertson 2018b, pp. 137–140).

On the surface, the conferral of Paro’s *koseki* may seem benign and inconsequential—even gimmicky. Quite the contrary. The *koseki* conflates family, nationality, and citizenship based on *jus sanguinus*. It also ‘legally and ideologically prioritises the *ie* (household) over the individual as the fundamental social unit in Japanese society’ (Chapman 2011, p. 3). Paro’s ‘blood’, a product of *monozukuri*, consisted of Japanese manufactured and manually assembled electronic parts and synthetic materials. These definitions and deployments of family and *kizuna* by conservative politicians and engineers, have framed robotics in a techno-nationalist light. They claim that ‘robots will rescue’ Japan from labour shortages by eliminating the need for immigrants and thus helping to preserve the country’s alleged ethnic homogeneity. And, as I elaborate below, robots are also imagined to help to restore ‘family values’ and to secure the stability of the household as a microcosm of Japanese society.

#### INNOVATION AS RENOVATION

Shinzō Abe, who, for health reasons, resigned the prime ministership in August 2020, eight years into his second term (2012–2020), is a ‘Meiji man’; that is, he is both a moderniser and traditionalist. Topping Abe’s nationalist agenda has been the revision of the 1947 constitution along the lines of the imperial constitution of 1889. Halfway through his short first stint (2006–2007) as prime minister, Abe, an enthusiastic advocate of Japan’s robotisation, introduced *Innovation 25*, an ambitious plan for fully robotised households and workplaces by 2025 (Government of Japan 2007). (The plan remains on the official website of the prime minister along with updated versions.) I describe *Innovation 25* as ‘retro-visionary’ because it imagines that robots and technology will restore the ‘traditional’ household (*ie*), a microcosm of the family state, as opposed to the post-war ‘democratic state’ (*minshu kokka*), recently (re)imagined in terms of *kizuna*. ‘Born in Japan’ robots are imagined in *Innovation 25* as playing a key role in the preservation and stabilisation of not just any family, but specifically the patriarchal extended family, or *ie*, which

conservatives regard as the core of a stable society. Clearly, techno-nationalism is a declinist narrative; preservation and stabilisation are invoked as motives *because* ideologues claim that family values and *kizuna* have been eroded by individualistic desires and pursuits.<sup>7</sup>

What demographic trends prompted *Innovation 25*? The number of two-generation families is declining in Japan and three-generation households are increasingly rare. The population of 125.9 million is ageing rapidly and the birth-rate has fallen below the mortality rate, prompting worries among pundits of a demographic catastrophe within several decades. Presently, nearly 30 per cent of the population is over 65 years of age, and only 13 per cent under 15 years of age. (When Abe introduced *Innovation 25*, the population was nearly 128 million, 21 per cent of whom were over 65 years of age.) Similar demographic profiles are shared by Italy, Portugal, and Germany in particular, all countries with ageing populations, low birth-rates, and growing robotics sectors. However, in Japan, heteronormative marriage remains the *only* sanctioned context for childbirth, effectively precluding single-by-choice parents and 'out' lesbian and gay couples from having children. Fewer women and men are keen on marriage, and the number of married couples declined to 4.7 per 1000 persons in 2018. Moreover, the mean age of first marriage was 31.1 for grooms and 29.4 for brides that year (Statistics Bureau of Japan 2019).

Women are reluctant to lose their careers and financial independence; marriage would entail their dependence on and subordination to husbands. Even married couples are opting not to have children, and demographers can no longer take for granted that marriages produce children. As illustrated in *Innovation 25*, however, one alternative to this loss of career and concomitant financial independence is for robot maids to relieve women of household chores and responsibilities, ostensibly making them more willing to get married and to have more than 1.3 children.

*Innovation 25* includes a fictional ethnographic portrait of a day in the life of the three-generation Inobe family, whose invented surname is an abbreviation of the loan word *inobēshon* (innovation). The household is micromanaged by Inobe-*kun*, a child-size, male-gendered humanoid robot connected to the internet. Inobe-*kun* liberates Mrs Inobe from housework and childcare even though she telecommutes from home; her husband commutes by mass transit to an office (Robertson 2007, 2018b, pp. 50–79). In 2008, the Toyota Motor Corporation made a prototype of a multi-tasking humanoid 'house-assistant robot' inspired by Inobe-*kun*, a gimmicky project that was quickly mothballed (Rosie the robot maid 2008).<sup>8</sup> This retro-visionary plan to secure national stability credits technology and robotics as the main agents of social change. *Innovation 25* does not promise gender and sexual equality, but rather a continuation of gender and sexual complementarity: husbands work outside the home for a salary, and wives remain at home, assisted by a robot helper. Mrs Inobe's telework earns her not a salary but 'pocket money' (*okozukai*) (Robertson 2018b, p. 58).



Without the inclusion of feminist perspectives there will be no gender and sexual equality in the Japanese homes and offices of tomorrow irrespective of the presence of robots. *Plus ça change, plus c'est la même chose*. Funded by the state and corporations, it goes without saying that robotics is not a neutral tool and reflects the values of those institutions and their mostly male executives—only 6.5 per cent of the top 100 companies in Japan have a female CEO. While continuing to support the development of household robots along with industrial robots, the Japanese government has also pursued a more lucrative avenue by joining robotics with the arms industry (Onozuka 2016; Pfanner 2014). Not surprisingly, *Innovation 25* and its successors promote a vision of Japan as mercantilist empire, liberating the developing nations—former colonies—in Asia by providing technological expertise that will ultimately benefit Japan.

Meanwhile, in Japan, automation over replacement migration was enshrined in post-WW2 domestic policy, and today a robotic labour force within Japan is imagined as eliminating the need for migrant labour and insuring 'cultural and ethnic homogeneity' (Robertson 2018b, pp. 128–129). The techno-nationalist rhetoric continues to crescendo despite the fact that there is an urgent need for guest workers: to clean up the damaged and polluted Fukushima Dai'ichi nuclear reactor site, reconstruct the tsunami ravaged north-eastern coastline, construct Olympic and Paralympic venues, and supplement the diminishing ranks of native nurses and caregivers. New legislation implemented in 2019 created two categories of medium-skilled foreign workers to be employed in 14 labour-shortage sectors.<sup>9</sup> One group is limited to a maximum stay of five years and prohibited from bringing family members. A second group, with higher skill levels, is allowed unlimited work-visa renewals and can bring spouses and children but no other family members. Theoretically, this second group should be eligible for permanent residency and even citizenship. However, only a fraction of the 350,000 workers approved has been hired, basically due to various disagreements among different parties about guest workers' rights and their equal treatment with Japanese workers (Milly 2020).

### SOCIETY 5.0

A decade after the debut of *Innovation 25*, the retro-visionary proposal remains a pipedream and Abe advisedly dropped the '25' and added 'Japan'. Along with 'Innovation Japan', newer buzzwords include 'Robot Revolution' and 'Society 5.0', which is described as the society of the future that will succeed, teleologically, Societies 1.0 (hunting and gathering), 2.0 (agriculture), 3.0 (industrial), and 4.0 (information). It is defined, enigmatically, as '[a] human-centred society that balances economic advancement with the resolution of social problems by a system that highly integrates cyberspace and physical space' (Cabinet Office 2020). The illustrated English-language synopsis of Society 5.0 on the Cabinet website blends lofty ideals with images of traditional gendered social structures.

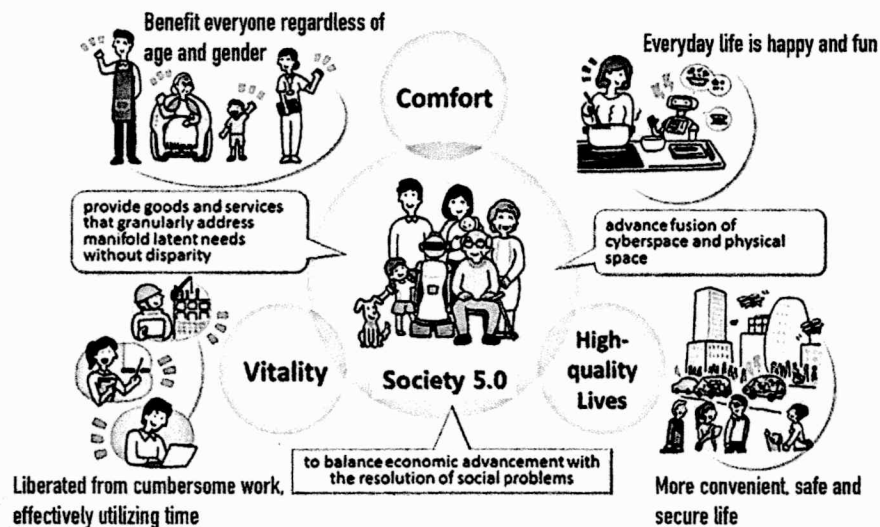


Fig. 23.1 Human-robot interaction and high-tech efficiency in Society 5.0. At the centre is the three-generation heteronormative family and their domestic robot and dog (Cabinet Office 2020). (The small, unbordered captions were redone by the author in a larger font for improved readability)

The explanatory cartoon (Fig. 23.1) accompanying this passage has four vignettes framing a light yellow circle in which is portrayed an apparently heteronormative multi-generational family (one set of grandparents, a married couple, their two children, one of which is a newborn), the household robot, and the family dog. In a vignette with the caption, ‘everyday life is happy and fun’, the housewife is in the kitchen ‘chatting’ with the robot as she stirs a pot on the stove. As in *Innovation 25*, Society 5.0 implies that a married woman who is freed from housekeeping and caretaking chores will be more able and willing to have (more) children. The traditional ‘good wife, wise mother’ and modern ‘professional housewife’ ideals for married women remain self-evident and dominant.

Promoted as a ‘model future society’, the addition of a maid robot in Society 5.0 only reinforces the present-day status quo. Outside of the home, in the ‘human-centred’ society of Society 5.0, there will be robot-run indoor farms, for robots will have replaced human farmers and factory workers (native and immigrant) to compensate for the ageing and shrinking labour force. Today, at least 50 per cent of the labour in automotive factories is already performed by robots. It has, however, proved to be far easier to robotise appliances themselves, from rice cookers to vacuum cleaners, than to build humanoid household assistants like Inobe-*kun* and the Toyota maid-bot. Thus, in 2018, Honda discontinued ASIMO, their male-gendered bipedal humanoid, and spun off

several mobility and lumbar support devices based on the robot that are much more practical in everyday human society. ASIMO has proved to be more appropriate as a platform for other innovations but remains a brand ambassador for the auto company, which embodies both techno-nationalism and techno-globalism—Honda having a stake in domestic innovation and a share of the global market in manufacturing.

### LIVING WITH ROBOTS

Stories about humans and robots in relationships and forming families are the stuff of Japanese *manga* (cartoons) and *animé* (animation films). Astro Boy (Tetsuwan Atomu) has a robot family and Doraemon, a blue and white bipedal robot cat, is adopted by a human family.<sup>10</sup> In 2016, the Japanese company SoftBank's website featured the fictional three-generation Asahi family and their robot Pepper smiling together at home. Osamu Tezuka's (1928–1989) ten laws of robotics were introduced at intervals in his *Astro Boy* comic book series during the early 1950s (*Mushi Purodakushon*, 1977). Unlike his contemporary, Isaac Asimov (1920–1992), who introduced three robot laws in 1942 and a fourth in 1985,<sup>11</sup> Tezuka's ten laws are not universal in scope and effectively integrate robots into human society where they share kinship bonds and perform familial roles. For example, Law Three stipulates that 'robots shall call the human who creates them "father"' (Robertson 2018b, pp. 1–2, pp. 129–131). Both Tezuka and Asimov presaged the integration of robots into the workplace and household long before actual human-robot interactions were possible.<sup>12</sup>

In large part, Tezuka's laws proceed from his easy familiarity with the Japanese family system. Moreover, situating robot laws within the context of the household, which is also a moral entity regulated by filial piety, obviates the need for a separate 'robo-ethics' (Robertson 2018a, p. 143). Note that in Japanese robotics today, 'ethics' is basically synonymous with 'safety', which is taken very seriously. The important point here is that familial order and filial obligations serve as a code of techno-ethics. The following examples illustrate the growing awareness outside of Japan of 'family' constituting both a safety zone and also a robo-ethics based on filial relationships. In January 2003, a Honda advertisement in *Smithsonian* featured ASIMO as part of a (white) American nuclear family (Robertson 2018a, p. 135). The ad was based on Honda's naïve assumption that, like the Japanese, mainstream Americans would also embrace the humanoid robot as part of the family. The majority of *Smithsonian* readers who blogged responses to the ad were not amused, and many complained that robots would take jobs away from humans! Honda quickly pulled the advertisement and began releasing commercials that integrated ASIMO into social situations with humans, but not as a member of a family. Fast forward to 2016. Early that year, the company Sen.se brought out Mother, a diminutive (16.5 cm, 0.5 kg) robot shaped like a *matryoshka* doll with a smiley face for use in the United States and Europe. Sen.se was formerly

Aldebaran Robotics (France) and is now incorporated into the multinational company, SoftBank, home of the robot Pepper. When activated by ‘motion cookies’—linked to apps labelled walk, coffee, presence, teeth, door, medication, temperature, sleep, check, drink, and habits—Mother monitors multiple events and behaviours (Sen.se 2017). Like the stereotyped gender role after which she is named, the small but powerful Mother stays at home and keeps everyone and everything in order. Sen.se’s Mother combines in one affective entity the characters of Yumiko Inobe and the robot Inobē-kun from *Innovation 25*, and the housewife in the Society 5.0 vignette.<sup>13</sup>

Japanese books such as *The Year 2025: A Day in the Life of the Inobe Family* (Eguchi and Fujii 2007), *Living with Robots* (Robo LDK Jikkō Inkai 2007), and *A Society that Co-exists with Robots* (Sumida and Kudō 2018) are manuals for human-robot coexistence in the real world. *Living with Robots* emphasises that humans can obtain emotional comfort and care from robots, and can relate to them as familiar and reassuring interlocutors—something that some Japanese feel would not be possible with foreign caregivers (Robo LDK Jikkō Inkai 2007, pp. 177–179). This issue is the subject of *Sayonara*, a recent play (2010) and film (2015), which stars Geminoid-F, an android created by roboticist Hiroshi Ishiguro, as the poetry- and platitudes-reciting caregiver of a woman with a terminal illness (who, perhaps ironically, is played by a ‘white’ actor who speaks in Japanese with the robot nurse). The playwright Oriza Hirata collaborated with Ishiguro to dramatise the possibility of employing androids as caregivers.

Five years earlier, in 2005, Mitsubishi engineer Junji Suzuki and his wife had ‘adopted’ a first-generation Wakamaru, anticipating by two years the attention to human-robot coexistence in *Innovation 25* and *Living with Robots*. Wakamaru, manufactured by Mitsubishi Heavy Industries from 2005 to 2009, is a yellow, male-gendered ‘communication robot’ initially advertised as a babysitter and personal butler. Named after a legendary samurai, its conical body includes two arms with mitten-like hands and a ball-and-socket type head with a curvy edge that gives the robot a cute, quizzical expression augmented by a synthesised child-like voice. Above Wakamaru’s two large ovaloid eyes are infrared and ultrasonic ‘eyebrow’ sensors; the eyes further give the impression that the robot understands the emotions of the person looking at him (Mitsubishi Heavy Industries 2016; Robertson 2018b, p. 110). The meter-tall boy-bot sports wheels and carries its battery in a backpack shaped like those worn by elementary school students as part of their uniform.

For nearly a year and a half, the Mitsubishi engineer Suzuki kept a diary of interactions between the male-gendered robot and his family, including his two children, who right away treated Wakamaru like a playmate or younger sibling—pushing and pulling on him, and putting him in a chokehold. They perceived the robot as a weakling, and true enough, most sociable humanoids are quite fragile in their complexity and can be damaged if roughhoused. Wakamaru managed to survive these encounters without injury. Suzuki regarded the humanoid as the youngest of his children; he and his wife also made use of it as

a house sitter. They linked their cell phones to the networked robot's internal camera, and were able to look in on the children and Suzuki's visiting elderly mother when they were out of the house. Suzuki notes that, like humans, robots develop personalities, and claims that Wakamaru's character was shaped through numerous interpersonal encounters with family and friends—and also from watching television (Robertson 2018b, p. 134; Suzuki 2007). As I explain below, the technology of kinship that frames human-robot relations is also an example of conceptual conservatism.

#### IMAGINEERISM REDUX

Technology (*qua* machinery and engineered devices) and robotics are infused with values that transcend their usefulness and convenience; they offer certain freedoms but can also be experienced as oppressive and dangerous. As I noted earlier, they are *not* neutral fields. State and corporate funding is crucial for robotics research and development. Thus, although many of these Japanese robots are cute (*kawaii*), they embody uncute political and economic ideologies and priorities. In the United States for example, robotics is heavily supported by the Department of Defence, and today in Japan, the robotics industry is increasingly incorporated into the lucrative weapons economy. The hardware and software that go into the production of cute humanoid and animaloid robots, many of which are one-off prototypes, are used in the manufacture of military equipment, although this techno-nationalist appropriation of robotics is not discussed much, if at all, in the Japanese mainstream media. As I have emphasised in this chapter, the *imagining* of a robotised society of the future is informed by a *reimagining* of the past. In other words, imagining the future can be a nostalgic activity, which, I argue, fosters a politics of conceptual conservatism.

'Imagineerism' describes how 'the future' becomes imagined as a technologically idealised version of 'the past'.<sup>14</sup> *Innovation 25* and its successor Society 5.0 highlight the operations and consequences of imagineerism; namely, a backward-looking technological nationalism. Similar juxtapositions of science and superstition, high-tech and low-tech, now and then, craft labour and industrial labour, are dramatically illustrated in the most recent Cabinet Office document on Society 5.0. The document focuses on generating *kizuna*, or kin-like ties, from ostensibly 'new values' through technologies like IoT (Internet of Things), or from the hyperconnectivity of things through the internet, and through AI (artificial intelligence). As explained on the Cabinet Office (2018) website, Society 5.0

represents an effort to create a new social contract and economic model by fully incorporating the technological innovations of the fourth industrial revolution. It envisions embedding these innovations into every corner of its ageing society. ... Japan wants to create...a 'super-smart' society, and one that will serve as a road map for the rest of the world.

Companion and household robots will provide ‘living support’, ‘conversation’, and ‘caregiving’; ‘[r]eal-time automatic health checkups’ will be possible through telemedicine (Cabinet Office 2018). A later report includes a graphic figure composed of four cartoon panels, each one representing a ‘current society’ scenario counterposed with its Society 5.0 version (Cabinet Office 2020). The ‘social problems’ vignette is illustrative:

‘Current society’ is illustrated by an image of an elderly man with a cane, circled by drops of sweat from exertion, standing in front of a thatched farmhouse. The caption reads: ‘A variety of constraints exists with respect to social problems such as the aging society and regional depopulation making a sufficient response difficult’.

‘Society 5.0’ is illustrated by an image of an elderly man reaching for a package delivered by a drone. That he is excited is indicated by a halo of three exclamation point-like marks. The caption reads: ‘Social issues *will be* overcome and humans *will be* liberated from various types of constraints’ (my italics).

*Innovation 25* and the new Society 5.0 proposal are both ‘manifestos’ simply declaring that new value *will be* born; social problems *will be* overcome; AI *will* free humans from the burdensome work of information analysis, and ‘possibility open to humans *will* expand through the use of robots’. *How* exactly these changes *will be* achieved is not articulated. What is implied is that robotics and new technologies will ensure and secure Japan as, in effect, an ethno-national(istic) gated community. As imagined in *Innovation 25* and Society 5.0, robots will reinforce old values, such as the traditional, heteronormative, multigenerational household; the sexist division of labour; cultural and ethnic homogeneity; and corporate paternalism. Innovation is renovation, a product of imagineerism, an ideological Möbius Loop. Society 5.0 looks backward towards the future.

#### EPILOGUE

Culture is at the centre of nationalist projects, and like other nations, Japan is an ‘imagined community’ distinguished by ‘cultural artifacts of a particular kind’—lexicological, for example (Anderson 1983, pp. 13–14, pp. 101–102). The *koseki* (household registry) sustains deeply entrenched definitions of Japanese nationality, ethnicity, gender roles, and family structure. Appeals to *kizuna* (kin-like ties) aim to foster communal mindedness and to override the uneven diffusion of material benefits in society. The widespread emphasis on the virtues of *kizuna* following the trifold disaster of 11 March 2011 and more recently, the Covid-19 pandemic, underscores the affective usefulness of familial slogans in narratives of national recovery.<sup>15</sup> These lexicons—*koseki* and *kizuna*, for example—are among the technologies of kinship that are used to engender relationships and transactions among humans, animals, and

inorganic things. I have shown how human-robot interactions are framed and performed in familial terms and idioms of kinship. Techno-nationalism is a declinist narrative that redresses the perceived coming apart of a nation state and its social structures. Thus, as evidenced by scenarios illustrating *Innovation 25* and *Society 5.0*, ‘born in Japan’ robots are imagined to play key roles in the preservation and reinforcement of the traditional household and concomitant stabilisation of a historically continuous culture, the ‘beautiful country’ (*utsukushii kuni*) used by former PM Abe as a sobriquet for Japan.<sup>16</sup> Although Abe left as self-evident the meaning of ‘beautiful’, the adjective simultaneously describes an aestheticisation of politics (in the form of ethno-nationalism) and a politicisation of aesthetics (in the form of traditional values) (Robertson 2018b, pp. 33–34). We are reminded anew that techno-nationalist narratives can be scripted and enacted as updated and enhanced versions of a nostalgically idealised past way of life and living.

**Acknowledgements** Heartfelt thanks to Cathrine Hasse and Maja Hojer Bruun for inviting me to contribute a chapter on technology and kinship to this handbook. Thank you too to Celeste Brusati and Snait Gissis for commenting on an earlier draft. All translations from Japanese to English are my own unless otherwise indicated.

## NOTES

1. Other especially useful national culture-focused ‘case studies’ of techno-nationalism that complement my analysis include Maurice Charland’s (1986) study of Canadian railways and telecommunications, and S. Waqar H. Zaidi’s (2008) interrogation of the conservative vision of British engineer-ideologues.
2. ‘Families we choose’ is not to be confused with ‘fictive kin’ which refers to people labelled by kinship terms (uncle, aunt, brother, sister) who are not related by biology or marriage.
3. I extend Nissani’s thesis and posit that these strongly held beliefs include both longstanding rituals, cultural practices, and customs, *and* the decisive rebuttals/refutations discrediting them; that is, these beliefs and their refutations simultaneously exist in a dialectic as if they were mutually constitutive.
4. Imagineer(ing) is most often associated with the Walt Disney Imagineering Research and Development, Inc.
5. The kindling of nostalgia for a seemingly less complicated and simpler period has been stimulated by the Covid-19 pandemic and the accompanying lockdowns and travel restrictions (Shoji 2020).
6. The nation state and corporations have been characterised as types of extended families, paternalistic in design. In 2011 there were 81,000 adult adoptions that were transacted to secure the continuity of the same number of households (and the corporations associated with them). Most were adopted sons-in-law, who assumed the surname of their fathers-in-law (Mehrotra et al. 2013).
7. A very recent article in the English-language *Asahi Shimbun* reports that an online survey conducted by the Ministry of Health, Labour and Welfare in December 2019 but only released in October 2020, found that about 50 per

- cent of adults 'do nothing to help out their neighbors or acquaintances' (Yamamoto 2020).
8. Japanese roboticists themselves have written books aimed at the general public that celebrate human-robot coexistence. Masahiro Mori's *The Buddha in the Robot* (2005 [1981]) was first published in Japanese under a different title in 1974. Between 2002 and 2007, roboticists at Waseda University published a seven-volume series of artsy cartoon-illustrated pamphlets that introduced readers to a future where human lives would be enhanced by 'helpful robots' (Waseda Daigaku Wabotto Hausu Kenkyūjo 2002–2007). Other relevant books are noted in this chapter.
  9. These sectors are agriculture, aviation construction\*, fisheries, food service industry, industrial machinery manufacturing, nursing care, automobile maintenance, building cleaning, electric and electronic information, food and beverage processing, lodging, material processing, and shipbuilding and ship-related sectors\*. \* indicates sectors approved for the second group (Milly 2020, p. 3).
  10. Tetsuwan Atomu (Astro Boy) was created by Osamu Tezuka in 1951, and Doraemon, which ran as a cartoon from 1969–1996, was created by Fujiko Fujio, the joint pen name of two cartoonists, Hiroshi Fujimoto (1933–1996) and Motoo Abiko (b.1934).
  11. Asimov's three laws were first elaborated in his 1942 short story, 'Runaround'; a fourth law, the zeroth law, was created much later in his novel, *Robots and Empire* (1985). The 'zeroth' law continues the pattern where lower-numbered laws supersede the higher-numbered laws. (1) A robot may not injure a human being or, through inaction, allow a human being to come to harm; (2) A robot must obey the orders given to it by human beings, except where such orders would conflict with the First Law; (3) A robot must protect its own existence as long as such protection does not conflict with the First or Second Laws; (4/0.) A robot may not harm humanity, or, by inaction, allow humanity to come to harm. Tezuka's more sociological, family-based laws are: (1) Robots must serve humankind; (2) Robots shall never kill or injure humans; (3) Robots shall call the human who creates them 'father'; (4) Robots can make anything, except money; (5) Robots shall never go abroad without permission; (6) Male and female robots shall never switch [gender] roles; (7) Robots shall never change their appearance or assume another identity without permission; (8) Robots created as adults shall never act as children; (9) Robots shall not assemble other robots that have been discarded by humans; (10) Robots shall never damage human homes or tools.
  12. Their laws have influenced the field of robot ethics although several roboticists in Europe, Japan, and the United States have proposed alternatives that address developments in AI and tangible robots (e.g. Murphy and Woods 2009).
  13. For reasons not provided, the Sen.se website was taken down over the past year. Information on 'Mother' sales is not available. Most reviews of the robot date to 2014 when she debuted. What is important in the context of this essay is that SoftBank perceived that the Euro-American market would welcome household/family robots (see also Robertson 2018b, pp. 135–136).
  14. Although I did not use the word 'imagineerism' at the time, I introduced the idea of advanced technology in the service of tradition and the status quo in my earliest articles on Japanese robotics (Robertson 2007, 2008).



15. *Kizuna* is invoked by Nikkei (persons of Japanese ancestry living outside of Japan) communities to promote solidarity during the Covid-19 pandemic as exemplified by community service websites in Japanese, English, Spanish, and Portuguese (Honda-Hasegawa 2020; Kizuna 2020).
16. Abe's book, a best seller, was published in 2006 and previewed *Innovation 25. Utsukushii kuni e* (Towards a Beautiful Country) bore the subtitle, *Jishin to hokori no moteru Nippon e* (Towards a Japan that possesses confidence and pride).

## REFERENCES

- Abe, S. (2006). *Utsukushii kuni e. Jishin to hokori no moteru Nippon e* (Towards a Beautiful Country. Towards a Japan that Possesses Confidence and Pride). Tokyo: Bungei Shunjū.
- Anderson, B. (1983). *Imagined Communities: Reflections on the Origin and Spread of Nationalism*. New York: Schocken Books.
- Asimov, I. (1985). *Robots and Empire*. New York: Collins.
- Asimov, I. (1991 [1942]). Runaround. In *Robot Visions*. New York: Penguin.
- Byford, S. (2017, 29 June). How the iPhone won over Japan and gave the world emoji. *The Verge*. <https://www.theverge.com/2017/6/29/15892640/iphone-anniversary-japan-success-emoji-history>. Accessed 1 May 2020.
- Cabinet Office (2018). Society 5.0. [https://www.japan.go.jp/abonomics/\\_userdata/abonomics/pdf/society\\_5.0.pdf](https://www.japan.go.jp/abonomics/_userdata/abonomics/pdf/society_5.0.pdf). Accessed 1 May 2019.
- Cabinet Office (2020). Society 5.0. [https://www8.cao.go.jp/cstp/english/society5\\_0/index.html](https://www8.cao.go.jp/cstp/english/society5_0/index.html). Accessed 15 March 2020.
- Campbell, B. (2010). How biotechnology makes human kinship with wildlife visible. In M. Bolton & C. Degnen (Eds.), *Animals and Sciences: From Colonial Encounters to the Biotech Industry* (pp. 196–219). Newcastle upon Tyne, UK: Cambridge Scholars Publishing.
- Capri, A. (2020, August). Techno-nationalism: The US-China tech innovation race. New challenges for markets, business and academia. *Hinrich Foundation Report*. Hong Kong: Hinrich Foundation.
- Chapman, D. (2011). No more 'aliens': Managing the familiar and the unfamiliar in Japan. *The Asia Pacific Journal: Japan Focus*, 9(29), no. 2, 1–13.
- Charland, M. (1986). Technological nationalism. *Canadian Journal of Political and Social Theory*, 10(1), 196–220.
- Eguchi, K., & Fujii, R. (2007). *2025nen Inobe-ke no ichinichi* (The Year 2025: A Day in the Life of the Inobe Family). Tokyo: PHP Kenkyūjo.
- Evans-Pritchard, E. E. (1950). Kinship and the local community among the Nuer. In C. D. Forde & A. R. Radcliffe-Brown (Eds.), *African Systems of Kinship and Marriage* (pp. 360–391). London and New York: Oxford University Press.
- Franklin, S. (2013). *Biological Relatives: IVF, Stem Cells and the Future of Kinship*. Durham: Duke University Press.
- Frizell, N. (2015, 13 January). Heartbreak is hard, even when your lover is the Eiffel Tower. *Vice*. <https://www.vice.com/en/article/nnqpm/breaking-up-with-the-eiffel-tower>. Accessed 1 January 2016.
- Government of Japan (2007). Innovation 25. Prime Minister of Japan and His Cabinet. [http://japan.kanti.go.jp/innovation/interimbody\\_e.html](http://japan.kanti.go.jp/innovation/interimbody_e.html). Accessed 1 May 2007.
- Honda-Hasegawa, L. (2020). *Kizuna 2020: Nikkei no omoi yari to rentai—shingata koronauirusu no sekaiteki tairyū o ukete. Pandemikku no sanaka ni mita komyunitai*

- no kizuna—sono hitotsu* (Kizuna 2020: Compassion and Solidarity among Nikkei in Response to the Global Coronavirus Pandemic. One Example of the *kizuna* Evident in the Midst of the Pandemic). *Discover Nikkei*. <http://www.discovernikkei.org/en/journal/2020/7/21/pandemia-1/>. Accessed 1 October 2020.
- Hughes, T. (2005). *Human-Built World: How to Think about Technology and Culture*. Chicago: University of Chicago Press.
- Kac, E. (2009 [2007]). *Signs of Life*. Cambridge, MA: The MIT Press.
- Kawabata, S. (2019, 21 April). Flip phone popularity remains unbowed in smartphone era Japan. *The Mainichi*.
- Kizuna (2020). <https://www.gokizuna.org/>. Accessed 1 October 2020.
- Mathiason, J. L. (2015). Through the looking glass. Review of Sarah Franklin, *Biological relatives: IVF, stem cells, and the future of kinship*. *Cultural Critique*, 91(Fall), 220–233.
- Mehrotra, V., Morck, R., Shim, J., & Wiwattanakantang, Y. (2013). Adoptive expectations: Rising sons in Japanese family firms. *Journal of Financial Economics*, 108, 840–854.
- Milly, D. (2020, 20 February). Japan's labour migration reforms: Breaking with the past? MPI (Migration Policy Institute). <https://www.migrationpolicy.org/print/16694#.X5R7BEKpE6A>. Accessed 1 October 2020.
- Mitsubishi Heavy Industries (MHI) (2016). <https://www.mhi-global.com/products/detail/>. Accessed 1 January 2016.
- Monozukuri (2016). <https://ja.wikipedia.org/wiki/ものづくり>. Accessed 1 March 2016.
- Mori, M. (1974). *Mori Masahiro no bukkō nyūmon* (Mori Masahiro's Introduction to Buddhism). Tokyo: Kōsei Shuppansha.
- Mori, M. (2005 [1981]). *The Buddha in the Robot*. (trans: Terry, C. S.). Tokyo: Kōsei Shuppansha.
- Müller, S., & Tworek, H. (2016). Imagined use as a category of analysis: New approaches to the history of technology. *History and Technology*, 32(2), 105–119.
- Murphy, R., & Woods, D. D. (2009). Beyond Asimov: The three laws of responsible robotics. *Intelligent Systems*, IEEE 24, 12–20. <https://www.computer.org/csdl/mags/ex/2009/04/mex2009040014.html>. Accessed 1 January 2013.
- Neo-Kinship (2017). <https://www.sheridanandco.com/news/neo-kinship/>. Accessed 1 October 2020.
- Nissani, M. (1994). Conceptual conservatism: An understated variable in human affairs? *The Social Science Journal*, 31(3), 307–318.
- Objectum-Sexuality Internationale (2015). <http://objectum-sexuality.org/>. Accessed 1 January 2016.
- Onozuka, T. (2016). *Sensō to heiwa to keizai: 2015nen no 'Nihon' o kangaeru* (War, peace and economy: A reflection on 'Japan' in 2015). *Kokusai buki iten (Global Arms Transfer)*, 1, 15–40.
- Pfanner, E. (2014, 20 July). Japan Inc. now exporting weapons. *Wall Street Journal*. <http://www.wsj.com/articles/japans-military-contractors-make-push-in-weapons-exports-1405879822>. Accessed 1 February 2017.
- Pringle, P. (2010). Monozukuri: Another look at a key Japanese principle. Japan Intercultural Consulting. <http://www.japanintercultural.com/en/news/default.aspx?newsid=88>. Accessed 1 March 2016.
- Robertson, J. (2007). Robo Sapiens Japonicus: Humanoid robots and the posthuman family. *Critical Asian Studies*, 39(3), 369–398.

- Robertson, J. (2008). Science fiction as public policy in Japan: Humanoid robots, post-humans, and *Innovation* 25. Woodrow Wilson International Centre for Scholars, Washington, D.C. *Asia Program Special Report*, 140, 29–34.
- Robertson, J. (2018a, 18 July). Looking ahead by going back. The Sections Edition: Society for East Asian Anthropology. *Anthropology News*. www.anthropology-news.org.
- Robertson, J. (2018b). *Robo Sapiens Japonicus: Robots, Gender, Family, and the Japanese Nation*. Berkeley: University of California Press.
- Robo LDK Jikkō Inkai (2007). *Robotto no iru kurashi* (Living with Robots). Tokyo: Nikkan Kōgyō Shinbunsha.
- Rosie the robot maid, made by Toyota (2008, 27 October). *Impact Lab*. <http://www.impactlab.net/2008/10/27/rosie-the-robot-maid-made-by-toyota/>. Accessed 5 November 2008.
- Satō, K. (2008). ‘Gijutsu’ ni tsuite no ikkōsatsu: *gijutsu no teigi to sono imi* (A consideration of ‘gijutsu’: Defining *gijutsu* and its meaning). *The Proceedings of the Technology and Society Conference*, 51–52.
- Schneider, D. (1968). *American Kinship. A Cultural Account*. Englewoods Cliffs, NJ: Prentice-Hall.
- Sen.se. (2017). Mother. <https://sen.se/store/mother/>. Accessed 1 February 2017.
- Shoji, K. (2020, 25 April). Seeking solace from COVID-19 in Showa Era nostalgia. *The Japan Times*. <https://www.japantimes.co.jp/news/2020/04/25/national/media-national/coronavirus-showa/>. Accessed 1 October 2020.
- Statistics Bureau of Japan (2019). *Statistical Handbook of Japan*. <http://www.stat.go.jp/english/data/handbook/c0117.html>. Accessed 1 January 2020.
- Stockwin, A., & Ampiah, K. (2017). *Rethinking Japan: The Politics of Contested Nationalism (New Studies in Modern Japan)*. London: Lexington Books.
- Sumida, M., & Kudō, S. (2018). *Robotto to ikiru shakai* (A Society That Co-exists With Robots). Tokyo: Kōbundō.
- Suzuki, J. (2007). *Robotto no iru kurashi o kangaeru*, Part 2: ‘Hito to hōmu robotto no kashikoi tsukiai kata’—Wakamaru to sugoshita 500-nichi no kiroku (Thinking about Living with Robots, Part 2: Intelligent Ways of Interacting with a Home Robot—A Chronicle of the 500 Days [We] Lived with Wakamaru). [http://robonable.typepad.jp/trend/2007/09/wakamaru500\\_6173.html#tp](http://robonable.typepad.jp/trend/2007/09/wakamaru500_6173.html#tp). Accessed 1 January 2007.
- Waseda Daigaku Wabotto Hausu Kenkyūjo (2002–2007). *Wabotto no hon* (*The Book of Wabot*). 7 volumes. Tokyo: Chūō Kōronsha.
- Weston, K. (1997). *Families We Choose: Lesbians, Gays, Kinship*. (Revised ed.). New York: Columbia University Press.
- Williams, R. (1981). Communications technologies and social institutions. In R. Williams (Ed.), *Contact: Human Communication and Its History* (pp. 225–328). London: Thames and Hudson.
- Yamamoto, K. (2020, 24 October). By and large, Japanese have lost their community spirit. *The Asahi Shimbun*. <http://www.asahi.com/ajw/articles/13866655>. Accessed 24 October 2020.
- Zaidi, S. Waqar H. (2008). The Janus-face of techno-nationalism. *Technology and Culture*, 49 (January), 62–88.