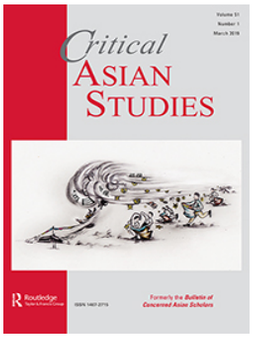

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Japan's robotic future

Tomomi Yamaguchi

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hedged about with taboos. This definition of sacred is presented in the introduction and not revisited again until the book's conclusion. The conclusion also introduces another framework for analysis, that of indigenous Chinese concepts of orthopraxy (*zheng*), efficacy (*ling*), the virtual/empty (*xu*), movement (*dong*) vs. quietness (*jing*), and "correlative resonance" (*ganying*), using these to map Shanghai residents' diverse interests in and approaches to the sacred. At times, however, the vast material that the authors present in a modest-sized volume feels a little under-analyzed. One is bounced back and forth between different religious communities as one might experience sights and sounds on a ride at the Shanghai Disney Resort without always having clear road marks as to how to make sense of the diversity. This approach might have worked better had the authors divided the book according to the concepts presented in the conclusion and used this as a thread to tie their study together. Some critical engagement with the growing number of works on post-Mao urban Chinese religiosity in settings other than Shanghai would also have enhanced the book. Nonetheless, the authors have put together an impressively vast amount of research in creative and original ways, making *Shanghai Sacred* an indispensable resource for scholars of contemporary Chinese religion as well as sociologists, anthropologists, and urban geographers interested in the impact of rapid urbanization on sociality in Asia. It should also finally put to rest the notion that religion is not thriving in contemporary China, with or without the support of the state. By the time one finishes reading this book, it is abundantly clear that even the seemingly secular, ultra-modern space of China's largest city is deeply infused with the sacred.

Notes

1. Geary 2017, 3.
2. Geary 2017, 21.
3. Geary 2017, 118.

Gareth Fisher
Syracuse University
gfisher@syr.edu

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Japan's robotic future

Robo Sapiens Japanicus: robots, gender, family, and the Japanese nation, by Jennifer Robertson, Berkeley and Los Angeles, University of California Press, 2018, 280 pp., $29.95 (paperback), ISBN 9780520283206

Jennifer Robertson begins her book, *Robo Sapiens Japanicus* with her childhood memories of living in Kodaira, a suburb of Tokyo, in the 1960s, where she grew up watching anime shows featuring robots, such as *Tetsuwan Atomu* (Astro Boy) and *Tetsujin 28* (Gigantor). These shows, and other popular Japanese anime series of the time such as *Doraemon* – a cat-shaped bipedal robot that acted like a human – all featured humanoid robots. Robertson points out that a "deep emotional bond" in a show like *Astro Boy* between the robot protagonist and his human friends "underscores the familial aspects of real-world human-robot

relations in Japan."[1] Robertson demonstrates in this book that Japanese have a radically different conception of robots from that which is common in Euro-American countries. That is, while robots are frequently considered to be threatening and unnatural in Euro-American contexts, Japanese popular culture routinely depicts robots as an everyday part of the natural world that coexists with humans in familial contexts.

In fact, this vision of coexistence between humans and robots goes beyond the world of popular culture, into the real world. Hence, this book addresses the question of how a vision of robotic society in which humans and robots coexist reflects socio-cultural values and the interpretation of the past, present, and future in Japan. Robertson characterizes Japan as a "cyber-Olduvai Gorge where humanoids first emerged and where they continue to evolve"[2] with examples such as Honda's ASIMO, Mitsubishi's Wakamaru, and Softbank's Pepper, among others.

Robertson points out that robots in Japan have been promoted and described as a dream solution to various social problems, ranging from the country's low birth rate, an insufficient labor force, and a need for foreign migrant workers, to disability, personal safety, and security concerns. Humanoid robots, moreover, are envisioned in both popular culture and by the state in a familial and gendered context. The design of humanoid robots, as well as this Japanese vision of a society in which humans and robots coexist, reflect roboticist, corporate, and government visions of gender roles and the family, as well as their conceptions of the Japanese nation. Robertson's detailed analysis of robotics in Japan successfully demonstrates how futuristic robots could in fact reflect a vision of the "futuristic past," that is, anachronistic, nostalgic views of gender, family, and the Japanese nation, particularly under current Prime Minister Shinzo Abe, who is the main promoter of robotics as a national initiative. During his tenure, first from 2006 to 2007, and now since 2012, the Japanese government has actively promoted and enlisted robots to help actualize his nostalgic vision of "beautiful Japan."[3]

Robertson conducted research using a "spatiotemporal framework."[4] Her multi-sited fieldwork was conducted in and outside of Japan, and she used visits to labs, showrooms, museum exhibits, and academic conferences as the base of her analysis. In addition, during her fieldwork she met and interacted with humanoid robots on multiple occasions. Her descriptions of these interactions are effective in giving readers a sense of how robots act with humans. She also interviewed roboticists and others involved in the robotics industry. Another significant element of this book, as in all of her previous published works, is Robertson's extensive archival research. She uses a wide range of sources, including government documents and committee reports, corporate public relations materials, articles by engineers and scholars, print publications such as manga, and Internet sources in shaping her story. A difference between this and her previous work, a reflection on the time period during which this research was undertaken (the 2000s, primarily), is her extensive use of websites and blogs, ranging from government sources to the voices of the public.

The past decade during which Robertson conducted her fieldwork and archival research coincides with the two Abe administrations and its robot initiatives: *Innovation 25* of 2007 and the "New Robot Strategy" of 2015. *Innovation 25* in particular is a major focus of her analysis. Furthermore, Robertson effectively incorporates her childhood memories of growing up in Kodaira into her discussion, especially concerning shared popular culture memories about robots and the situation surrounding disabled people in Japan. In addition, she builds upon her earlier works (including *furusato zukuri* in Kodaira, the construction of

[1]Robertson 2018, 1.
[2]Ibid., 6.
[3]Ibid., 34.
[4]Ibid., 29.

gender in the Takarazuka Revue, and wartime eugenics) and connects these with her current research. Hence, this book, besides being an excellent examination of her extensive research on robots, can also be read as a story of the course of her research throughout her career, which also provides a background to aid readers in making connections between robots and other significant aspects of Japanese history and culture. An additional source that could be an interesting addition to her research is social media, especially *mixi* in the early 2000s, and Twitter, Instagram, and video sharing services such as Youtube in the late 2000s. These have become the most popularly used online sources in which people in Japan voice their thoughts and opinions on various social phenomena and news stories.

Robo Sapiens Japanicus is composed of seven chapters. In Chapter One, Robertson outlines the background, purpose, main arguments, and plans for the work, which functions as an excellent introduction to prepare the reader for the rest of the book. In Chapters Two and Three, Robertson examines *Innovation 25*, a blueprint for Japan's future proposed by the *Innovation 25* Strategy Council (chaired by Sanae Takaichi, Abe's Minister of State for Innovation) in 2007. *Innovation 25* emphasizes the role that biotechnology and robotics will play in stabilizing the Japanese economy and social institutions.[5] Robertson's detailed analysis shows that for the *Innovation 25* Strategy Council "innovation" actually means "renovation," as "it is not new values but rather the renewal of old values – especially those represented by the patriarchal extended family and wartime ideologies – that constitute the significant changes associated with the robotization of society."[6] Robertson argues that the dream of safety, security, and convenience, enabled by robotization in the Abe administration's *Innovation 25*, represents "reactionary postmodernism, in which images and forms of the past, including invented traditions, are mined for their nostalgic and novel impact."[7]

The focus of Chapter Three is a detailed analysis of the fictive ethnography of the Inobe family that represents *Innovation 25's* vision of future society. The Inobes are depicted as a three-generational family that lives with a robot, Inobē-kun, in 2025. As soft power propaganda, this fictive ethnography, based on the interim report of the Strategy Council, was released in February 2007 on the Cabinet's official website, and its manga version was published later in June of that year. Robertson's analysis shows the operation of reactionary postmodernism, with the use of terms such as *monozukuri* (artisanship, written in *hiragana*) that evoke a "native" aura, and highlights the ethnography's depiction of Japanese innovation as dominating the global market and Japanese universities being popular among foreign students (especially from Asia) due to Japan's advanced knowledge and technological innovations. Robertson aptly demonstrates the way this story's narrative is intimately connected with the view that "Japanese colonialism paved the way for the modernization of other Asian countries and cultures."[8] Robertson's brilliant analysis of *Innovation 25* and the Inobe family story shows the workings of reactionary postmodernism and the significant place that an idealized "past" occupies in the Abe government's imagination of the future.

A major theme of Robertson's book is the role of family and gender as components in this vision of reactionary postmodernism. She shows readers how the story of the Inobe family celebrates the patriarchal extended family (*ie*) and traditional gender roles of women. Her comparative analysis with the pre-WWII propaganda story in manga form of the Yokusan Yamato family, as well as the post-WWII cartoon of Sazae-san (discussed in Chapter Three) highlight striking parallels, with Sazae-san bridging the pre-war Yamato family and the twenty-first century's Inobe family of *Innovation 25*. The Yamato family was invented

[5]Ibid., 35.
[6]Ibid., 35.
[7]Ibid., 49.
[8]Ibid., 77.

by the Imperial Rule Assistance Association (IRAA) to demonstrate the "right way" for a family to perform their duty as a patriotic unit. Such a model family was an embodiment of the *ie* (household), and epitomized a network of *tonarigumi* (neighborhood associations) responsible for surveillance. Robertson argues the depiction of the Yamato family is similar in many respects to the Inobe family that parrots the rhetoric of *Innovation 25*. The post-war Sazae-san cartoons by Machiko Hasegawa (who was also involved in the IRAA's Yamato family series) served as a transition from wartime to post-war, particularly in Hasegawa's depictions of the fear of surveillance and gender roles. The Yamato family, Sazae-san, and the Inobe family all portray an idealized type of extended family and conventional gender roles in which women are the primary people responsible for household chores. The key point is that the future will repeat the past: in 2025 a robot may help with household tasks, but men will not. In the case of the Inobe family, Robertson writes, "Implicit in this proposal is the notion that a married woman who is freed from housekeeping and caretaking chores will be more able and willing to have more children," thus supposedly providing a solution to the issue of the low birth rate in Japan.[9] Moreover, the robot in the family, as well as various other robots and wearable devices, provide "safety, security, and convenience," despite the constant surveillance and invasion of personal privacy. In other words, the role of *tonarigumi* is replaced by robots and wearables. Hence, the future is imagined as an improved version of the past and the type of family that robots will be integrated into is the *ie* system, which will continue to endure from pre-WWII Japan.[10]

Robertson then moves on to further question the construction of gender and the body in robotics in Chapter Four, where she argues that the Japanese robotics industry exemplifies "retro-robotics and retro-tech"[11] or "advanced technology in the service of traditionalism."[12] Robertson brilliantly points out that "a robot's imagined or assigned gender both precedes and determines the construction of the body,"[13] unlike humans who are mostly assigned gender at birth. The roboticists construct the bodies of their robots based on their conceptions of gender. In other words, their ideas and assumptions about gender impact the construction of robots, as shown in various examples that Robertson brings up, such as the gendered male robot Pino and gendered female robot Posy. Gendered robots created by robot engineers – most of whom are heterosexual, married men who regard gender differences as both natural and universal – end up reinforcing the conventional sex/gender system. As a result, Robertson argues, robot gender effectively reproduces a sexist division of gendered labor. The example from the images of the sexist gendered division of labor on the cover of the *Journal of the Japanese Society for Artificial Intelligence*, which I recall caused a great deal of controversy in social networking sites, especially on Twitter, is striking, as female-gendered humanoid robots are depicted as maids in charge of cleaning, and other tasks traditionally assigned to women. Hence, while the government may claim that robots enable women to have careers and raise children, they maintain the gendered status quo. Furthermore, robots are not promoted as replacements for typically women-gendered jobs, such as that of "elevator girls," a job in which living women robotically control elevators. These robotic tasks must be performed by flesh-and-blood women in order to maintain the category of emotional support as "women's work."

Robertson then turns her attention to the question of robot rights and human rights in Chapter Five. The pursuit of coexistence between humans and robots brings up the question

[9]Ibid., 75.
[10]Ibid., 79.
[11]Ibid., 23.
[12]Ibid., 79.
[13]Ibid., 87.

of how "rights" are envisioned in this new configuration of civil society. Robertson discusses the ongoing problem in Japanese society of denying civil rights to immigrants and foreign guest workers, while in some cases giving citizenship and residency rights to robots and animals considered to be naturally "Japanese." This is particularly the case with the provision of *koseki* (household registration), which is a legal system that functions to maintain the *ie* system, and "fabricates a unified image of 'the Japanese.'"[14] Robertson notes that Prime Minister Abe, a leading promoter of robotizing Japan with made-in-Japan robots, imagines robots playing a key role in stabilizing and preserving the patriarchal, extended family. Robertson's comparative analysis of the laws of robotics by science fiction author Isaac Asimov (1920–1992) and Osamu Tezuka (1928–1989), the creator of *Astro Boy*, shows Tezuka's view of robots as interdependent with humans in the context of kinship, that is, they are integrated into the *ie*. Robots "born" in Japan are considered adopted members of the household (*ie*) with the function of assuring life with "safety, security, and convenience" for Japanese families.

Chapter Six examines the development and use of robotic prostheses and other technologies for the disabled, especially in the specific historical context of Japan's preparation for the 2020 Olympic and Paralympic Games, to be held in Tokyo. Robertson demonstrates that the valorization of cyborg-ableism is occurring, with cyborg-prostheses and robotic exoskeletons correcting or normalizing disabilities, by privileging bipedal mobility or *gotai* (the whole body), so that the disabled can navigate the world made for able-bodied humans. In this context, normative social and behavioral barriers remain intact.

In her concluding chapter, Robertson visits sites such as the Wabot House laboratory, which is supposed to prepare Japanese for a life of cohabitation between humans and robots. She also attends a memorial service for "dead" robots. These cases demonstrate the belief that technology will bring "desirable social arrangements," that is, "the restoration of the family" in the case of Wabot House and the idea that religion and science are compatible and synergistic, in the case of Japanese roboticists' and their supporters' imaged world in which humans and robots coexist.[15] Robertson reiterates her argument that the central dream of roboticists is that robots they perceive as Japanese will provide all the solutions for the country's many social problems, and suggests that the "inconvenient truth" for politicians and bureaucrats might be to come up with more concrete, pragmatic solutions to real life problems, as the "dream" may not be so realistic at this point.

In summary, *Robo Sapiens Japanicus* explores a wide variety of issues salient in contemporary Japanese society. What I found most intriguing about Robertson's analysis is the significance of gender, family (*ie*), and nationalism, as well as the nostalgia for the past that permeates all aspects of the seemingly apolitical, futuristic landscape of robotics. Robertson's analysis reveals that both *Innovation 25* of 2007 and the "New Robot Strategy" of 2015 signal the centrality of a specific understanding of gender and family by the main proponent of robotics in Japan, Prime Minister Shinzo Abe, and his administration. She also poses a significant question concerning the intention behind Abe's "womenomics," which is supposed to promote the active participation of women in society. Give the imposition of traditional ideas of gender and family behind his promotion of robotics, it seems clear that "womenomics" has nothing to do with gender equality and instead may be aimed at promoting traditional family values and gender roles.

To further this discussion, it might be beneficial to consider the issues of robotics in the context of other family-related laws and policies of the Abe Administration. As discussed by Robertson, the Liberal Democratic Party's (LDP) draft constitution issued in 2012 contains revisions that "make explicit the primacy of the *ie* and recuperate its nineteenth-century legacy

[14]Ibid., 124.
[15]Ibid., 178.

as a microcosm of the nation-state."[16] Of particular note is the proposed revision of Article 24, which includes a "family protection clause" that makes the family, not the individual, the basic unit of society.[17] In addition to the primacy of *ie* in the LDP proposal, other policies proposed by Abe are also relevant. For example, around the same time that *Innovation 25* was being developed, Japan's Diet passed a revision of the Basic Act of Education, which added a new article (Article 10) on "education in the family," according to which "mothers, fathers, and other guardians [have] the primary responsibility for their children's education" and requires the national and local governments to "take the necessary measures for supporting education in the family."[18] This revision led to the introduction of new measures by the first Abe administration, such as "family day" (*kazoku no hi*) with events promoting family ties. The second Abe administration, with what it has called "womenomics" and "*ichioku sōkatsuyaku*" (society of dynamic engagement of all citizens) policy, has promoted three-generation households as a solution to existing problems of the lack of daycare and elderly care facilities, as well as a shortage of workers, in which families – very likely the women in the household – are supposed to be responsible for domestic work. Conservative supporters of Abe also praise Sazae-san's three-generation household as a model family. The Inobe family, introduced in *Innovation 25*, is also a three-generation household, albeit one with a robot.

Finally, I would note that this book is highly readable and will appeal to a wide audience from a range of disciplines. It provides both a sophisticated analysis and a very accessible use of language, avoiding jargon. For example, Robertson writes in Chapter One:

> Readers will notice that, as in my previous books, I do not subscribe to a trendy "theoretical" approach and the accompanying name-dropping. My scholarly orientation is characterized by a reticulate aesthetics that is nonhierarchical (or non-canonical), eclectic, genre-crossing, discipline-crossing, and pursued, eyes wide open, with great curiosity about manifold things.[19]

The book, which takes an interdisciplinary approach drawing from anthropology, cultural studies, gender studies, art history, and science and technology studies, is suitable for a wide range of readers in various academic fields, including scientists and engineers who may not be familiar with the humanities and social science literature. This book is not only for professional academics and graduate students, but also works perfectly for undergraduate classrooms. In fact, I recently used it in an anthropology class at Montana State University, and my students emphasized how they liked that it was written in an accessible manner. Some said they could not put it down and they were very interested in Robertson's discussions. While sophisticated humanoid robots may not have made it to Montana yet, many of my students use artificial intelligence technologies such as Alexa and Siri, and some own a Roomba robot cleaner, so it is easier than ever for them to imagine lives in which robots play an important role. They also grew up watching animated films and television shows that feature robots, including some shows originally from Japan. With its accessibility and increasingly important subject matter, this book is a highly welcome addition for college instructional purposes, as well as for the general public.

Thinking of where Japan is heading in the near future, given the 2020 Olympics and Paralympics Games in Tokyo, and the recently awarded World Expo 2025 in Osaka, the issues that Robertson brings up will continue to be relevant, both in Japan and beyond. The book is a

[16]Ibid., 128.
[17]Liberal Democratic Party Constitutional Reform Promotion Headquarters. *Nihonkokou Kenpō Kaisei Sōan* (Draft Reform to Japan's Constitution). http://constitution.jimin.jp/draft/ Accessed December 5, 2018.
[18]Basic Act on Education (Act No. 120 of December 22, 2006), Ministry of Education, Culture, Sports, Science and Technology-Japan. See http://www.mext.go.jp/en/policy/education/lawandplan/title01/detail01/1373798.htm.
[19]Robertson 2018, 31.

must-read for anyone interested in Japan or in robotics. While not her focus, the author also touches on the recent development and use of robots in the cleanup process of the Fukushima Nuclear Power Plant, the military use of robots in revitalizing Japan's economy, and in Prime Minister Abe's move toward revising Japan's post-war Constitution, particularly Article 11, the human rights provision, and Article 9, the peace clause. These should be significant topics for future research on robotics in Japan and elsewhere by scholars in Asian Studies.

Tomomi Yamaguchi
Montana State University
tyamaguchi@montana.edu

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