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JAPAN: BUILDING THE FUTURE, LIVING IN THE PAST?

1 November 2017 Christopher Simons

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Robots aren't likely to replace postal workers in Japan, but they may soon be looking after grandma – or sharing the bed. **Christopher Simons** explores some of their unique impacts

Science fiction frequently explores robots learning to live in human society. The reverse – humans learning to live as robots – is less common, but I had a chance to experience it recently, when a friend in San Francisco invited me to attend his birthday party *in absentia* as a 'telepresence robot'. My efforts to control the robot online from Tokyo were predictably chaotic, including shouting loudly during toasts, colliding with people while trying to dance with them, and running down my batteries while trying to roll over a rug.

Japan is a world leader in the development of *jinkou chihou* (artificial intelligence or AI) and robotics. On a stroll through Tokyo, you can meet humanoid robots like Pepper, touting the latest smartphone deals outside SoftBank shops. But robots promoting corporations and their products are the glossy face of much deeper changes. The Japanese economy, mostly stagnant since the early 1990s, is currently enjoying rapid growth in industrial robot exports. As China automates its manufacturing sector, Japanese robotics companies are benefiting. Robot exports to China grew from over \$3 billion in 2012 to nearly \$4.5 billion in 2016, and are predicted to reach \$6.8 billion by the end of 2017. Advances in the development of AI and humanoid robots, such as those on display at Tokyo's National Museum of Emerging Science and Innovation, promise to extend this technological revolution beyond

factory automation, and into our daily lives.

Yet, while Japan is a world leader in robotics, the widespread deployment of AI in Japan may end up looking quite different when compared to other countries. Four key reasons for this include Japan's devotion to human employment as an essential component of social welfare; an intense work ethic that already ensures a supply of robotic labour – in human form; a strong focus on AI and robotics development for nursing and social care; and problematic attitudes towards sexuality.



Aiko Chihira, a humanoid robot that can blink and speak developed by Toshiba Corp, staffs the information desk of a high-end department store in Tokyo. Photo: David Mareuil/Anadolu Agency/Getty Images

HUMAN EMPLOYMENT

First, despite its innovative industries, Japan lags behind many Western countries on adapting to globalization and modern work culture. This has

benefits as well as drawbacks. Economic protectionism and a government emphasis on full employment mean that, despite widespread factory automation, Japan is still a relatively good country in which to be a semi- or unskilled worker, especially in small- and medium-sized companies. As Japan's population dwindles, there are far more jobs than working-age people available to do them. For now, this means growing opportunities for further automation, without the toll on human employment. And outside the factory gates, job sectors under threat in the West are relatively safe in Japan. In the US, people-facing AIs are already replacing humans in sectors such as security, sometimes with unfortunate results, as in the recent accidents with the Knightscope K5 or 'thug R2-D2' security robot in California: one injured a toddler, and another committed robotic suicide by driving into a fountain.

Japanese society wants robots to fill labour shortages in the professions to which they are least suited: jobs requiring emotional sensitivity and nuanced judgement

Robots like these are unlikely to be deployed in Japan – at least not until the population crisis bites harder. High levels of government employment and strong state subsidies for key industries like construction result in an excess of workers in these sectors. The famous Time Lord of *Doctor Who* would have no difficulty hiding his TARDIS in Tokyo, if it could appear as a Japanese *koban*, or police box; there seems to be one on every street corner. And walking past a busy construction or road repair site – a daily experience in Tokyo – results in a cheerful, if slightly embarrassing, encounter with half a dozen bowing, baton-waving guards redirecting foot traffic.



The same situation applies in Japan's postal and transportation systems. Robots and drones are unlikely to replace the army of *takkyubin* workers who knock on your door several times a day and who will return – sometimes *immediately* – if you miss a delivery. It's not just a desire for full employment that keeps Japan Post free of automation; the postmasters serve as the ground troops for the ruling Liberal Democratic Party's election machine across the country, delivering their campaign leaflets for free, in exchange for job security.

65.1% of Japanese patients approved of care robots in a 2013 poll

ROBOTIC SOCIETY

Second, the spread of AI in Japanese society may allow the country to avoid challenging some of its negative cultural norms. Japanese society is already 'robotic' in ways that other countries are not. Work culture emphasizes communal endeavour, and can discourage or punish individuality and creativity that do not express themselves through acceptable channels. The highly structured nature of Japanese society will make people-facing AIs easier to introduce, but may have little impact on improving the lives of the once-ubiquitous 'salaryman'. Many corporate employees accept six-day working weeks and endless meetings and reports as unfortunate obligations of lifetime employment. In 2016, Nomura Securities began using AI software to assist in stock trading, but this use of AI in the workplace has not reduced

the workloads or working hours of Nomura's human employees. So even if AIs automate data analysis in these jobs, companies may still demand that their human workers spend as much time at the office as they do now, in exchange for their salaries. The *Asahi Shimbun* newspaper recently reported on a technology prize for 'HR Tech', with a focus on *hataraki-kata kaikaku*, or 'worker reform'. The winning entry combines wearable technology and AI to 'quantify the degree of [a worker's] concentration by measuring the number and type of their blinks' with the goal of 'improvement in [worker] productivity.' This sounds ominously like attempts to create more controllable human workers, rather than more independent robot workers.

BEDSIDE MANNER

Third, the sectors in which human-facing AIs will be most in demand in Japan are health and social care, where the country faces acute labour shortages. Japanese culture has long stigmatized nursing, and the care of the elderly and disabled, as 'unclean' work. A shortage of labour in these sectors could be offset by skilled immigration, but laws remain inflexible; migrant nurses must pass exams that are only offered in Japanese. Foreign social care workers also face racial abuse from an elderly generation with limited experience of diversity. As a result, public and private investment is pouring into the development of care robots. This summer's RoboCup event in Nagoya (now in its 20th year) featured Toyota's HSR, a 'lifestyle support' robot, capable of assisting people with mobility problems. As these technologies acquire AI capabilities, they will function as live-in support for Japan's skyrocketing elderly population.

The spectre of AI child sex workers is a strong possibility in Japan

But these advances reveal a paradox: Japanese society wants robots to plug labour gaps in the professions to which they are least suited: jobs requiring emotional sensitivity, nuanced judgement, and delicate fine-motor dexterity. The recent spate of reports detailing which careers will survive global automation include jobs in healthcare and social work. Yet these are precisely the jobs that Japan wants robots to do. Furthermore, while Japan has a strong track record in robotics, the country is less of a leader in the sort of AI

required to mechanize social care jobs. Luc Hovan, an employee at a company developing AI for autonomous systems in Japan, comments that, ‘Japan has been exemplary in developing and producing robots which reliably execute orders, but not machines which analyse contextual information, extract meaning, and make choices: sensing, deciding, [then] executing.’ Similar weaknesses in the Japanese education system (which traditionally focuses on rote learning) suggest that societies that wish to become leaders in AI development must nurture capabilities for more abstract thinking – precisely the sort of thinking that makes the human mind so different from a machine.

INTIMATE RELATIONS

Finally, AI and humanoid robots in Japan pose challenges in the area of sex and interpersonal relationships. Japan has attracted an unusual amount of attention (sometimes unwarranted) in global popular culture for its unique attitudes towards sexuality. While AIs designed specifically for sex already exist, ethical issues of AI sex work threaten to dehumanize further Japan’s urban societies, in which people feel increasingly isolated, and increasingly unable or unwilling to form long-term romantic attachments. Far more serious are issues of paedophilia and the fetishizing of child sexuality. Japan only recently banned the possession of child pornography, but the new law exempts animation, as not equivalent to the ‘real’ exploitation of children. This law sets a dangerous precedent for legal child sex robots. Shin Takagi’s company Trottla drew international media attention for creating lifelike child sex dolls in an attempt to keep paedophiles (like Takagi himself) from offending or re-offending. The spectre of AI child sex workers is a strong possibility in Japan.

A popular theme in Japanese animation such as *Ghost in the Shell* is the question of whether AIs can have souls as well as consciousness. This is no abstruse philosophical question in a society that, while predominantly atheist, retains deep and often unconscious connections to its Shinto history. In Shinto, all objects, even stones, can embody *kami* – spirit or divinity.

As Japan’s robot exports continue to stimulate its economy, the future of domestic AI deployment in human-facing roles will either need to

accommodate Japan's unique cultural attitudes, or hopefully, encourage some of them to change. Having lived for a few hours in a telepresence robot body, I can empathize with the physical constraints that the first artificial minds may feel. Metaphorically, they are remarkably similar to the social constraints of living in Japan, where the smooth-running social machine depends on a communal willingness to be a little artificial ourselves.

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