

Japan's elderly take the strain

A greying population finds a silver lining to the economic storm clouds. Joji Sakurai looks at how Japanese society is adapting to changing times

Six years after Japan's defeat in the Second World War, a manga cartoonist invented a robot hero who would embody the hopes, ambitions and fears of a nation struggling to rebuild itself. Today he still captures Japan's experience as it faces daunting new challenges.

Astro Boy is set in the early 21st century and envisions a world in which humans and robots co-exist. Instead of being scary, the robots are mostly friendly, and can 'talk, get mad and laugh just like humans', even as they toil to plug labour shortages. The hero is a humanoid robot, Atom, who looks exactly like a sweet little boy.

The robot attends school, lives with dotting parents, obediently serves tea to the elderly – and in his free time sets off on adventures to save Japan. Rather ambiguously for a society devastated by atomic bombs, Atom is powered by nuclear energy – underscoring Japan's eternal dialectic of faith and fear regarding advanced technology.

As a contemporary mythology, the cartoon by Osamu Tezuka is hard-wired in Japanese society, its tales retold for each new generation. As a parable of Japanese life, it resonates more strongly than ever as Japan turns to robots and high-tech prowess to help overcome a formidable array of problems: caring for the elderly in the world's most aged society; covering worker shortages in a country whose population is in decline; and boosting productivity to reverse a trend of flat-lining economic growth.

More broadly, Astro Boy's themes of community welfare, social harmony and government-supported development – the fictional robots are creations of the Ministry of Science – are emblematic of Japan's responses to dilemmas it has grappled with for a generation that today are becoming the new norm across the developed world.

Rich countries are waking up to the reality that Japan's problems of rapid greying, chronically weak growth and escalating public debt are now their own. Japanese solutions – including advanced robotics, healthcare innovations, senior empowerment and rethinking the downside of labour shortages – may provide insights for the wider world.

Even in view of global trends, Japan's challenges still loom large. The proportion of Japanese above 65 is expected to jump from roughly 25 per cent today to nearly 40 per cent by 2050. Japan is forecast to lose a quarter of its population by the mid-

dle of this century, with numbers falling below 100 million. A combination of the world's highest longevity, 83.7 years, and one of the lowest fertility rates, 1.43 births per woman, means that new generations of Japanese face a crushing burden. Not least, Japan has the world's highest level of public debt at 230 per cent of GDP – an estimated \$7.6 trillion – a legacy that dwindling future generations will need to pay off.

Meanwhile, Prime Minister Shinzo Abe's economic revitalization plan – Abenomics – is now in its fifth year with only tentative signs that its combination of printing money, public spending and growth-promoting reforms is lifting Japan out of a vicious circle of deflation and economic decline.

Bleak demographics saddle Japan with a potential growth rate of less than 1 per cent, economists say, unless there are aggressive moves to accept more immigrants, boost the role of women in the workforce and overhaul workplace inefficiencies to increase productivity.

Yet despite its real and chronic problems, Japan may arguably be faring better than the image often projected of a country on the brink of an abyss. Japan still feels safe, prosperous and dazzlingly futuristic. While the overall economy has stagnated, GDP per head has outperformed most of the developed world, including Germany and France, according to World Bank figures – partly a consequence of the population crunch.

There are no signs of the social unrest that gripped Europe following the 2008 financial crisis, nor the populism that dominates politics on both sides of the Atlantic. Japan has one of the world's best healthcare systems, but spends less on it than the United States, Germany and France, according to the Organization for Economic Cooperation and Development. And investment is pouring into new technologies to care for the elderly, a global growth industry, as the number of people over 60 worldwide is on track to double to two billion by 2050.

While Japan today remains enviably safe and comfortable, the question is whether it can carry its living standards into the future given its debt and demographic problems. There are no easy answers. But rather than being stuck in a rut, Japan has quietly been enacting strategies both in technology and policy-making aimed at laying the groundwork for a successful 21st



A man communicates with his granddaughter using the Telenoid R1 robot which mimics the expressions and gestures of a distant speaker

century – with potential lessons for nations facing similar burdens.

At Tokyo's Haneda Airport last year, a humanoid robot with a blinking red heart helped jet-lagged visitors find their feet as it went through trials as a robotic tour guide. The EMIEW3 robot uses artificial intelligence to approach tourists, ask what they need and lead them to where they want to go.

'Where is the currency exchange?' a tourist asked in a press demonstration of the technology.

'Please go straight for about four metres and there is a currency exchange on the right.'

'I'm worried that I can't make it alone, can you take me?'

'I understand. Please allow EMIEW to guide you there.'

The Hitachi robot is one of several pro-

totypes expected at airports and railway stations – even crisscrossing the plaza at Ginza – guiding visitors during the 2020 Tokyo Olympics. Japan envisions robots playing a central role in compensating for the labour shortages inevitable in a shrinking society, as its workforce is braced for the loss of more than 11 million by 2060. Robots will not only take over manufacturing jobs, but enter the fabric of Japanese life as the face of everyday transactions.

'Humans who can perform these services will become fewer and fewer, so it's natural that robots take over,' said Tatsuhiko Kagehiro, the EMIEW project's lead researcher. Will robots be bank-tellers, receptionists or department store sales staff? 'These things are already being tested.'

Japan's global lead in robot technology comes not just from high-tech prowess but

also the insight that robots can be socially engaging, not to mention cute, a legacy of the Astro Boy narrative that in Japan has meant that there is less resistance to seeing robots as partners. These social attitudes are key to perhaps the most critical role that robots will play in an ageing Japan: elderly care.

Japan is betting on the likes of cuddly robots such as Paro, a robotic seal, Parlo, a humanoid fitness trainer, and Robear, a prototype ursine helper designed to lift patients from their bed to their wheelchair, to lead a healthcare revolution aimed at easing a nursing crisis. Japan is projected to face a shortage of 380,000 carers by 2025, and for now robots rather than immigrants are viewed as the answer. Robots for the elderly are also seen as an engine of growth: Japan's trade ministry estimates that the market for elderly care

robots will jump 25 times to \$3.5 billion by 2035.

Other rich, ageing nations face nursing shortages, but it's far from clear that robotic solutions will be exportable. People in the West may find it harder to overcome the but-it-doesn't-really-love-me factor than in Japan, which takes a more practical – some might say cynical – approach to virtual affection. But trials last year of Paro, the seal pup that responds to speech and touch, at a care home in Oxford proved popular with residents as a therapy for social engagement.

If robots are the vanguard of Japan's plans for its elderly, the backbone is its mandatory public long-term care insurance, or LTCI, launched in 2000. The government programme offers nursing care to all people over 65, irrespective of income or availability of family care. It is funded by taxes and mandatory premiums paid by everybody above 40. Benefits are limited to services instead of cash, and consumers choose their carer rather than having one assigned. The programme's chief objective is to allow the elderly 'to maintain an independent daily life' – central to a Japanese approach to ageing that has yielded not only the world's longest-living citizens but the most active. The World Health Organization ranks Japan No 1 in its 'healthy life expectancy' table, with the average Japanese expected to enjoy 74.9 years in full health.

In a study, *The Lancet* medical journal called LTCI 'unusually generous in terms of both coverage and benefits' – representing 'the first time that Japan has been a leader of developed nations in an important sector of social policy'. Critical for a nation facing fiscal crisis, the paper concluded that the programme was 'effective and manageable, including constraining expenditures to the growth rate of the target population'. The OECD says Japan kept its long-term care outlays at 1.2 per cent of GDP in 2010, far below other comprehensive programmes such as Sweden, at 3.58 per cent of GDP in 2010, or the Netherlands, at 3.7 per cent.

There are no guarantees the programme will continue to be affordable as Japan's demographic crisis grows more acute: the OECD also said long-term care expenditure is expected to 'more than double' by 2050 and 'could even reach 4.4 per cent of GDP', although that range of increase does not seem calamitous considering Japan's rate of greying. And Japan's nursing crunch

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will put heavy strains on the system, especially if it does not relax rules on allowing nurses from countries such as Indonesia and the Philippines to stay long-term. Still, Japan's innovative approach to improving elderly quality of life has been seen by global policy-makers as a success story. And other greying Asian societies, such as Taiwan and South Korea, have been building long-term care systems based on the Japanese model.

Japan's 'healthy life expectancy' also gives it a weapon for coping with its shrinking workforce: silver power. The Japanese are increasingly working beyond the official retirement age of 61, accepting lower wages in jobs big and small, largely because it gives them *ikigai* – the Japanese word, frequently heard in debates about ageing, for 'purpose in life'. More than 20 per cent of Japan's over-65s are in some form of employment, the highest rate among developed economies. More than 70 per cent of Japanese over 60 want to keep working – pointing to a vast pool of workers who can be expected to have 15 years of active life ahead of them. Many workers in Japan are re-hired at retirement age by their companies, accepting lower pay while providing valuable services based on decades of experience and often helping to train younger workers.

One key to harnessing the energies of senior citizens has been the government-subsidized 'silver centres' that dot Japan. These job placement centres – there are more than 1,600 of them – specifically cater to the aged, matching elderly Japanese with contract work from corporations, households and public institutions. Jobs range from reception work to sweeping leaves in public parks. More than half a million elderly Japanese pick up jobs from the National Human Resources Centre each year.

No amount of 'silver power' will make

up for the workforce crunch Japan faces due to its population trends. And while Japan has slowly opened the door to immigration – foreign permanent residents reached a record 2.23 million in 2015, a 72 per cent increase from 1995 – experts say it's more of a trickle than the deluge needed to staunch labour shortages. But people both in Japan and elsewhere in the rich world are increasingly wondering whether a smaller pool of people may not be such a bad thing, especially if one puts quality of life above national GDP. Japan's unemployment rate stands at 3 per cent – the lowest among industrialized nations – and wages are rising in the tight labour market. Meanwhile, fewer people means more space, less waste and a healthier environment.

Takahiko Furuta, a sociologist and president of the Research Institute for Contemporary Society, argues that Japan's evolution from a growth society to a mature one based on wellbeing is sustainable, even if predictions of flat-lining economic growth come true. 'If total population is declining, zero growth would be enough,' he says, since individuals would be growing richer. He envisions a Japan in which an alarming rise in vacant houses allows many Japanese to own two homes – one in the city and one in the countryside – an almost unheard of luxury in the 1980s boom-times when headlines of Japanese living in 'rabbit hutches' coursed around the globe.

Most importantly, a shrinking population fosters innovation to boost productivity. Writing in the *Financial Times*, Michael Lind, a senior fellow at New America, a Washington think-tank, argued that a labour shortage can be a blessing rather than a curse: 'Where labour is scarce and expensive, businesses have an incentive to invest in labour-saving technology,' he wrote, 'which boosts productivity growth by enabling fewer workers to produce more.'

That is precisely what is happening in today's Japan, with investment pouring into robotics, industrial automation and artificial intelligence. Furuta notes that a similar phenomenon took place in 18th-century Japan, under the Tokugawa shoguns, when sharp population declines due to famine and natural disaster spurred an age of innovation in science, the arts and agriculture. Such thinking has prompted Prime Minister Abe to embrace the idea that Japan's population crunch may have a

silver lining: 'Japan may be losing its population. But these are incentives,' Abe said in a speech last year. 'Japan's demography, paradoxically, is not an onus, but a bonus.'

In an engrossing paper for the World Economic Forum entitled *Lessons on Growth from 1,300 Years of Japanese History*, Jean-Pascal Bassino, an economist at the *École Normale Supérieure* in Lyon, attributes much of Japan's success throughout its history to being a tortoise

of economic growth – rather than the hare that stunned the world in the post-war era.

Using sources such as temple records, Bassino and his colleagues pieced together a picture of Japanese growth per head from the 8th century Nara period that showed extremely weak rates of consistent growth (0.04 per cent for 725-1874) with no significant periods of reversal. Still Japan overtook China and India, whose economic fortunes see-sawed through the ages, in

per capita wealth by the end of the 18th century. 'Our findings suggest that prosperity depends on avoiding periods of negative growth as much as achieving positive growth,' Bassino said in an interview. 'And Japan, despite its long period of stagnation in recent times, has managed to avoid going backwards.'

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