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Reimagining Productive Longevity

Kok Ping Soon

TRANSFORMING COMMUNITY CARE IN 2030
Nadine Chia and Melissa Khoo

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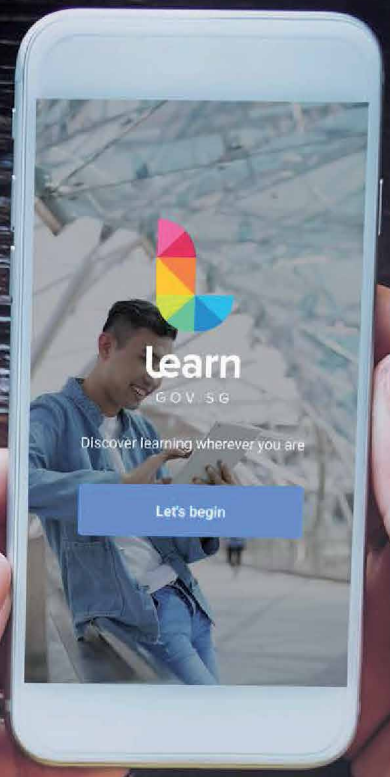

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Editorial

by **Alvin Pang**
Editor-in-Chief, ETHOS

An ageing population is, from one perspective, a triumph. It means that a society has managed, through sound policies and steady advancement, to allow its people to live longer, healthier lives than ever before. Yet this global phenomenon has stirred anxiety. Even as more of us are now able to fulfil the long-held human dream of living to a ripe old age, we also worry about affordability and sustainability, about intergenerational competition for resources, and about the risk of frailty, which rises along with advancing years.

Many of Asia's rapidly developing urban centres, which until recently were concerned about basic subsistence, are now having to adjust to a 'silver tsunami' of seniors who comprise a growing proportion of society, as both mortality and birth rates plummet. Mindsets, structures and institutions, formed when longevity was the exception, have yet to catch up with the new normal of human lifespans.

In the long run, ingrained ideas about age and ageing will have to change. Automation is already reducing the

Our elders are not the problem, nor should they be passive recipients of society's largesse.

need for physical exertion—for which youth is an advantage—in work. We should find ways to better recognise and sharpen the valuable skills and judgement that seniors have honed over the years, and to match these to the right tasks, so that they can extend their productive, independent lives (*p. 4*). The Institute for Adult Learning in Singapore has found that while age and educational background have an impact on the ability to learn, appropriate technologies and learning methods can help seniors acquire new knowledge and competencies (*p. 22*). While the stereotype of seniors is that they are averse to new tools and approaches, the reality is that a significant difference can be made if technologies are well designed to cater to individual needs (*p. 32*). Indeed, cutting edge VR and AR technology could acclimatise senior learners to new environments while providing richer data to help in developing better facilities and pedagogy for them (*p. 38*).

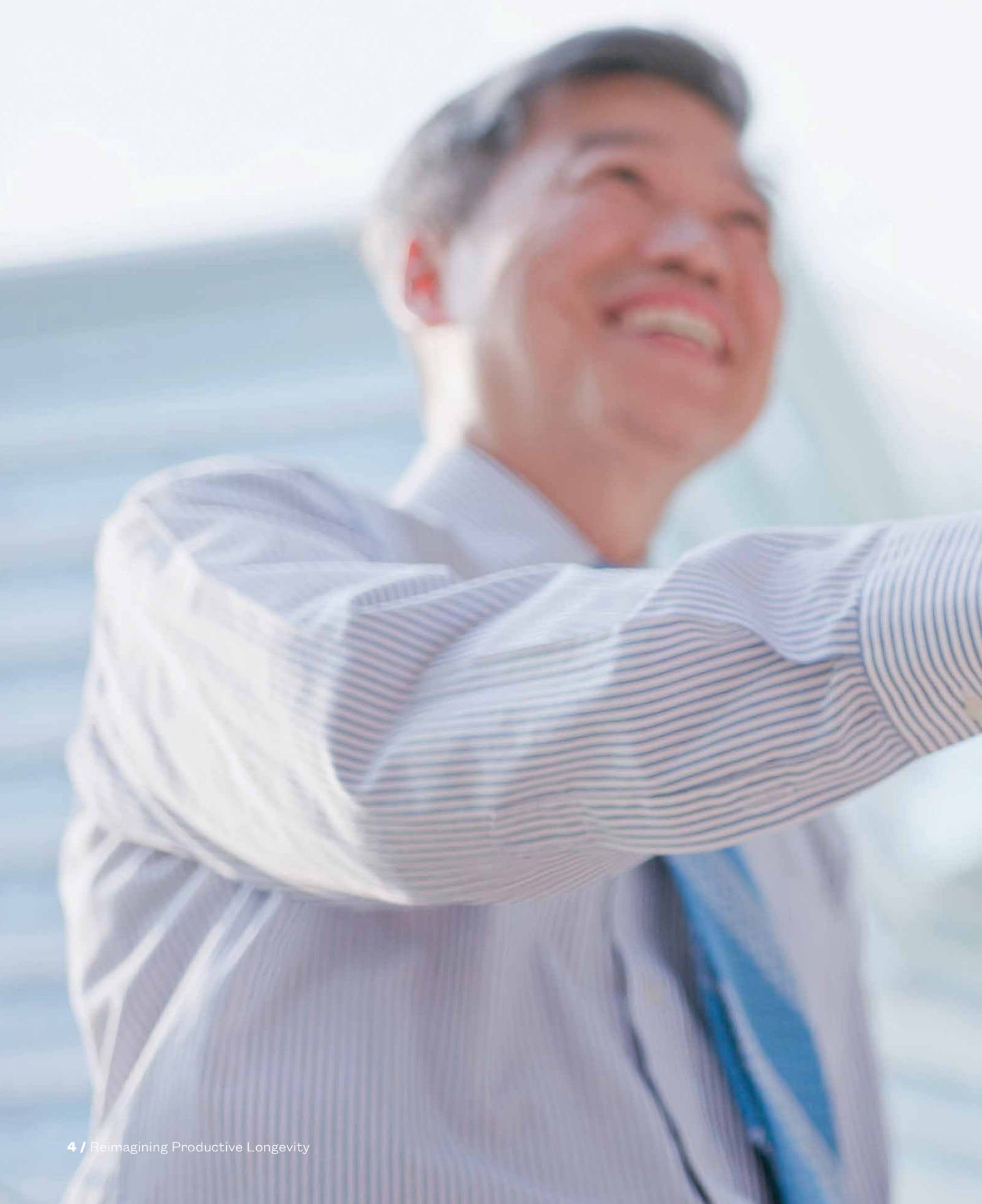
Of course, the future of ageing is not only about more finely tuned assistive

hardware. Improving society's soft touch may in fact be the more important service revolution, as we rally our communities to care for all its members (*p. 58*). Seniors themselves play an important role, not only in staying active and connected themselves, but in helping their peers to do so (*p. 68*).

The emerging generation of seniors is perhaps the most well-educated, healthy and capable of their age group in history. They are a diverse, dynamic group with varying interests and the wherewithal to pursue them. With advancements in medical and other technologies, our prospects for a full, rich life as we age are continuing to grow (*p. 46*). Our elders are not the problem, nor should they be passive recipients of society's largesse: instead, we must work harder to find ways in which seniors remain an active part of the solution, as we enhance society to meet changing circumstances and needs (*p. 80*). The seniors of the future will continue to shape society, and contribute to the betterment of life—for all of us.

I wish you an inspiring read. ■

We must work harder to find ways in which seniors remain an active part of the solution.



Reimagining Productive Longevity

by **Kok Ping Soon**

By increasing seniors' productive capacity, strengthening the ecoysystem functional capacity and changing the social narrative, we can turn ageing from a societal liability to a productive asset for the nation.

Kok Ping Soon is the Chief Executive of the Government Technology Agency of Singapore, the lead agency driving Singapore's Smart Nation initiative and public sector digital transformation. Prior to his current appointment, he held various positions in the Ministry of Manpower, National Security Co-ordination Secretariat, Ministry of Trade & Industry, Singapore Tourism Board, and Economic Development Board (EDB).

The author wishes to thank the inter-agency study team that worked on the analysis and recommendations for the project on which this article was based. The team members include Tony Lim, Kenny Tan, Wong Hefen, Ye Yongfeng, Ng Yi Han, Oon Si Xiang, Sherlene Chatterji, Hannah Chia, Li Caijia, Lim Shiqi, Yvonne Liu, Xiao Yifei, Chng Jun Yi, Hu Ching, Lee Zhang Er, Rachael Quah, Cheryl Lim, and Geeva s/o Gopal Krishnan.

Singapore's population—and by extension its workforce—is ageing. As the workforce ages, it will also shrink. A tight labour market could negatively affect investment decisions and potentially lead to slower growth.[1]

Moreover, ageing may also result in slower technological adoption as more age-related health complications reduce worker productivity. The rapid pace of technological progress means that many of today's jobs may disappear even as new ones get created. As our seniors age, declining cognitive and physical ability may constrain their abilities to take on these jobs.

However, almost half of our seniors remain outside the labour force, despite being in relatively good and fair health.[2] The volunteerism rate among seniors is also relatively low at 19%, compared to the national average of 35%, suggesting that there is much potential for greater engagement in productive activity.[3]

What can be done to enable and encourage longer productive lifespans through changes in policies, job design and work arrangements? How can the public sector take the lead to enhance productive longevity?

An Ageing Society, with Cause for Optimism

1

In 2015, **1 in 8** Singaporeans was 65 and older.
By 2030, it will be

1 in 4.

We will have over

900,000

seniors, approximately double the current **440,000**.

2

In 2015, there were **1.4** locals entering working-age for every one local exiting.
By 2030, this will drop to

0.7 locals entering for every one exiting.

3

Studies have tried to quantify the degree of age-susceptibility and technology-susceptibility of jobs.[4]
In Singapore, the jobs most vulnerable to ageing and automation were found to be drivers, cleaners and food preparation assistants. Of the

164,000 seniors aged 55 and above

employed in the top 10 jobs for seniors,

62% are in age- and tech-susceptible roles.

4 Singapore's seniors are **living longer and healthier** than before.[5] They are also **better educated and better prepared financially** for retirement.[6, 7]

5 Despite a **50%** increase in the cohort of seniors aged 55 and above from 2007 (689,300) to 2016 (1,058,200), employment outcomes have improved. In 2007, only **36.8% (253,200)** of these seniors were employed; in 2016, **47.6%** (504,200) of them were employed.

6 Singaporean seniors' Labour Force Participation Rate (LFPR) is **comparable to international benchmarks**.[8]

What is Productive Longevity?

Productivity is simply the creation of value, which can occur in paid work (as an employee or self-employed person) *and* also in unpaid work. Examples of unpaid work include volunteering and care-giving, which are not traditionally seen as formal productive work but do add significant value; they may also be alternatives to paid services.

Measurements for productive longevity therefore extend beyond traditional labour market indicators (such as the employment, unemployment and labour force participation rates) to the rate of volunteerism and even Health Adjusted Life Expectancy (HALE).[9] Studies have found that a continued state of engagement in paid or unpaid work is good for health: it structures time, creates meaning, gives identity and slows physical and cognitive decline. In other words, health is both a pre-condition of productivity and also an *outcome* of productivity.

Research into the ageing issue in Singapore has surfaced four areas of concern:

1 Most seniors desire to work longer and delay retirement but do not have the skills and knowledge to access adjacent or new productive opportunities.

2 Companies are not always willing or able to employ seniors. This is due to job or workplace designs that are not age-friendly, discriminatory HR policies or the lack of flexible work arrangement provisions.

3 Existing information portals and services that supported seniors in discovering new productive opportunities are often under-utilised or not known to them.

4 Ageist attitudes persist in society which inhibit seniors from remaining employed or from transiting to new productive opportunities, even when they remain able and willing to work.

The Problem of Mismatch, Missed Matches and Mindsets

To tackle the issue of productive longevity, seniors must be able and willing to stay productive. At the same time, companies must offer productive opportunities. These challenges will require changes in the predominant social narrative today, which portrays ageing as a period of deteriorating health, increased dependency and disempowerment.

> Health is both a pre-condition of productivity and also an outcome of productivity.

Three levels of interventions are needed:

First, we need to close the **mismatch** between seniors and companies. This occurs when seniors are willing and able to work but companies are not willing or able to employ them, and vice versa. We will need to address this by increasing the **mastery** of both seniors and companies in accessing and providing productive opportunities, respectively.

Second, we need to tackle **missed matches**. These occur when information asymmetry leads to missed opportunities between seniors and companies, even though there may not be a mismatch of seniors' capabilities and business requirements. Tackling missed matches will require us to strengthen the eco-system by tightening coordination efforts across the public, private and people sectors.

Third, we need to confront the ageist **mindsets** that persist in society. These are reinforced both by explicit anchors (such as the retirement age) and ambient anchors (such as the labels for senior-specific schemes). We need to create a new narrative around what it means to grow old in Singapore.

Addressing "Mismatch" by Improving Mastery

STRENGTHENING SENIORS' PRODUCTIVE CAPACITY

Ensuring our seniors remain productive requires us to look beyond the adequacy of *tangible* assets (such as financial resources) to include *intangible* assets. There are three categories of intangible assets:

- **Vitality** assets, such as health and well-being, enable seniors to live and work longer with a positive mindset;
- **Productive** assets, such as skills, expertise, professional networks, enable seniors to remain employable and access new productive opportunities;
- **Transformational** assets, such as resilience, adaptability, self-awareness, enable seniors to make successful transitions into new areas of opportunity and deal with changes in life or work routines.[10]

> Information asymmetry leads to missed opportunities between seniors and companies, even though there may not be a mismatch of seniors' capabilities and business requirements.

The relatively lower educational attainment of today's seniors in their earlier years, coupled with the rapid pace of technological developments, means that our seniors need to acquire new productive and transformational

assets. In light of this, data from the SkillsFuture credit scheme is encouraging. Of the 285,060 Singaporeans who have used their SkillsFuture credit as of December 2017, 80,604 (28%) are seniors aged 55 to 69 years old.[11] This reflects an innate desire among our seniors to continuously upgrade and pick up new skills.

Ageist mindsets are reinforced both by explicit anchors (such as the retirement age) and ambient anchors (such as the labels for senior-specific schemes).

However, there are three challenges. First, there are too many courses, resulting in a "paradox of choice", whereby the plethora of options induces more anxiety and decision-paralysis rather than empowerment. Second, courses that are work-related are typically not designed for seniors. In fact, fewer than 50% of seniors who enrolled in Workforce Singapore's (WSG) and Employment Employability Institute's (e2i) training courses actually completed their training.[12] This may be due to the adult training approaches used: many seniors lack "learning how to learn" or meta-cognitive skills, and need a more gradual and guided process to learn effectively. Many seniors also prefer practice-based learning formats rather than formal classroom learning. Third, courses designed for seniors are typically lifestyle- or hobbies-related, without a targeted focus on work and employment.

What we can do

We should develop course packages customised for different profiles of seniors. These packages should comprise cross-industry hard skills, soft skills and those relating to transformational assets. Instead of a long list of ala carte items, we should design a few set *menus* with a good balance of the necessary skills to be acquired, curated for different profiles. We will also need to build up expertise and help inject senior-centric pedagogy into the delivery of these courses.

Our seniors also need help to guide them through this life-stage transition. Many may require some support to get their lives in order—i.e., to better understand their employment and learning needs as well as their options, based on a review of their circumstances and aspirations.

What we can do

We could institute a structured and systematic nationwide outreach programme that invites seniors turning 55 for a holistic life-stage review. This review would cover both their tangible and intangible assets. We have similar life-stage based conversations to help students prepare for the transition to working life. As our seniors' lives become more complex, a structured life-stage review will be crucial in helping them take stock of their current assets and plan for a meaningful and productive future.

IMPROVING COMPANIES' CARRYING CAPACITY

Many policies and schemes are already in place to encourage the employment of older workers. These include reduced CPF contribution rates for employers of employees aged 55 and above, the Special Employment Credit scheme which provides a wage offset of up to 8% of monthly wages to employers of older workers, and WorkPro schemes which provide funding to help companies implement age management practices and redesign their workplace processes.[13]

However, many employers still lack the know-how to re-design workplace practices and jobs to make them age-friendly. In addition, although ageing affects the entire workforce, interventions are best made at a sectoral level, to better address sector-specific challenges to employing seniors. These sector- and industry-wide solutions also allow for greater impact beyond individual companies.

> Ensuring our seniors remain productive requires us to look beyond the adequacy of *tangible* assets (such as financial resources) to include *intangible* assets.

What we can do

We can develop sector-specific plans to help companies become more age-friendly. The plans should include an assessment of the age- and tech-susceptibility of jobs, the risk of displacement, as well as transition plans for older workers in these jobs. We can consider providing a bonus Dependency Ratio Ceiling (DRC) to those companies in the identified sectors who commit to undertaking restructuring in order to be more age-friendly.[14]

The Retirement and Health Study (RHS) is a survey on Singapore residents' retirement and healthcare needs and how they change over time. Selected individuals are interviewed once every 2 years over a 10-year period. The RHS is a joint initiative by CPF Board, HDB, MOF, MOH and MOM. The RHS 2014–2017 data set involved a sample size of about 15,000 respondents of age 45 to 85. The total number of seniors represented in the 6 emergent archetypes was approximately 10,300.

The data was analysed by the data team from Pioneer Generation Office (now known as the Silver Generation Office) and the inter-agency team followed up with ethnographic interviews based on the clusters that emerged from the analysis. The 6 distinct archetypes of seniors in Singapore emerged from the data analysis and ethnographic interviews.

Who Are Our Seniors in Singapore?

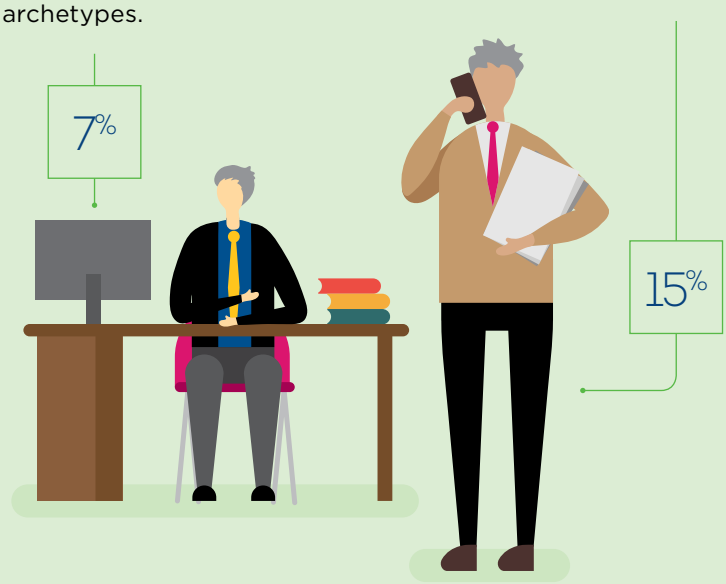
Seniors are not a homogenous group. Ethnographic interviews based on a cluster analysis of the Retirement and Health Study data surfaced 6 distinct archetypes of seniors in Singapore.[1]

PRIVILEGED RETIREE (7%)[2]

He is married, well-educated (university degree and above) and resides in a private or landed property. He has worked in a professional, managerial or executive role for the majority of his career and has initiated his own partial retirement. His friends also hold similar jobs and are early retirees as well. The smallest group of the 6 archetypes.

INDEPENDENT WORKAHOLIC (15%)

He is similar to the *Privileged Retiree* in educational background, career portfolio and type of residence. However, his family tends to be bigger, with three or more children. He continues to work despite being able to retire. He does this to pass the time, maintain a routine and sense of autonomy while ensuring that he is not a burden to his spouse or children.



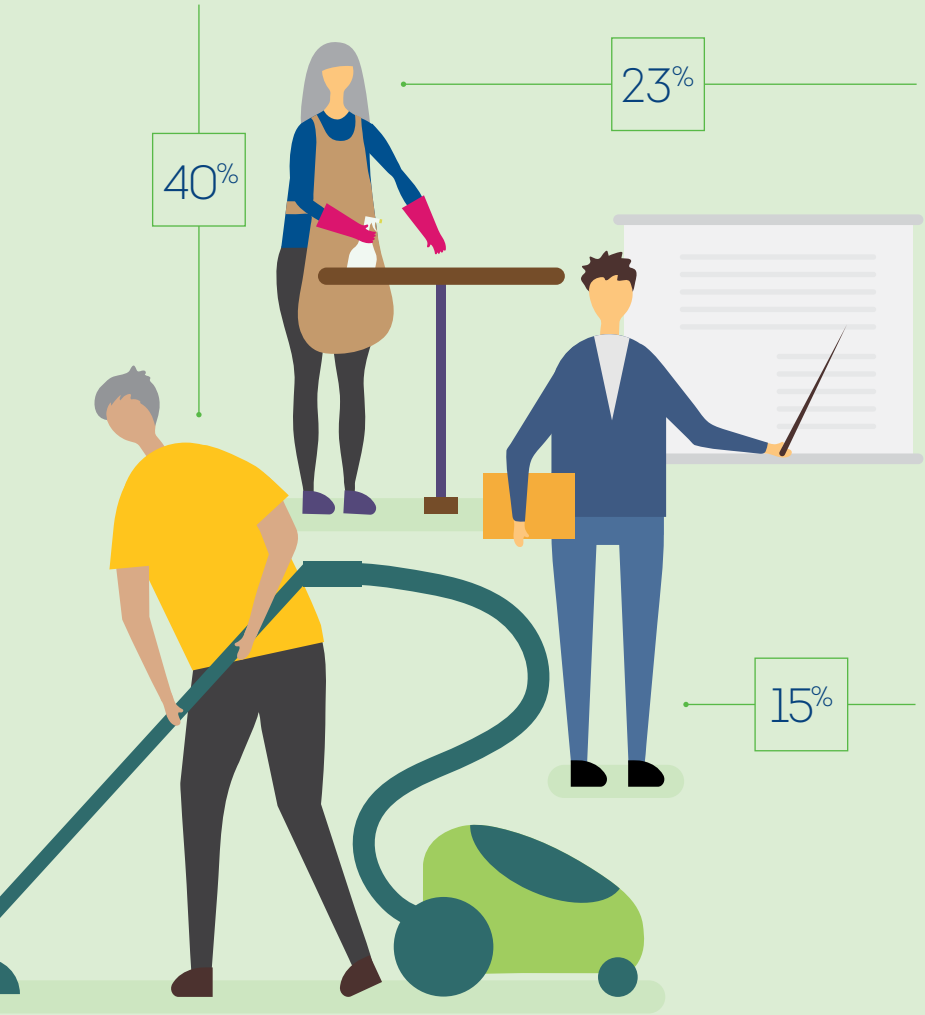
Notes

1. The Retirement and Heath survey involves a sample size of approximately 15,000 respondents of age 45 to 85. The total number of seniors represented in the 5 clusters and 6 emergent archetypes is approximately 10,300.

2. The percentages are calculated based on the sample size of 10,300 and give a sense of the distribution of these archetypes across Singapore. The percentages are not representative of the actual distribution across the general population.

BURDENED BREADWINNER (40%)

He is married with a large family and dwells in a four- or five-room HDB flat. He does not hold high educational qualifications and is only able to find low- to mid-income jobs which are labour intensive and susceptible to automation. He finds work increasingly stressful as he competes with foreign workers, who are younger and willing to work longer hours, for lower pay. Despite these challenges, the responsibility of being the sole breadwinner requires him to persevere. The largest group of the 6 archetypes.



DISHEARTENED LABOURER (23%)

This group is predominately female and single. She has similar educational qualifications and career options as the *Burdened Breadwinner*, but is additionally hampered by poor health, due to chronic conditions or unfortunate circumstances. Being single, she often feels lonely knowing that she can only rely on herself. However, she occasionally feels luckier than her peers in similar situations who are further burdened with care-giving duties for their spouses in ill-health.

PASSIONATE FREELANCER/LAID-BACK FLEXI-WORKER (15%)

The *Passionate Freelancer* is self-employed and supported by children of working age. As financial adequacy is not his main concern, work is an opportunity to pursue passions and hobbies that had been set aside during his working years. For many, he is viewed as the model active senior—self-directed and living life to the fullest after retirement.

Like the *Passionate Freelancer*, the *Laid-back Flexi-worker* is also self-employed but works more to supplement his income and to keep himself occupied. He chooses flexible work such as giving tuition or volunteering at community events because these allow him to keep his schedule open, in order to run errands for his children or babysit his grandchildren.

Which Sectors Could Our Seniors Be Employed In?

Sectors that could employ Singapore's seniors are those marked by high employment growth in the short term till 2020, in which job growth takes place in roles less susceptible to technological disruption and age-related decline. Possible sectors include:

HOTEL SECTOR

+200 NEW JOBS PER YEAR

Seniors could be employed in high-touch roles as guest service officers and house-keeping managers where their experience and interpersonal skills are valuable. With relatively low barriers to entry, seniors can more easily assimilate into new roles. The greater adoption of technology in this sector also means that tasks are less physically demanding, suiting older workers.

EARLY CHILDHOOD SECTOR

+1,000 NEW JOBS PER YEAR

Seniors could be employed as assistant or relief edu-carers, preschool teachers, or in non-teaching roles within HR, finance or operations management. Caring for young children is inherently suitable for seniors who are likely to have prior experience raising their own children or those of close relatives. Seniors would bring valuable life experience and interpersonal skills to this work.

HEALTHCARE SECTOR

+2,100 NEW JOBS PER YEAR

Seniors could be employed in non-clinical roles, or in clinical roles as support staff such as basic care assistants, nursing care support staff, therapy support staff and operational theatre support staff. Non-clinical support staff roles, being non-specialised, have permissive entry requirements. Seniors may also have work skills transferable to administrative and executive non-clinical positions.

INFORMATION COMMUNICATION TECHNOLOGY (ICT) SECTOR

+3,000 NEW JOBS PER YEAR

This sector's general expansion will create opportunities in roles that do not require ICT competencies. Seniors could be employed as information systems auditors, social media analysts, IT support staff and in non-technology related roles such as network operations, infrastructure support, tool-based or user experience testers.

FINANCE SECTOR

+3,000 NEW JOBS PER YEAR

Seniors could be employed in entry level, middle management and professional positions in areas such as sales, basic analytics, financial planning, account management, digital payment and quality management. Job growth is likely for roles that do not need significant reskilling, benefiting seniors with transferable skills from different industries.

OTHER PRODUCTIVE OPPORTUNITIES

While Singapore's primary approach is to strengthen organisations' capabilities to provide full or part-time employment to older workers, many seniors remain outside the workforce. Some do so because of ill health or care-giving obligations. However, there is a latent pool of seniors who can make a productive contribution if there are suitable freelancing or volunteering opportunities.

> Many employers still lack the know-how to re-design workplace practices and jobs to make them age-friendly.

Providing a stipend or allowance to offset the cost of volunteering can potentially draw out seniors who traditionally do not consider volunteering. This could enlarge the available pool of productive labour. Some examples of companies that have tapped on this pool include:

- The Social Iron,[15] a social enterprise, has managed to aggregate the supply of seniors who are adept at ironing clothes, to meet demand among busy working professionals.
- Changi Airport Group has demonstrated that providing a small stipend can catalyse seniors to take on volunteer jobs (e.g., Changi Airport Ambassadors) which involve providing a service with a personal touch.

More can be done to generate demand for products or services that tap on the skills that seniors possess. They can serve as tour guides, or front-desk concierge staff, or provide services such as car-pooling, home-based care visits, or usability testing for products and services.

What we can do

We can provide more support to social enterprises seeking to aggregate demand and supply to create these opportunities. Public sector organisations should be encouraged to create volunteer opportunities by providing a stipend or allowance to offset the cost of participation. If cost-reimbursement is frowned upon for diluting the altruistic motive of volunteering, a national volunteer time bank can be considered instead, where services and skills are exchanged for time instead of money.

> More can be done to generate demand for products or services that tap on the skills that seniors possess.

Dealing with "missed matches"

Missed matches between seniors and companies can and do occur, especially with poor information flow. While the current landscape of programmes and schemes to support seniors in their productivity is variegated and comprehensive, national platforms (such as Jobs Bank and Workforce Singapore) are not senior-centric, and senior-centric platforms (such as Centre for Seniors or Silver Spring) lack scale. The fragmented ecosystem poses challenges for navigation and leads to sub-optimal outcomes, with missed opportunities for cross-referral, outreach or joint delivery of services.

What we can do

We can adopt a more senior-centric approach and devise a coherent strategy across agencies for both paid work and non-paid work. Workforce Singapore could be the lead agency to improve employment outcomes for seniors, working with the Council for Third Age which currently drives senior volunteerism. For a start, they could develop a common framework based on mapping out seniors' learning, employment and volunteering needs. Common referral processes and the sharing of client data across their network of touch-points will significantly multiply reach and improve programme effectiveness.

Changing Mindsets

Mindsets play a powerful role in supporting or inhibiting productive longevity. Unfortunately, the predominant social narrative today portrays ageing as a period of decline. Media representations of seniors tend to be scarce, inaccurate or framed in disempowering stereotypes.[16]

One way to shift the narrative is to reshape the citizens' choice architecture in relation to retirement, which is heavily influenced by the Retirement and Re-employment Act (RRA). The RRA protects older workers from being unfairly dismissed based on age, while balancing competing interests among government, employers and younger workers. By providing a mechanism for resetting job expectations at age 62 while placing a time-bound onus on employers to offer re-employment until age 67, the RRA framework is both worker-friendly and employer-friendly. It provides employment assurance and a socially acceptable mechanism to achieve organisational renewal outcomes.

However, misperceptions of a "retirement age" exist—many perceive it as a *mandatory* retirement age, instead of a *minimum* retirement age, and mistakenly feel obliged to retire against their wishes. Furthermore, with increased life expectancy, the raising of the retirement and re-employment age is no longer a matter of *should*, but of *how* and *when*.

What we can do

We should flip the labels of the two age points: re-label age 62 as the *re-employment* age and 67 as the *minimum retirement* age. This better reflects the RRA's intent and practice, i.e., for employers to offer re-employment at age 62 and to signal to workers that 67 is the current socially acceptable age to leave the workforce. We could also inject some certainty by pegging future increases for these two age-based milestones to an empirical formula based on HALE—an increasingly common practice in other countries.[17] Embedding such a formula into existing tripartite consultations could help to depoliticise future age increases and sensitise the population to the necessity of further increases, with rising life expectancy.[18]

How can we change the narrative by changing the way we talk about ageing? Terminology is key. Even subtle changes in terms and labels used can make a big difference in the public's mental model of ageing.

At present, the conventional mental frame of life is a three-stage life model: with life progressing in a linear and lockstep manner from *education* in one's youth, to *work* (typically in a single career) in adulthood, and finally *retirement* in one's senior years. However, longer lifespans have meant the lengthening of the "work" life-stage to achieve retirement adequacy. This not only creates a physical strain on individuals, but also on systems designed for a shorter work life-stage. Second, digital technologies and economic restructuring are rapidly rendering skills acquired in the early education life-stage obsolete. New short stages of rest and reskilling during the work life-stage are necessary.

What we can do

We should articulate a new life-stage called the "Third Age" in our social discourse, to give structure to the grey zone (i.e., starting from 55 years old) between one's primary career and full retirement. Naming a life-stage gives it a coherent identity and legitimises its existence. Similar to how the codification of "adolescence" as a distinct life-stage re-shaped educators' and parents' approach towards teenagers, codifying "Third Age" as a distinct life-stage can do the same to redefine societal norms around ageing.

The "Third Age" life-stage has two defining characteristics. First, it marks a period of intentional reskilling as Third Agers seek to reach further heights in their existing careers, or transit to new careers through actively reskilling. Second, it involves a repurposing of goals and roles as Third Agers tap on their experiences and networks to contribute to their organisations, communities or society in new ways: such as mentoring, care-giving or befriending others.

The focus will be to turn the push ("you have to work longer") into a pull ("there's important work you want to do") and transform the desire to be "free from work" to one of being "free to work". We should normalise this life stage with new rituals in society: from awarding "Third Age Fellowships" to building up a community of senior social change makers, naming the life-stage conversation as a "Third Age Conversation" and making references to seniors who embraced this transition as "Third Agers".

The focus will be to transform the desire to be "free from work" to one of being "free to work".

THE SINGAPORE PUBLIC SERVICE:

How to Take the Lead in Enhancing Productive Longevity

As the largest employer in Singapore, the Singapore Public Service has consistently been at the forefront of national efforts to improve employability of older workers. Although the Public Service has a younger workforce than the national average, it is expected to age significantly over time. It should therefore lead the change.

MASTERY

To improve public officers' mastery—the ability and willingness to work longer—structured transition milestone programmes can be put in place, supported by career conversations for all public officers. The milestone programmes should be designed specifically for public officers aged 50 and above with certain modules that can be customised or curated based on the participants' profile. The career conversations can happen at age 40, 45 and 50 to give officers a longer runway to build up intangible assets. They should be administered by career counsellors instead of supervisors, to remove the perception that such conversations are linked to appraisals. Comprehensive playbooks and toolkits can be developed to support and guide public agencies in job and workplace redesign.

MATCHING

Mechanisms to facilitate appropriate transitions within and outside the Public Service should be established and enhanced. For transitions into the private sector, "transition dollars and days" can be given to officers to search for new career opportunities. This would help to legitimise job searching during work hours. Greater porosity across agencies could be encouraged via schemes to de-risk potential transitions between agencies and encourage the redeployment of officers into new growth areas. Work attachment programmes could be used to facilitate such transitions within the Public Service. Under such a programme, the receiving agency could receive the services of an officer on attachment without utilising its Manpower Management Framework (MMF) headcount during the "trial period". The Career Transition Unit in the Public Service Division would be key to driving and coordinating these policies while providing centralised support for agencies.

MINDSET

There is a need to reset public officers' unspoken expectation of an "iron rice bowl". With technological disruption, the new norm will involve consistent reskilling and redeployment to new roles in and outside public service agencies. This could be supported by a move towards more contract-based employment instead of employment based on the permanent establishment. To incentivise lifelong learning and skills acquisition, a skills-based component could also be introduced into the wage structure. These shifts would support the new social contract within the Service where opportunities and resources are provided to support "lifetime employability", instead of an expectation of "lifetime employment".

Ageing as a Positive Force

That seniors will make up a growing proportion of our population is inevitable. Singapore is neither the first nor only country to grapple with the challenges posed by the confluence of rapid demographic, economic and technological changes. What we have is a valuable opportunity to reimagine what growing old could be like in the next decade and beyond. Ageing does not have to be associated with deteriorating health, disempowerment and dependency. Instead, we can be a society where seniors are empowered, skilled, healthy and active contributors to society. Reimagining productive longevity is a call to reaffirm that Singapore can be, and is, a home for all ages, with opportunities for all. ■

Notes

1. See: The WEF article (weblink), "How will an ageing population affect the economy?", Henrique Basso, Economist, Bank of Spain, accessed October, 15, 2017, www.weforum.org/agenda/2015/04/how-will-an-ageing-population-affect-the-economy.

2. Source: Labour Force Survey 2016, Ministry of Manpower, MOM.

3. National Volunteer and Philanthropy Centre (NVPC), "Individual Giving Survey 2016 Results", accessed August, 12, 2017, https://www.nvpc.org.sg/resources/individual-giving-survey-2016-findings.

4. The Age Susceptibility index (ASI) was developed by Boston College's Center for Retirement Research. It measures how likely jobholders' abilities required by an occupation would decline during the working years. This covers both cognitive abilities (e.g., deductive reasoning, memorisation), physical abilities (e.g., explosive strength, manual dexterity), and sensory abilities (e.g., night vision, sound localisation). A total of 954 occupations in the US were ranked and scored, from 0.10 to 99.8. The higher the ASI score of occupation, the more it requires abilities that decline early. The detailed working paper can be accessed at Anek Belbase, Geoffrey T. Sanzenbacher, and Christopher M. Gillis, "Does Age-Related decline in ability Correspond with Retirement Age?", working paper, September 2015, http://crr.bc.edu/working-papers/does-age-related-decline-in-ability-correspond-with-retirement-age/ and the index listing can be accessed at http://crr.bc.edu/wp-content/uploads/2016/04/Susceptibility-Index_April-2016.pdf.

   The Technology Susceptibility index measures how likely the constituent work tasks within a particular occupation are automatable based on current technology. McKinsey Global Institute disaggregated 820 occupations in the US into 2,000 constituent activities and rated each against human performance in 18 capabilities. A tech-susceptibility score of 0.53 means that 53% of the work activities within that occupation are at risk of being replaced by automation. For details, see McKinsey Global Institute, "A Future that Works: Automation, Employment and Productivity", January 2017.

5. Between 2004 and 2010, the life expectancy for men increased by 2.1 years, while their healthy years rose by 2.7 years. The change was even greater for women, whose life expectancy rose by 2 years and healthy years by 4. Singapore is ranked third worldwide in average life expectancy at 83.1 years, behind Japan (83.6 years) and Switzerland (83.4 years), but second in healthy life expectancy at 73.9 years, behind Japan (74.9 years). Sources: Ministry of Health, Department of Statistics, accessed at Salma Khalik, "'Healthy Lifespan' Gets Longer in Singapore", *The Straits Times*, December 7, 2015, accessed February 10, 2018, www.straitstimes.com/singapore/health/healthy-lifespan-gets-longer-in-singapore; World Health Organisation, *World Health Statistics Report 2017*, accessed February, 10, 2018, www.who.int/gho/publications/world_health_statistics/en/.

6. Between 2010 and 2015, seniors aged 55 and above with post-secondary qualifications increased from 17.2% to 22.3%. Source: Department of Statistics Singapore, *General Household Survey 2015* (Singapore: Department of Statistics, 2016).

7. Between 2010 and 2014, seniors aged 55 and above experienced the highest growth rate of CPF net balances at 90%, almost doubling from $42.1 billion to $79.9 billion. Source: CPF Trends, July 2015, p. 3.

8. At 69%, the labour force participation rate for our seniors aged 55 to 64 ranks 8th amongst OECD countries and our unemployment rates rank 6th. Source: OECD Employment Statistics database, data from 1990 to 2016. Accessed January 25, 2018, https://stats.oecd.org/index.aspx?queryid=54741.

9. HALE refers to the average number of years that a person can expect to live in "full health" by taking into account years lived in less than full health due to disease and/or injury.

10. Lynda Gratton and Andrew Scott, *The 100 Year Life: Living and Working in an Age of Longevity* (Bloomsbury Publishing, 2016), 71.

11. Data accurate as of December 2017. Source: SkillsFuture Singapore.

12. Only 676 (45.9%) of the 1,472 seniors aged 55 and above who enrolled in the WSG courses in 2016 completed their training. Source: Workforce Singapore.

13. The percentage of an employee's salary received in CPF contribution is reduced from 37% (ages 35 to 55) to 16.5% for those aged 55 to 65. Employer's contributions fall from 17% (ages 35 to 55) to 9% (ages 55 to 65). Source: Ministry of Manpower, *Committee of Supply-In-Brief, Supplementary Info & FAQs,* 2018.

14. DRC is a regulatory cap on the proportion of foreign workers that companies can hire. This cap varies by sector.

15. See: The Social Iron (website), https://www.thesocialiron.com/.

16. United Nations Population Fund, *Ageing in the Twenty-First Century: A Celebration and a Challenge* (UN: New York, 2012).

17. For example: Cyprus, Denmark, Greece, Finland, Italy, the Netherlands, Portugal and Slovakia.

18. In the 1980s, there was no statutory minimum retirement age and the "norm" age at which workers tended to retire was 55. In 1988, the Government set a three-year timeframe to allow employers to voluntarily raise the minimum retirement age to 60 but the uptake was not high. In response, the Retirement Age Act was passed in 1993 to provide a minimum retirement age of 60. In 1999, the Retirement Age Act was amended to extend the minimum retirement age from 60 to 62. In 2012, the Retirement and Re-employment Act came into effect to enable Singaporeans to continue working up to age 65. With effect from July 2017, the re-employment age was raised to 67.

Lifelong Learning and Ageing:

EVIDENCE FROM SINGAPORE

by **Chia Ying, Sheng Yee Zher and Johnny Sung**

While age and educational background are key factors influencing our ability to learn, a recent study suggests that enabling technologies and learning methods can help seniors to go further.

Chia Ying is Researcher at the Centre for Skills, Performance, and Productivity (CSPP), a research centre under the Institute for Adult Learning—part of SkillsFuture Singapore. CSPP specialises in skills research on the impact of skills at work and the implications for policy and practices in Continuing Education and Training (CET). **Sheng Yee Zher** is Principal Researcher and **Johnny Sung** is Centre Director of CSPP.

For more information, please visit https://www.ial.edu.sg.

Lifelong Learning and Ageing: Why It Matters

Advancements in technologies and global developments have already mandated a relentless change in the way we live, work, and learn. This means that throughout the course of our lives—even after our initial formal education, throughout our tenure in the workforce, and as we age into our silver years—we have to be prepared to constantly learn and relearn. Learning will no longer be limited to specific life periods and age groups.[1]

Singapore's learning imperative, as demonstrated by the SkillsFuture movement, is more than just workforce development: it is also about the attainment of skills mastery, personal development and social integration. As learning becomes lifelong, the participation of our seniors cannot and should not be ignored.

A first attempt to collect data on lifelong learning among adults in Singapore, to assess the current state and future progress of lifelong learning was carried out as part of a 2017 Skills and Learning Study (SLS) by the Institute for Adult Learning (IAL).[2] In this article, we present findings relating to seniors in Singapore aged 50 to 70, indicating their participation, motivation and perceptions of learning.

SLS Findings

The SLS data suggests that age and education attainment are the two main factors explaining scores across all six pillars of lifelong learning.

LEARNING IS NEGATIVELY ASSOCIATED WITH AGE

Learning is negatively associated with age, even after we take education attainment, employment status, and parents' education into consideration (see Figure 1). However, within the general decline with age, there are some interesting observations:

- The "social learning" scores peak at the ages of 40 to 49 years old, and the scores for seniors are not that different from 20- to 29-year-olds.
- The "personal learning" scores for seniors are not that different from those of other age groups.
- There is a relatively sharp decline in the "technologies for learning" scores, especially between the ages of 40 to 70 years.

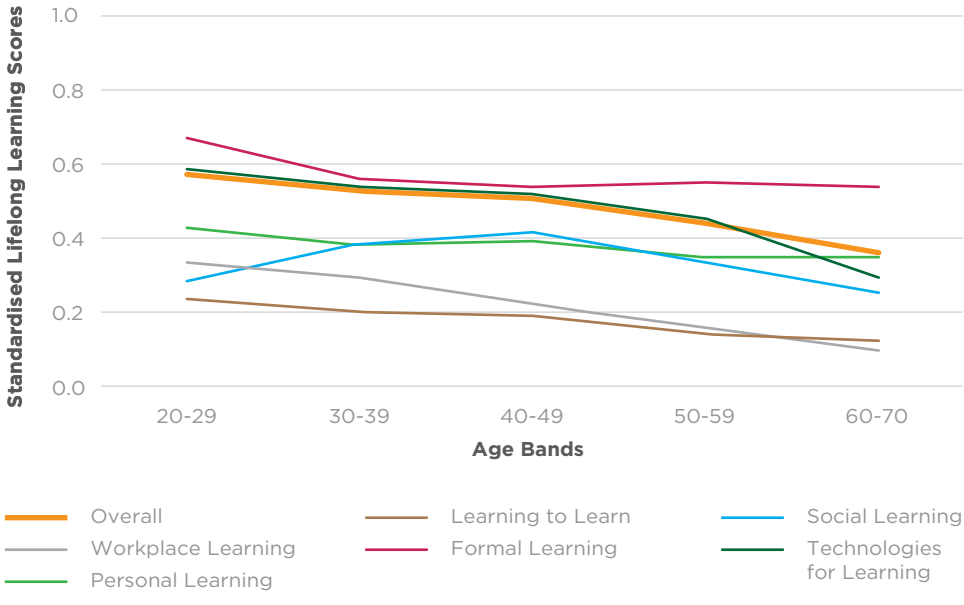


Figure 1. Lifelong Learning Scores, by Age Bands[3]

While the general decline in learning with age is not unique to Singapore,[4] it suggests a potential obstacle in our pursuit of lifelong learning. As we age, our physiological and cognitive functions deteriorate, making it difficult to learn something new.[5] This may impede our willingness and ability to participate in learning. Nonetheless, as we confront increased longevity, we have to be more proactive about investing (tangibly or otherwise) in learning during our later years.

> We have to be prepared to constantly learn and relearn; learning will no longer be limited to specific life periods and age groups.

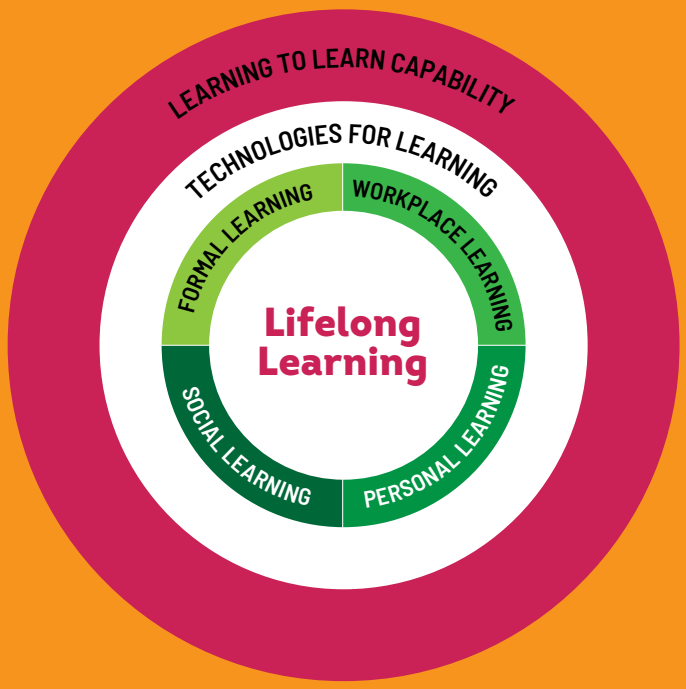
FRAMING OUR RESEARCH: THE SIX PILLARS OF LIFELONG LEARNING

In a seminal framework on lifelong learning proposed by Jacques Delors[1] during his tenure as the Head of UNESCO Education Commission between 1993 and 1996, there are four learning pillars: "to know", "to do", "to be" and "to live together". These reflect the modes of learning in relation to formal education, vocational training, personal development, and social cohesion respectively.[2]

The Skills and Learning Study retained the original four pillars (renamed "formal learning", "workplace learning", "personal learning", and "social learning").

Two new *enabling* pillars were added—"technologies for learning" and "learning to learn"—reflecting important elements that *enable* the pursuit of learning. The pillar "technologies for learning" relates to the use of the internet and other ICT tools for communication and productivity purposes, to access information, and to carry out learning activities. "Learning to learn" relates to learning strategies and capabilities for self-directed learning.

The Six Pillars of Lifelong Learning



Source: Authors

PILLARS	EXAMPLE OF INDICATORS
Formal Learning	• Adult participation in formal learning • Educational attainment • Gauge of paper-chase
Workplace Learning	• Work-related training • Informal learning at work • Employer support
Social Learning	• Volunteering • Racial or religious discrimination • Participation in activities organised by the community
Personal Learning	• Learning through culture • Non-work related learning • Health orientation
Technologies for Learning	• Use of internet for learning • Use of internet to access information • Frequency of ICT skills
Learning to Learn	• Learning strategy • Self-directed learning

Table 1. Example of Indicators for the Six Pillars

Each pillar was measured by a basket of indicators relating to learning participation, motivation and perceptions, which were combined to form a pillar learning score.

Notes

1. Jacques Delors et al., *Learning: The Treasure Within. Report to UNESCO of the International Commission on Education for the Twenty-First Century* (Paris: UNESCO Publishing, 1996).

2. As an "experiment" prior to the Skills and Learning Study (SLS) 2017, we used this framework and data from the PIAAC study to create an international lifelong learning comparison. See: J. Sung and S. Freebody, "Lifelong Learning in Singapore: Where are We?", *Asia Pacific Journal of Education* 37, no. 4 (2017): 615–628.

LEARNING IS POSITIVELY ASSOCIATED WITH EDUCATION ATTAINMENT

Learning is positively associated with education attainment, even after we take age, employment status, and parents' education into consideration (see Figure 2).

- The education effect is most evident in the "technologies for learning" score. In particular, the difference in scores between the group with "below secondary" education and the group in the next category is rather large.
- The incline in scores for "social learning" and "learning to learn" is relatively less steep.

This suggests that participation in lifelong learning is significantly influenced by previous education and learning experiences.[7] However, lifelong learning

> We have to be more proactive about investing in learning–tangibly or otherwise–during our later years.

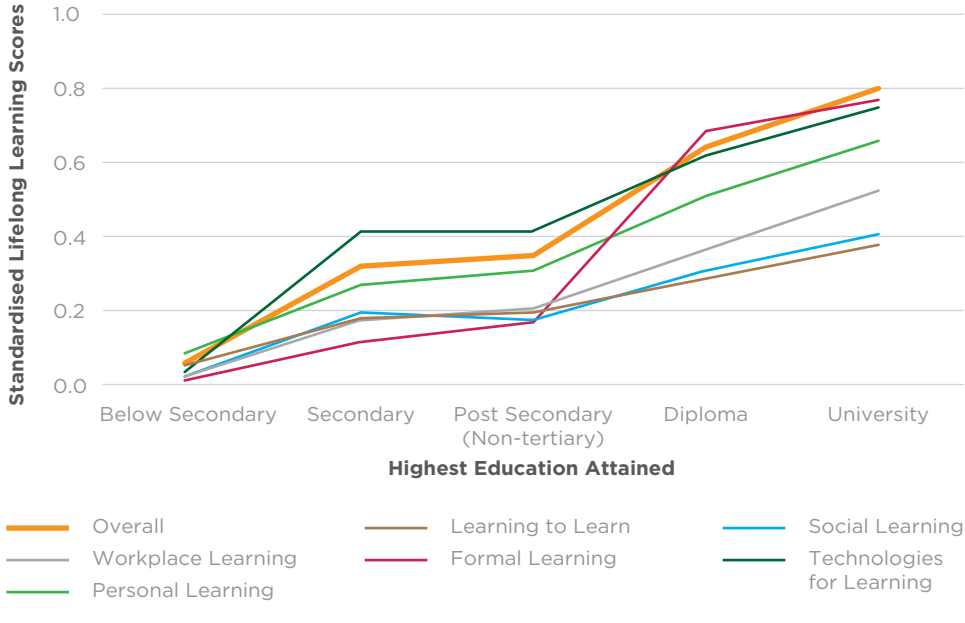


Figure 2. Lifelong Learning Scores, by Highest Education Attained[6]

is important to consider in relation to social inclusion and cohesiveness. We therefore have to be more conscientious about reaching out to seniors from all walks of life, so that everyone can benefit from lifelong learning regardless of their backgrounds.

"NO TIME" TO LEARN?

Although learning is crucial to ageing successfully and actively, learning participation among seniors is low compared to other age groups. Among seniors who indicated in our study that they had not participated in any education or training in the preceding 12 months, slightly more than 1 in 2 (52.2%) picked "lack of time" as the most important reason for their lack of participation. This seems to contradict conventional wisdom that older folks have more time, especially those who have retired.

CONFIDENCE IN OWN ABILITIES MATTERS

Our data shows that learning is positively associated with a person's confidence in his or her own abilities, even after we control for the effects of age and education attainment. As seniors learn and adapt to technological advancements and global developments, confidence in their own literacy and computer skills are important prerequisites that support further learning efforts.

However, we found very low levels of skills confidence among seniors with less than secondary education. Among this group of respondents, only 3 in 10 were confident in their literacy skills, and just 1 in 20 were confident in their computer skills. This was in sharp contrast with respondents in other age groups and education levels (see Figure 3).

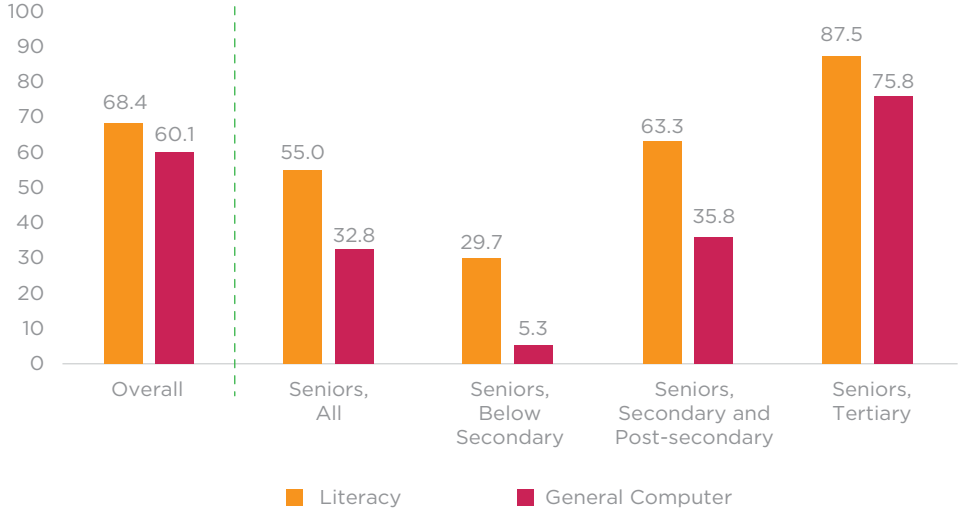


Figure 3. Seniors' Self-assessed Confidence in Their Own Literacy and Computer Skills

Participation in lifelong learning is significantly influenced by previous education and learning experiences.

ENABLING LIFELONG LEARNING

We took "technologies for learning" and "learning to learn" to be *enablers* in pursuing learning. Using our data, we tested the correlation between these two enabling pillars, and the other learning pillars, and found a modest to strong positive correlation, especially among seniors. Among non-seniors, the same relationship also occurred, although it was relatively weaker.

This suggests that to help our seniors with lifelong learning, we could look into harnessing technologies for learning and enhancing their ability in learning to learn, as these will help strengthen their overall capability to learn other skills.

A Learning Society for All Ages

When we talk about successful and active ageing, we want our seniors to be empowered individuals, knowledgeable and contributors at work, and to be valued members in their community. This goal does not come without its own set of challenges and many are inter-related. It is crucial that we acquire a good sense of how seniors can learn, and support them in developing passion and confidence to seize any new learning opportunities they are given.

With the push to encourage lifelong learning through various initiatives of the SkillsFuture movement, we would expect to see changes in the patterns for lifelong learning over time. Therefore, it will be of our interest to track these changes in the next iteration of the Skills and Learning Study. ■

Notes

1. Jacques Delors et al., *Learning: The Treasure Within. Report to UNESCO of the International Commission on Education for the Twenty-First Century* (Paris: UNESCO Publishing, 1996).

2. Our data on lifelong learning was collected as part of the Skills and Learning Study (SLS) 2017 conducted by IAL. The SLS 2017 is the second iteration of a skills study covering a range of skills topics including skills utilisation, job quality, qualification and skills mismatch, and the gig economy. This latest iteration has also been expanded to include the lifelong learning component. The study is constructed as a national random sample survey, covering a representative sample of Singapore residents of age 20 to 70 years old. Data collection for this iteration of the survey took place from July 2017 to March 2018.

3. The learning scores presented in Figures 1 and 2 are based on the standardised regression coefficient. Rather than the value of the score, we wish to draw attention to the size of the differences in age bands (or education levels) between the six pillars.

4. For example, similar trends were observed in the UK. See: Foresight, *Future of Skills and Lifelong Learning* (London, UK: Foresight, Government Office for Science, 2017).

5. E. Stine-Morrow and J. Parisi, "The Adult Development of Cognition and Learning", in *Adult Learning and Education*, K. Rubenson (Academic Press, 2011), 41–46.

6. We should make a note that the sharp increase in scores in "formal learning" between the group with post-secondary (non-tertiary) education and that with diploma education is likely due to how we have constructed our pillar. One of the indicators that we have included in the "formal learning" pillar is the attainment of tertiary education.

7. S. Gorard, "The Potential Lifelong Impact of Schooling", in *The Routledge International Handbook of Lifelong Learning*, ed. P. Jarvis (London: Routledge, 2009), 91–101.

Humanising Technology for Older Adults

by **Tan Tai Kiat**

Technology can be of profound benefit to seniors and their supporters—but it has to be adaptable to individual needs and contexts to be truly useful.

Tan Tai Kiat is Director, Operations at SingHealth Community Hospitals. He received his MSc Public Policy and Administration at the London School of Economics and Political Science (LSE) under the Singapore-LSE Trust scholarship. Tai Kiat is also a PhD student at the Singapore University of Social Sciences (SUSS) under the Alice Lim Memorial Fund scholarship and Research Scholar with SUSS Geron EngAGE.

As a discipline, gerontology looks at bio-psychosocial and spiritual dimensions of ageing—necessary elements to consider when thinking about technology for older adults. Questions that arise include: which cohorts of older adults are the technologies for; are they ready for them; do technologies meet their needs; how technologies can enable them to age-in-place; even whether and how technology can be used to provide peace of mind. Gerontechnology is the multidisciplinary field combining gerontology and technology to take into account such considerations.

In the case of Singapore, the drive towards a Smart Nation and its impact on older adults should be considered from a gerontechnology perspective also. Concerns and potential unintended effects that could be discussed and addressed include: the digital divide among the elderly between the haves and have-nots or know and know-nots, the social isolation of older adults who are not digitally connected, and the risk of over-reliance on technology as a panacea.

Context matters in the implementation of technology, for older adults as well as for their caregivers. In designing and thinking of technology for older adults, due consideration needs to be given to those providing direct caregiving. Besides enabling older adults to age-in-place themselves, technology can also facilitate caregiving—such as for those who have commitments that take them out of the home or even abroad. For instance, Smart Nation initiatives for older adults could make caregivers "smarter" and improve family decision-making with sensor technologies to support caregiving, electronic medical records with predictive analytics to plan ahead for family caregiving, as well as assistive technologies and concierge caregiver services. The possibilities are plentiful.

Humanising technology means pursuing technology that appeals to our senses and needs. Technology should be personalised to individual needs and learning habits—the user-friendliness, learning curve, accessibility options and customisable settings of modern devices are there by design. Gerontechnology takes into account functional design that can meet the specific needs of senior adults, who may experience diminished tactile, auditory and visual senses that varies from person to person. If technologies intended for seniors' use

are not humanised or are too generalised for a particular group, adoption can be sluggish over time—and certain groups may fall behind the curve as a result.

Humanising technology could also mean taking into account both intrinsic needs (such as the desire to stay fit and healthy) and extrinsic motivations (such as incentives to spur individuals to exercise). This is the principle, for example, behind the Health Promotion Board's step-tracker programme.[1]

Another aspect of technology that can often be overlooked is its psychological value. Imagine a group of older adults exchanging news and updates with their old schoolmates and reminiscing about the good old days through Whatsapp—and the good this can do for their mental and emotional wellbeing. Such clear benefits can help make the embrace of technology more appealing. The social appeal of technology is akin to creating personalised virtual family and community spaces, where we do not need to physically meet our loved ones all the time in order to stay in touch effectively and affectively.

It is crucial also to consider how technology can be humanised in appropriate cultural terms, such as with diverse language settings, or by providing content (such as newsfeeds or entertainment) from different cultural sources, to cater to the diverse backgrounds and interests of seniors. The key is not to make seniors adapt to technology but for technological uses to be adapted to the needs of seniors, at their own pace.

The distancing afforded by technology could sometimes even be an advantage. For instance, death is a culturally sensitive subject and it is not easy to broach such a difficult subject even amongst family members. I see the potential and value of technology as a communication tool that can humanise the end-of-life journey. Through the medium of technology, we may be able to explore, express and examine our anxieties and desires about these issues, which we might find difficult to share openly with loved ones.

Context matters in the implementation of technology, for older adults as well as for their caregivers.

All these possibilities are moot if seniors do not have the means to own or use a device (such as a smartphone) able to run the applications that will most benefit them. Could we pool our collective resources to ensure that everyone, particularly seniors, can have use of a suitable device with data access and the right pre-loaded mix of applications—to help bridge the digital divide between haves and have-nots? And can we provide support to show our older adults how to make the most of technology to live and age better? Gerontechnology is not just about technological solutions but also social ones. We will have to do it together. ■

Social Uses of Technology: An Example

Around the world, a variety of mobile apps are popular among older adults. In China, WeChat is the online hangout of choice for retirees. According to an article published by *Nikkei Asian Review*, there were more than 50 million WeChat users aged 55 years and above as of September 2017.[1]

Smartphone-based apps such as WeChat and Alipay also feature QR code payment systems commonly used in China for day-to-day transactions or even online shopping with door-to-door delivery.

Such apps have allowed older adults to remain connected and live independently using technology—the case for seniors to own a smartphone has thus become more compelling, with the mobile-based eco-system becoming a key part of their way of life.

Note

1. Naoki Matsuda, "For Chinese Retirees, WeChat is the Hangout of Choice", *Nikkei Asian Review*, August 1, 2018, accessed November 23, 2018, https://asia.nikkei.com/Economy/For-Chinese-retirees-WeChat-is-the-hangout-of-choice.

Note

1. HealthHub, "National Steps Challenge™ Season 4 Is Here!", accessed October 22, 2018, www.healthhub.sg/programmes/37/nsc.

Promoting Active Ageing through Virtual & Augmented Reality

by **Jung Younbo**

A Nanyang Technological University team is developing simulation tools to help seniors learn important skills at their own pace.

Jung Younbo is Associate Professor at the Wee Kim Wee School of Communication and Information, Nanyang Technological University, Singapore.

Human beings have long desired to live longer, and now our advances have made this dream possible. However, greater life expectancy comes with a price. As the elderly population in our societies rise, we are seeing attendant challenges such as social isolation, loneliness, and increased depression rates among the elderly. Social counsellors have identified several reasons for this trend, including a lost sense of purpose in life, a lack of confidence in dealing with their own decline, and the refusal to be a burden to others.[1] Almost a third of the elderly have reported experiencing loneliness.

More important than how long we live, is how well we live.

Perhaps more important than how long we live, is how well we live. Research has shown that in order to age in an active and healthy way, both physically and mentally, we must continue to do a certain level of work, even after retirement. The right amount of work will vary for each individual. We cannot help but face changes in our physical and cognitive abilities as we get old, which means that we may not be able to continue with the same kind of work that we might have been doing when younger. As we age, learning new skills gets more difficult as well, which tends to impede our willingness and ability to participate in learning.[2] An important question is how to support the elderly, and society in general, in developing the appropriate capacities to flourish in an ageing society.

Singapore has recognised both opportunities and challenges in these demographic changes. The government has sought to make economically and socially sustainable adjustments to the family, workplace and community, so as to ensure a fulfilling and dignified life for everyone—including those in their senior years.[3] In pursuing our vision of becoming a Smart Nation, Prime Minister Lee Hsien Loong has promised that the elderly and the less-technology savvy would not be left behind.[4] Several initiatives involving innovative uses of technology have been rolled out to help the elderly age in place, such as smart sensors and remote monitoring software at home.[5]

PASSIVE-USER VERSUS ACTIVE-USER APPROACHES TO TECHNOLOGY FOR SENIORS

While such elderly-friendly technologies are designed with good intentions in mind, they may be limited in their ability to allow the elderly to truly live independently. Many current innovations targeted at the elderly are designed to help those who are weak and frail, or who require constant monitoring. But this stereotypical image of the elderly is hardly an accurate description of every senior in society, especially when research has shown that many seniors can and want to lead an active life with dignity and autonomy.[6,7] As such, this current passive-user approach for the ageing population may result in resentment among the elderly and lead to rejection of use, as suggested by recent reports in Singapore.[8] Instead, an active-user approach—where technology is used to empower the elderly to live independently—would be more aligned with active ageing. However, this vision is far from the current reality.

For instance, social workers in Singapore reveal that many of the elderly currently depend on them to assist with daily tasks such as using the ATM machine to withdraw money, using automated self-service kiosks to top-up EZ-link cards or pay bills, or dialling an automated hotline to make enquiries. Apparently, elderly people are having problems adjusting to our increasingly automated society. As such, there is a pressing need to provide adequate training for the elderly, to enable them to carry out essential functions and handle various aspects of life independently and confidently.

HELPING SINGAPOREAN SENIORS TO LEARN BETTER

Conventional training and teaching methods used for the elderly in one-to-one settings are not cost-effective. They also do not take into account Singapore's unique context, in which the elderly have varying levels of language and technology literacy. Successful lifelong education for the elderly requires a deeper understanding of how seniors learn, and careful, deliberate planning to support their learning.[9]

In light of these concerns, an interdisciplinary research team at Nanyang Technological University, Singapore proposed to use virtual reality (VR) and augmented reality (AR) tools to help build up the confidence of the elderly and empower them with relevant skills. VR immerses the user in an alternate virtual environment, while augmented reality (AR) overlays digital information

An active-user approach—where technology is used to empower the elderly to live independently—would be more aligned with active ageing.

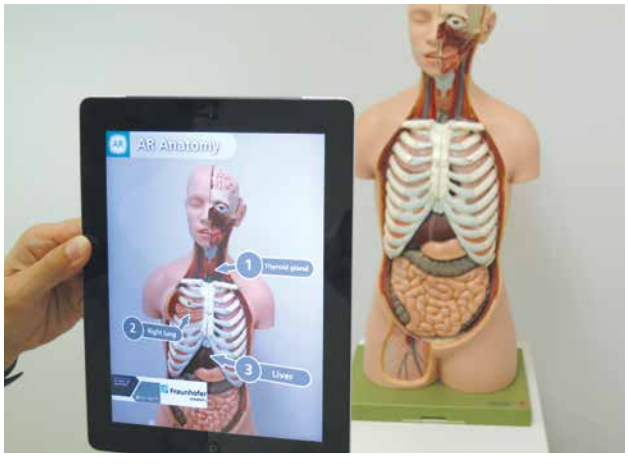
Successful lifelong education for the elderly requires a

deeper understanding

of how seniors learn, and planning to support their learning.

onto the real environment around us. The project, led by this author and funded by SkillsFuture Singapore, aims to provide a cost-effective VR and AR learning system for elderly Singaporeans through the creation of virtual and augmented reality self-support training programmes (VRSTPs). These are individual training environments that can be tailored to the different learning curves and needs of individual seniors. They can help to familiarise the elderly with situations such as an ATM interface or work environments, providing a simulated experience closer to that of actually using the machine, or being at the workplace. VRSTPs also offer the ability to learn at one's own pace, which would likely reduce the peer pressure of keeping up with others, or the anxiety of holding others back, minimising unnecessary stress.

Although the project has just begun, its findings will be timely and relevant given Singapore's current societal developments and policy directions, in light of a broader global trend of exploring new applications for VR and AR technology.



Examples of educational applications and ATM interface developed by Franhofer IDM@NTU (co-Principal Investigator of the project)

VR and AR:

The Next Frontier in Technology

VR is set to become a significant computing platform within the next decade, with applications in a wide variety of sectors, from retail to education and healthcare. The launch of consumer gadgets such as Samsung Gear and the Google Cardboard means that VR technology is becoming increasingly affordable and accessible. This is a good time to capitalise on the technology to design interventions that can address broader societal concerns.

VR/AR interactive technology offers many advantages to the field of elderly training:

1 The systematic delivery and control of digital parameters, such as difficulty levels or task requirements. This means that challenges in interactive learning scenarios can vary according to individual needs, including educational level, language ability and familiarity with technology.

2 Realistic environments can be simulated for interactive scenarios, incorporating challenges that require real world social and practical skills. These mean that training outcomes can be readily applied to the real world.

3 A wealth of high quality interactive data can be collected. This may include the time taken to complete a task, or other behavioural information. This data can be used to assess and review the training process for each person, and for machine learning to improve future development and design.

4 Game features can be added to serious tasks. Features such as real-time visual, auditory and haptic feedback can motivate elderly users, and can also help them feel more immersed in the virtual interaction scenarios.

TIMELY INTERVENTIONS TO ADDRESS SOCIAL CHANGES

We need to help seniors transition to more technology-oriented Singapore. If we want to promote active ageing and independent living among seniors while realising our Smart Nation vision, we must provide adequate and appropriate support for seniors to adjust. Recent studies suggest that many of the neediest in society—over 65% of the elderly who receive ComCare long-term assistance—live on their own.[10,11] This presents concerns because beyond financial needs, many elderly people can be stumped by essential everyday tasks, and often have to approach others for help. This can put a strain on social workers, who already have their hands full.

Using VRSTPs to teach the elderly how to handle some of these tasks on their own could improve their sense of autonomy, improving their psychological well-being, while reducing the need for assistance. Simulated job training provided by VRSTPs could also help the elderly overcome psychological barriers to learning new skills, and enable them to find some meaningful employment, which will have benefits for their well-being, self-esteem, and sense of relevance in a Smart Nation. It would also alleviate the current increasing demand on social welfare, offering a more sustainable form of support in the long run.

By providing tangible evidence on the effectiveness of interactive technology in promoting active ageing, our findings could help policymakers, social workers and non-profit organisations develop better training programmes for the elderly in terms of daily tasks, job training, and the acquisition of technological literacy. This will be vital to Singapore's attempts to address the challenges and opportunities brought about by an ageing population in a cost-effective way. ■

Notes

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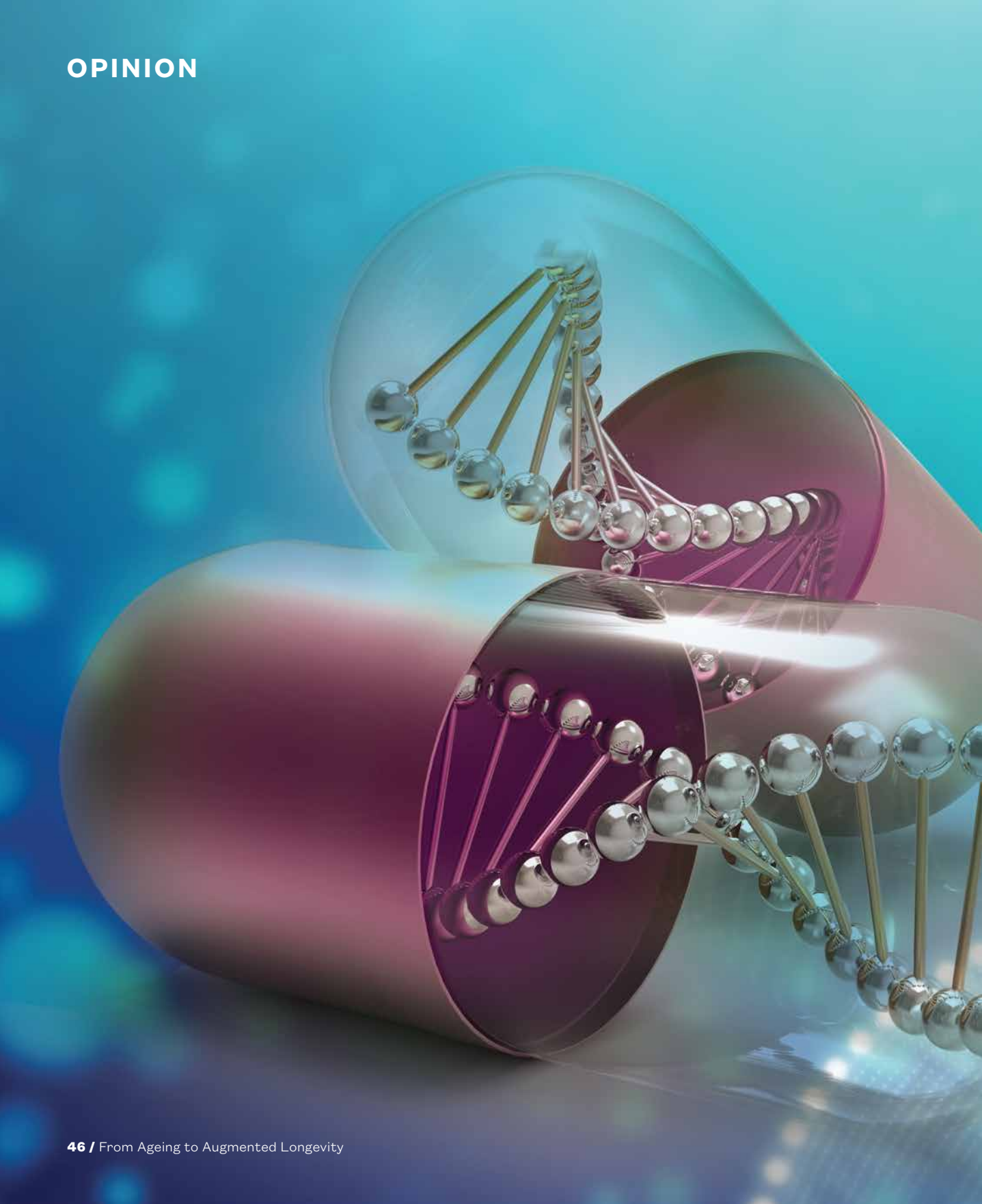


From Ageing to Augmented Longevity

by **Hannah Chia**

Even as governments around the world confront greying populations and their implications, advances in technology and medicine are extending lifespans and healthspans, challenging assumptions about what it means to age.

Hannah Chia was Assistant Director at the Centre for Strategic Futures (CSF), a unit within the Singapore Public Service which focuses on cross-cutting and emerging issues of strategic importance that will impact Singapore. She has been involved in several projects studying the impact that human augmentation, artificial intelligence and other emerging technologies have on society.

She is now Special Project Officer, Planning Division, Education Policy Branch, Ministry of Education.

Ageing and Longevity

Human beings have always tried to live longer while growing older. Although ageing is still often associated with pessimism and decline, lifespans and healthspans have been significantly and steadily increasing over the past two centuries. Furthermore, there are signs that the trend towards longer and healthier lives will continue, with increased investment in anti-ageing solutions and rapid advancements in biotechnology.

In an era of augmented longevity, ageing may no longer be the inexorable final phase of human life.

The successful augmentation of our bodies at a biochemical, cellular and even genetic level, to delay (or even defeat) death, could result in breakthroughs with far-reaching implications for our lives and our societies. In an era of augmented longevity, ageing may no longer be the inexorable final phase of human life.

Reaping the Next Longevity Dividend

Historical increases in life expectancy have led to significant benefits for society. Since 1840, human life expectancy has increased by about three months each year, or two to three years of increased lifespan with each decade.[1] This increase was achieved in a number of distinct phases marked by the addressing of specific healthcare issues and diseases, each resulting in a corresponding longevity dividend.

The **first** longevity dividend came from reducing infant mortality. By treating diseases such as smallpox, tuberculosis, typhoid and diphtheria, child and infant mortality fell significantly.[2] This allowed more children to reach working age, with significant productivity and economic gains. The **second** longevity dividend was and is still being reaped by tackling chronic diseases which tend to occur at middle age and beyond, such as cardiovascular diseases, diabetes and cancer. Through early health screenings, more effective treatments and public awareness campaigns to promote healthier lifestyle choices, individuals' healthspans have experienced an increase estimated to be worth trillions of dollars in value.[3]

The mitigation of key causes of morbidity in each era was the source of the first two longevity dividends. The next longevity dividend will arise from addressing the next significant threat to morbidity: ageing-related illness and the ageing process itself. By 2030, the global population of those aged 60 years and above is projected to grow by 56%; by 2050, it will double in size. The potential dividends from tackling ageing-related illnesses could be dramatically significant.[4] These dividends could come in the form

The next longevity dividend will arise from addressing the next significant threat to morbidity: ageing-related illness and the ageing process itself.

of productivity gains through increased number of working years, and potential cost savings if the elderly stay healthy for longer.

The Road to Augmented Longevity

A confluence of developments across domains like technology, healthcare, engineering and genetic research suggests that we are on the brink of the next phase of longevity extension. Investments in anti-ageing research show keen interest and momentum: the global anti-ageing market was worth US$250 billion in 2016 and is estimated to grow to a whopping US$331.41 billion by 2021.[5] The diverse range of anti-ageing or augmented longevity interventions also indicates a deep and perceptible shift away from the passive acceptance of ageing as the norm, to ageing as an obstacle to be overcome through technological innovation. Examples of these augmented longevity developments include:

- **Physical enhancements.** Exoskeletons and other physical augmentations have an indirect but nonetheless powerful impact on healthspans. While they do not address the root causes of ageing and mortality, they can extend an individual's physical longevity. For example, Cyberdyne's Hybrid Assistive Limb (HAL) augments the physical strength of wearers and SuitX's Phoenix exoskeleton lets paraplegics walk unassisted for four hours at up to 1.8 km per hour.

- **Social robots.** Robot companions powered by artificial intelligence (AI) could help to extend cognitive longevity by keeping individuals

Man walking with the help of a robotic exoskeleton

PARO, a therapeutic robot

mentally active and purposefully engaged. Many of these devices, such as PARO (a therapeutic robot), are already on the market and the impact of mass adoption over the next few years could be transformative.[6] The growing awareness of an "epidemic of loneliness", with attendant healthcare and social costs, make social robots a particularly important prospect for augmented longevity.[7]

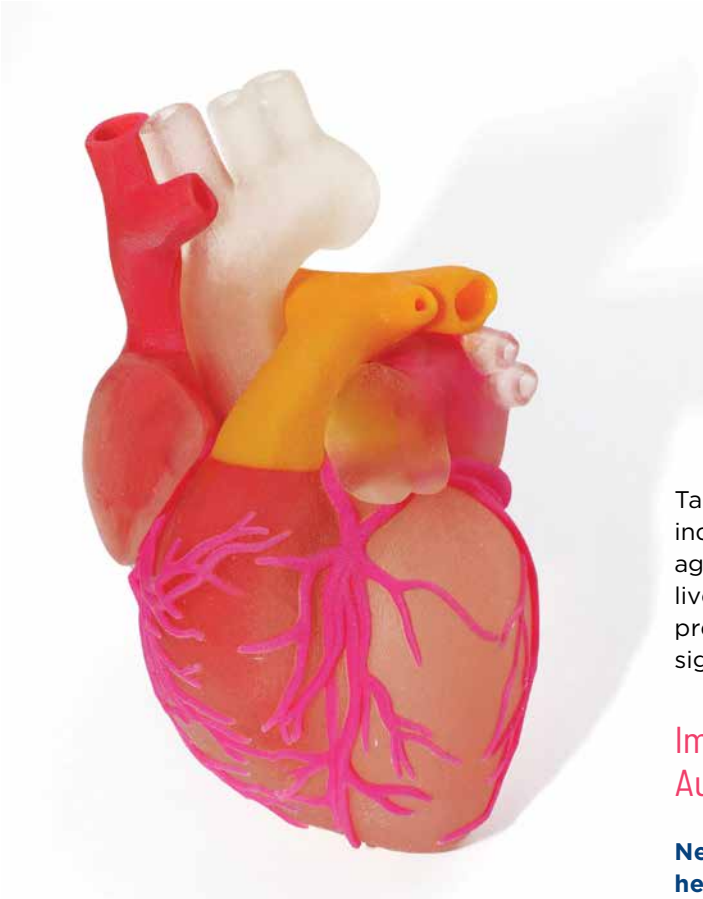
- **Smart wearables.** This is part of a wider Quantified Self movement, in which the ubiquity of next-generation smart wearable technologies will help individuals monitor their own state of health, and gamify life-extending behavioural changes (for example, increasing motivation to exercise).[8] The combined power of personalised data analytics, artificial intelligence and gamification techniques will significantly boost the ability to prompt and sustain behavioural changes, be it for caloric restriction, healthier diets or a more active lifestyle. While fitness trackers are already commonplace, their upgraded successors could be truly transformative due to the greater degree of customisation and personalisation of feedback and gamification which would become possible. Individuals respond differently to different incentives and the ability of the next generation of smart wearables to adapt to each unique user could have profound effects on healthspans.[9]

The diverse range of anti-ageing or augmented longevity interventions also indicate a deep and perceptible shift away from the passive acceptance of ageing as the norm, to ageing as an obstacle to be overcome through technological innovation.

Metformin has been found to extend the lifespan of Type-2 diabetic patients

- **Pharmaceutical drugs.** Augmented longevity could be just a pill away, with current drugs showing great potential to extend healthspans. For example, Metformin, a cheap, safe drug used widely for type-2 diabetes, has already been found to extend the lifespan of type-2 diabetic patients relative to non-diabetic controls.[10] Mice with metformin added to their diet have seen an approximate 40% increase in their mean lifespan.[11] In December 2016, the US Food and Drug Administration approved the Targeting Ageing with Metformin (TAME) study, which will study whether preventively administering metformin to healthy individuals can prevent or delay the onset of ageing-related diseases. TAME is a significant milestone since it is the first drug trial to broadly target ageing-related processes.[12] This paves the way for trials of other drugs that could extend healthspans and lifespans.

- **Rejuvenation Treatments.** There has already been success in regenerating muscles, tissues and organs through pluripotent stem-cell research, the 3D printing of organs and the growing and harvesting of human organs in pigs. The routine and sustainable replacement of aged body parts could soon be within reach. In 2017, biologists at the Salk Institute, succeeded in growing human stem cells in pig embryos. The resultant organ would be made of a patient's own stem cells, mitigating the risk of immune rejection. Swiss scientists



A 3D printed human heart

at ETH Zurich have also developed a functional beating heart made of silicone and based on a 3D mould.[13]

- **Gene therapy.** The successful use of the gene-editing technique CRISPR has enabled a host of interventions that may extend healthspans and lifespans at the most fundamental levels of human biology. In August 2017, scientists successfully corrected a genetic defect in newly created human embryos via CRISPR, demonstrating that gene editing technology could prevent the transmission of inherited diseases to future generations.[14] As scientists gain a better understanding of the genetic processes behind ageing-related diseases and the ageing process itself, genetic interventions may allow us to delay ageing, or eventually defeat it entirely.[15]

Taken together, these developments indicate that we are already living in the age of augmented longevity and we *will* live longer and healthier lives than our predecessors. This raises a number of significant implications.

Implications of Augmented Ageing

New possibilities for extending healthspan and longevity

The dominant narrative in Singapore has always been to promote active lifestyles, healthier diets, as well as early diagnoses and treatments in order to lengthen healthspans. However, augmented longevity technologies provide new possibilities.

First, gamification could be leveraged to spur individuals to maintain healthier lifestyles or post-treatment care. This, coupled with customised data analytics and feedback from AI-powered assistants, is where the next wave of longevity dividends will be reaped. Healthcare apps and their AI assistants could save more lives than hospitals in the near future.

Second, drugs and supplements taken to prevent ageing-related illnesses instead of to cure specific illnesses are a potential game changer. Instead of ageing as an inevitable biological process, the TAME trial suggests the potential for ageing-related processes to be targeted and blocked. Regular supplements to delay ageing could become as commonplace as Vitamin C tablets.

Ethical concerns and values-based conversations

New technologies and treatments present exciting possibilities but also raise ethical challenges.

First, in the early stages of adoption, these augmented longevity technologies are likely to be prohibitively expensive and may only be available to the wealthy. Ensuring fair and equal access for all will be an important issue for regulators to consider.

Second, it will be necessary to ensure that the clinical trials and marketing of new treatments are done ethically and do not exploit the vulnerabilities of those who are terminally ill and/or ageing. Scientists and regulators alike have urged caution in fixating on a specific gene or biological process as a key determinant, as ageing is still a complex process. There should also be public education around the efficacy of new treatments so that individuals are not misled by exaggerated claims of life-extension.

Third, the inter-generational compact between the young and the old will require careful management. New treatments will benefit the growing segment of seniors, while the costs could be borne by a shrinking proportion of younger workers, especially if social structures, such as retirement age, remain the same. If seniors stay healthy and remain in their jobs beyond current norms, maintaining sufficient opportunities for younger workers could also become a concern. Therefore, there will need to be values-based conversations on how to allocate national resources and opportunities between the competing needs of different generations (e.g., life-extension versus housing and education subsidies).

Moving away from age as a definitive marker

As new technologies lengthen cognitive and physical function, age becomes less meaningful as a marker of life stage and ability. Moreover, research has proven that that biological ageing, far from being a static and intractable process, is significantly plastic. This means that a decline in physical function is not tied to

There will need to be values-based conversations on how to allocate national resources and opportunities between the competing needs of different generations.

specific ages. A deeper and more textured understanding of ageing and longevity is needed. Policies which are anchored on distinct ages as proxy indicators of ability, such as retirement ages, will need to be reviewed and updated to keep pace with advances in scientific research and technological innovations. For example, an experienced older worker empowered by exoskeletons may be equally or better able to function in a labour-intensive job, compared to a younger worker.

As new technologies lengthen cognitive and physical function, age becomes less meaningful as a marker of life-stage and ability.

Conclusion

Developments in augmented longevity challenge us to reframe our view of ageing and to strategically position ourselves to reap the next longevity dividend. We must anticipate fundamental disruptions to our assumptions about age, ageing and life stages. The sooner we invest in new ways of thinking around what it means to grow older and live longer, the better able we will be to harvest the fruits of living in a world where age is just a number. ■

Notes

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5. The full report can be accessed at *Reuters*, accessed November 10, 2018, https://www.reuters.com/brandfeatures/venture-capital/article?id=111480.

6. PARO is an advanced interactive therapeutic robot designed to stimulate patients with dementia, Alzheimer's and other cognition disorders. It was developed by AIST, a leading Japanese industrial automation pioneer. See PARO (website), accessed November 10, 2018, www.parorobots.com.

7. For a decade of an older person's life, the extra economic cost of loneliness is calculated as 6,000 pounds. Loneliness is also linked to earlier death and higher risks of dementia. Source: Sean Coughlan, "Loneliness: The Cost of the 'Last Taboo'", *BBC*, September 22, 2017, accessed November 10, 2018 at: https://www.bbc.com/news/education-41349219

8. Apple's iOS HealthKit App has seven major categories of information (body measurements, fitness, me, nutrition, results, sleep and vitals) and 67 separate categories ranging from active calories to zinc levels. The SCiO spectrometer works with your smartphone to tell you the chemical make-up of food, allowing one to make better dietary choices. The latest Apple Watch Series 4 also boasts the ability to take ECG (electrocardiogram) readings.

9. Companies like Ayogo, Mango Health and Pact (funded by the founder of the popular game Guitar Hero) are just some examples of companies that have gamified healthcare and saved lives. Source: Yu-kai Chou, "Top Ten Gamified Healthcare Games that Will Extend Your Life", accessed November 10, 2018, https://yukaichou.com/gamilfication-examples/top-ten-gamification-healthcare-games/.

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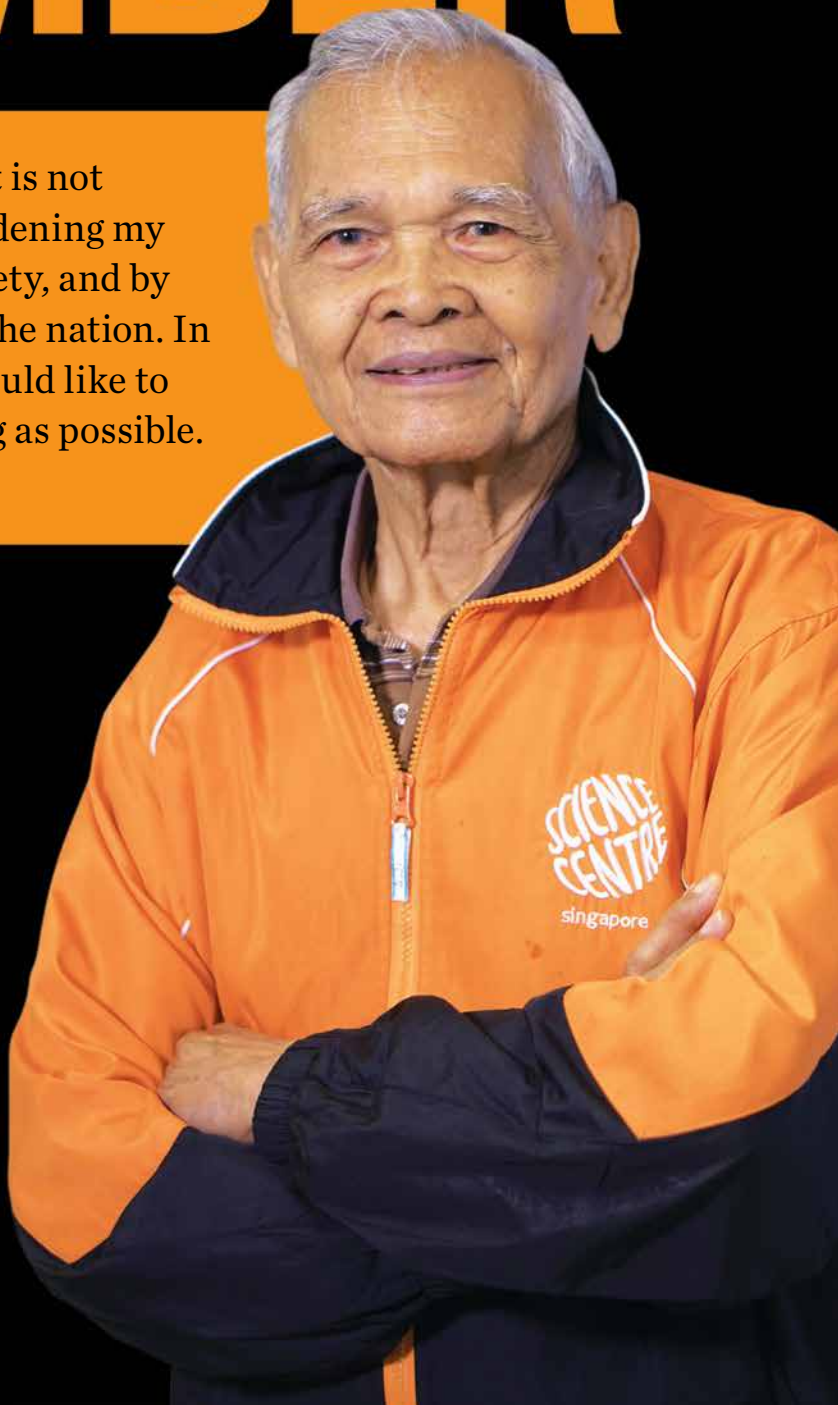
13. Biologists at the Salk Institute have succeeded in growing human stem cells in pig embryos. The resultant organ would be made of a patient's own stem cells and thus reduce the risk of immune rejection. Source: Nicholas Wade, "New Prospects for Growing Human Replacement Organs in Animals", *The New York Times*, January 26, 2017, accessed May 20, 2017, https://www.nytimes.com/2017/01/26/science/chimera-stemcells-organs.amp.html; Swiss scientists at ETH Zurich developed a functional beating heart made of silicone using a 3D mould. See Luke Dormehl, "Swiss Scientist just 3D Printed an Artificial Heart that Beats Like the Real Thing", *Digital Trends*, July 14, 2017, accessed November 13, 2017, http://www.digitaltrends.com/cool-tech/3d-printed-silicone-heart/.

14. Clive Cookson, "Scientists Mend Genetic Defect in Human Embryo for First Time", *Financial Times,* August 3, 2017, accessed Aug 30, 2017, http://www.ft.com/content/ba9c41a0-76d5-11e7-a3e8-60495fe6ca71.

15. There are many ongoing studies on the genetic causes of ageing. For example, George Church, a Harvard geneticist, has culled 45 promising gene variants from humans who have lived to 110 years old as potential ageing genes.

AGE IS A NUMBER

> I enjoy a quality of life that is not burdening myself, not burdening my family, not burdening society, and by extension, not burdening the nation. In fact, I'm contributing. I would like to have this dream job as long as possible.
>
> *—John Franklin Siregar*



At **87** this year, John is the most senior guide at the Science Centre's "Dialogue with Time" exhibition, where he conducts tours and facilitates discussions on the future of ageing in Singapore.

At **75**, John became a trainer with a workplace literacy programme run by Workforce Singapore.

> **If you want to work, you must stay current. You must embrace lifelong learning, so you'll be relevant.**

John served in the police force for 26 years. A firm believer in maintaining an active mind *and* body, he introduced scuba diving to his colleagues and organised the First Police Academy Bi-Annual Chess Championship.

> **I believe that age is a number and our body is designed to move; so move, be active!**

Our full interview with John Siregar is online at **www.csc.gov.sg/ethos**

Transforming Community Care in 2030

by **Nadine Chia and Melissa Khoo**

Singapore is developing a networked community care system to meet the changing and varied needs of seniors in a rapidly ageing society.

Nadine Chia is Assistant Director (Successful Ageing) in the Ageing Planning Office (APO), Ministry of Health. The APO oversees the planning and implementation of strategies to respond to the needs of Singapore's ageing population.

Melissa Khoo is Group Director of the APO.

Demographic Transition

Over the next two decades, Singapore is expected to undergo rapid population ageing. By 2030, almost a million Singaporeans will be aged 65 and above. Even as we seek ways to support seniors in remaining healthy and active for as long as possible, the care burden will grow: driven by the onset of frailty among seniors on the one hand, and intensive care needs at the end of life on the other. An increasing number of seniors will need access to services to age in place.

In recent years, the Ministry of Health (MOH) has invested in growing aged care capacity, and piloting new models of care. Under the Integrated Home and Day Care programme for example, seniors can now receive care flexibly at home, at a nearby day care centre, or both, benefiting from care packages customised for their needs. MOH has also partnered with the Housing and Development Board (HDB) to create purpose-built "Active Ageing Hubs", offering integrated eldercare services in new estates. These one-stop centres provide seniors with a range of services, from active ageing to day care and rehabilitation, and even grocery delivery. At least 10 future HDB estates will have these Active Ageing Hubs by 2020.

As population ageing picks up speed in the next decade, we need to build up a strong community-based support system that can achieve three main goals:

1. First, we want to keep our seniors physically and cognitively well for as long as possible, so that they enjoy their golden years.

2. Second, we want to keep them socially connected with the community, pre-empting loneliness and isolation.

3. Third, we want to enable them to age well in place for as long as possible, minimising unnecessary acute care episodes or premature institutionalisation in nursing homes.

Recent structural moves have opened up new possibilities. The transfer of the Senior Cluster Networks and other programmes such as befriending services, from the Ministry of Social and Family Development to MOH, allows the Ageing Planning Office to take a more comprehensive view of the landscape, in order to strengthen social-health integration and close the social last mile for seniors. The Pioneer Generation Office was also renamed as the Silver Generation Office (SGO) and merged into the Agency for Integrated Care (AIC) to strengthen AIC's outreach and coordination of aged services across both the health and social domains.

Community Care Vision 2030

Our vision is a community-based support system that is:

(i) **proactive** in going upstream to support seniors, pre-empting issues of social isolation and ill health more effectively;
(ii) **broad-based** in serving seniors, beyond those who are low-income and frail; and
(iii) **integrated** in weaving together social and health support to support seniors.

The Community Networks for Seniors (CNS) initiative is our national "community-based care system". This national effort brings together a network of different stakeholders in the community, in every constituency—voluntary welfare organisations (VWOs), the People's Association (PA) grassroots organisations, regional health systems and government agencies—so that our seniors can get help quickly and in a coordinated manner. In support of this vision, MOH and AIC are building a community care system with four key layers: proactive outreach, health and wellness, community support, as well as senior-centric help and accessible care services.

PROACTIVE OUTREACH

With the merger of the SGO into AIC, we can now put in place a basic system of "preventive health home visits" for seniors. Silver Generation (SG) Ambassadors can reach out to seniors through home visits, to educate them on healthy ageing, as well as proactively

Source: Ministry of Health

> **The approach to supporting seniors is not "touch and go", but "touch and hold".**

identify any health and social issues that seniors may have. Since the SGO started in 2014, it has trained over 3,000 such SG Ambassadors, all of whom are volunteers.

Each SG Ambassador undergoes a series of classroom-based and on-the-job training, before they are deployed for home visits. After their door-to-door visits, these SG Ambassadors complete a Post-Engagement Form assessing each senior's social, health and financial situation. Seniors who have given their consent are then referred to appropriate active ageing, befriending or care services.

The SGO also follows up with government agencies and community partners to provide support for seniors with needs and to close the last mile. For example, these include the Social Service Office for financial assistance, HDB for home modifications under the Enhancement for Active Seniors Programme, the Health Promotion Board and PA for active ageing programmes and health screenings, AIC for home-based or centre-based aged care services, and relevant VWOs for community befriending or family services. Often, seniors are also linked up with community care providers who offer active ageing programmes and other services. Hence, the approach

to supporting seniors is not "touch and go", but "touch and hold".

HEALTH AND WELLNESS

We envision a national health programme to delay frailty, akin to a "school health system", for seniors. This community-based programme might include chronic disease and functional screening, vaccinations, exercise, and nutrition programmes, on an annual basis. Through this initiative, a community nurse could also identify seniors with needs so that early intervention can be rendered.

For example, we have started functional health screening islandwide in community nodes such as Senior Activity Centres (SACs), Community Clubs/Centres and Residents' Committee Centres to identify seniors who may be experiencing decline in key functions such as vision, hearing, and oral health. The aim is to help seniors see, hear and eat better. As of September 2018, over 23,000 seniors have been screened, and those with abnormal screening results are referred to relevant care services in the community for further assessment.

COMMUNITY SUPPORT

We aim to build a national community support infrastructure, centred on and wrapped around our seniors. For seniors living alone, we envisage a network of befrienders within the community who will serve as first responders when help is needed. Today, SG Ambassadors are already trained to identify seniors who live alone. Tapping on relevant data from outreach, MOH and AIC work with community befriending providers and PA to mobilise existing pools of befrienders and neighbour helpers, and systematically match them with seniors who live alone.

> **We envision a national health programme to delay frailty, akin to a "school health system", for seniors.**

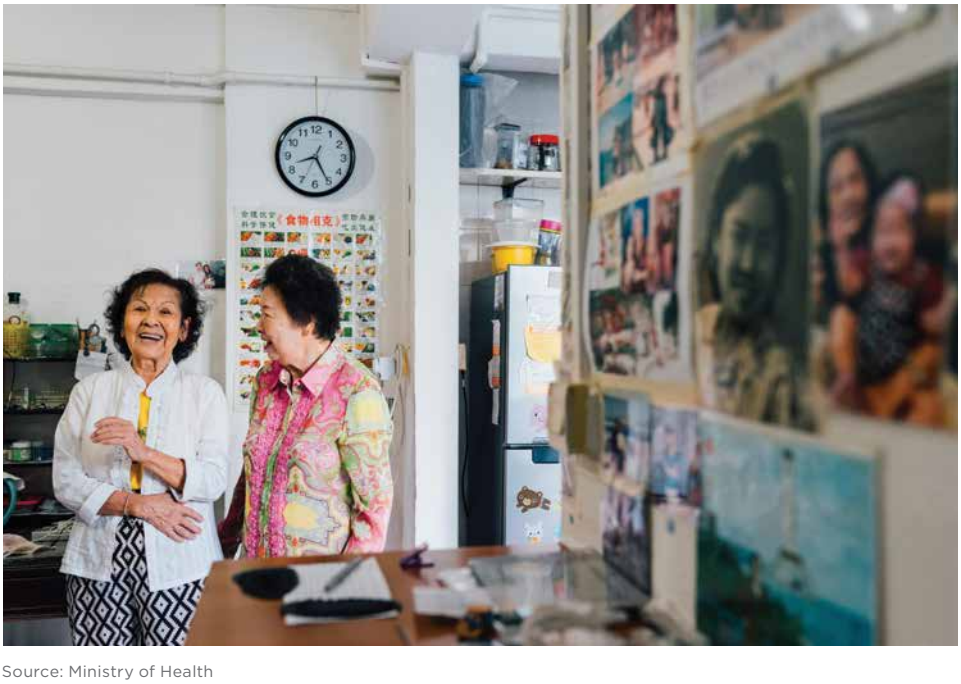
Source: Ministry of Health

Figure 1. Proactive Community Care
Adapted with permission from the Ministry of Health

- **Care Line:** As a first layer of social support for seniors who live alone, MOH has piloted a one-stop call centre, "Care Line", operated by the Changi General Hospital in the Eastern region to provide round-the-clock tele-befriending support services. This is a 24/7 service to proactively engage seniors who are well, checking in on them regularly to help them with reminders for medications and encourage them to participate in active ageing programmes in the vicinity.

- **Befrienders:** Seniors living alone who have consented for referral to befriending services will receive

such services from SACs if they stay in rental flats, or VWOs appointed under the Community Befriending Programme (CBP) in other areas. Befrienders from these Centres will conduct regular visits to seniors' homes and invite them to join the Centres' daily activities. CBP Befrienders will make at least two home visits and two phone calls per month to seniors, encouraging them to step out of their homes and join active ageing programmes in the community.



Source: Ministry of Health

- **Neighbour helpers:** As a complement to family support, neighbours can help keep an eye out for senior neighbours living alone. This network of neighbours can play an important role as first line responders to support seniors in the event of an emergency (e.g., if a senior falls at home), and can be vital in alerting the family as well as relevant agencies in a timely manner.

SENIOR-CENTRIC HELP AND CARE SERVICES

Seniors with mild to moderate frailty and with some family support can tap on a range of home and community care services to help them continue to age in place. For frail seniors with high care needs, and those with weak family support or frail caregivers, MOH will continue to build up nursing home care as part of a robust system of care for our seniors. Institutionalisation is a last resort, as we want to support Singaporeans who wish to age in place, in a physical and social environment they are familiar and comfortable with.

For seniors with complex needs, MOH will seek to develop a networked system on the ground to get them help quickly and in a coordinated manner. Social and health needs are closely connected. Under the CNS which was introduced in 2016, we seek to link up healthcare services, social assistance and community support for a more holistic care plan for these seniors. For example, the health outcomes of seniors may be adversely affected by a lack of social support or when the "social last mile" is not closed (e.g., if seniors lack a means of transport to attend medical appointments). The network brings together different stakeholders in the community to jointly engage and support our seniors. We aim to scale the network islandwide by 2020, tapping on SGO's outreach.

Efforts are ongoing to also strengthen linkages across care settings—such as through partnerships between the regional health systems and community care providers—to improve post-discharge outcomes and support transition back to everyday life. A community nursing pilot is being conducted where cluster-led, geographically-based nursing teams can reach out to residents in the community to deliver health coaching, provide care in the homes of seniors who have been discharged from hospitals and to also support them with end-of-

life care. We will also aim to expand information and referral touchpoints in the community, beyond existing AICare Link physical resource centres at hospitals, and improve awareness of the Singapore Silver Line hotline and Singapore Silver Pages website, to help seniors and their caregivers navigate care services and schemes.

Conclusion

To be a City for All Ages, we need to build up our social infrastructure in tandem with physical infrastructure, to enable our seniors to age confidently in place. By creating communities of care throughout the island, we can grow a robust community care system where seniors can access a range of active ageing and preventive health programmes in every neighbourhood, where every senior living alone or in need of support has a befriender or neighbour looking out for them, and in which the ecosystem of care and support services "grows old with our seniors" as needs evolve. ■

Positive Ageing:

HOW CAN WE MAKE IT HAPPEN?

by **Kalyani K. Mehta**

Surveying current cross-sector efforts, a veteran gerontologist suggests ways to make Singapore an even more age-friendly city.

Kalyani K. Mehta is the Head of the Gerontology programme at Singapore University of Social Sciences. She taught at the NUS Department of Social Work before joining SUSS to start the Master of Gerontology degree programme in 2011. She has published widely and has a strong international and regional network. Currently, she is involved in research and training on age management practices, inter-generational activities, and caregiving for seniors.

The author acknowledges the contribution of Ms Amanda Chan (Master of Gerontology graduate) towards the earlier version of this paper which was presented at the 14th International Federation of Ageing conference held in Toronto, Canada in August 2018.

Introduction: National Engagement with Ageing

Singapore's approach to the demographic challenges was laid in the 1980s, some two decades after independence in 1965. A number of high-level committees were formed to look at issues related to ageing. These included: the Committee on the Problems of the Aged (1982), the Advisory Council on the Aged (1988–1989), the National Advisory of Council on the Family and the Aged (1989–1998), and the Inter-Ministerial Committee (IMC) on Health and Care for the Elderly (1997–1999).

Building on these foundations, the Ministry of Community Development and Sports released the IMC Report on the Ageing Population and the Eldercare Master Plan (FY2001 to FY2005)[1] in 1999 and 2001, respectively. The IMC report was put together through focus groups discussions with various civic society representatives from different ethnic, age, gender, religious, media and union groups.

> "Ageing is not just the concern of a specific segment of society but a whole-of-society issue.

The IMC report proposed 78 recommendations in the areas of Social Integration of the Elderly, Health Care, Financial Security, Employment and Employability, Housing and Land Use Policies, Cohesion and Conflict in an Ageing Society. These recommendations[2] aimed to realise a vision of "Successful Ageing for Singapore" as the population ages, and to translate this vision into outcomes for the individual, family, community and nation.

The Eldercare Master Plan was put up by the Services Review Committee (SRC), which was formed in 1999 to review then existing services available for the elderly.[3] The goal of the SRC was to recommend a blueprint for eldercare services for 2001 to 2005. In continued support of the IMC's vision for "Successful Ageing for Singapore", the SRC's blueprint recommended six areas of programme and service improvements, with a focus on the social integration of older people. These areas included: improving physical infrastructure, the restructuring of funding policies for provision of targeted services by voluntary welfare organisations, programmes for well and frail elderly as well as caregivers, and public engagement and residential care.

Building on the work of the IMC and the Ministry of Community, Youth and Sports (MCYS), the Committee on Ageing Issues (CAI)[4] released a Report on the Ageing Population in 2006. This report, put together by a tripartite of people-public-private

representatives from health, social, manpower and media sectors, speaks of Singapore's belief that ageing is not just the concern of a specific segment of society but a whole-of-society issue. This is reflected in its recommendations, based on four key thrusts: Housing for Seniors; Accessibility for Seniors; Caring for Seniors; and Opportunities for Seniors.

The CAI was succeeded by the Ministerial Committee on Ageing, headed by then Minister in the Prime Minister's Office Mr Lim Boon Heng in 2007. This Committee comprised ministers and senior office holders from a range of government ministries, including: National Development, Social and Family Development, Education, Law, Finance, Transport, Health, Manpower, Culture, Community and Youth, National Security and Defence. The work of the Ministerial Committee of Ageing culminated in the *Action Plan for Successful Ageing*, announced in August 2015.

The Action Plan for Successful Ageing

The Action Plan for Successful Ageing reflects Singapore's tenets of aged care—ageing-in-place and community-based care—which are founded on the social philosophy of the family and the community as the first and second lines of support respectively. It may be considered Singapore's response to the World Health Organization's (WHO) "Global Age-friendly Cities" guidelines,[5] and serves Singapore's unique political, economic and social environment.

The Plan outlines three strategic thrusts to make Singapore "A Nation for All Ages". These thrusts involve the individual ("Opportunities for All Ages"), community ("Kampong for All Ages"), and the nation ("City for All Ages").

"Opportunities for All Ages" focuses on providing opportunities for lifelong employability, lifelong learning, volunteerism, supported by longer healthy life expectancy and financial adequacy.

Singapore's tenets of aged care—ageing-in-place and community-based care—are founded on the social philosophy of the family and the community as the first and second lines of support respectively.

"Kampong for All Ages" focuses on building cohesive intergenerational

communities which can support older persons to age-in-place—in which older persons are regarded with love and respect, and in which older persons are supported to stay connected to the communities they live in. Besides these, enhancing legislative frameworks is also another aspect of building a "Kampong for All Ages". Existing legislation which relates to the protection of older persons, such as the Maintenance of Parents Act and the Mental Capacity Act, is now complemented by a Vulnerable Adults Act. Passed in Parliament in May 2018, the Act will protect individuals 18 years old and above, who due to mental or physical infirmity, disability or incapacity, are unable to protect themselves from abuse, neglect or self-neglect. This Act will allow the Government to intervene to protect vulnerable adults. However, its exercise is viewed as a last resort, as Singapore's underlying social philosophy is family and community as the main lines of support.

The goal of a "City for All Ages" is articulated through the City for All Ages (CFAA) project.[6] To date, there are more than 15 CFAA communities across Singapore; the Ministry of Health (MOH) has also published a set of guidelines, "Creating Senior-friendly Communities: Tips and Tools from the City for All Ages Project", to encourage the growth of such communities. The guidelines recommend that a CFAA should commence with community involvement. To do this, platforms such as a townhall are set up to to bring across the concept of a

CFAA to residents in a community. This is followed by dialogue sessions with older residents in the community to understand their concerns and wishes for ageing-in-place, and also presentations from various government agencies on age-friendly programmes available in the community. This recommended format takes on a person-centred approach as it starts from community involvement and puts older persons in the centre of the process. The range of programmes available to seniors also gives them a chance to exercise their agency in selecting programmes they enjoy and which best suit them.

Dealing with Dementia

As the population ages, dementia becomes a significant concern, since age is a risk factor. In 2004, Singapore published a National Dementia Blueprint. This was followed by the 2009 National Dementia Strategy, which was proposed by MOH in consultation with the National Dementia Network of specialists in dementia care and family physicians.

In the 2009 National Dementia Strategy, dementia prevalence was projected to increase from 4% to 5.8% in 2030. This translates to 48,000 to 70,000 persons in 2030, of which 19,000 to 28,000 are estimated to have mild dementia and 29,000 to 42,000 are estimated to have moderate or severe dementia.

The Strategy made recommendations in dementia care in the areas of primary prevention, increasing awareness and early detection of dementia, early diagnosis of dementia and comprehensive evaluation of dementia, management of dementia, collaborative model of care, audit and standards of care, as well as training, education and research.

While the 2009 National Dementia Strategy[7] drives the public agenda on dementia, a noteworthy people/private driver of dementia concerns is the "Forget Us Not" or FUN campaign, an initiative led by the Lien Foundation, a privately funded philanthropic organisation.

The campaign seeks to create dementia-friendly communities (DFC) across Singapore,[8] through a network of Dementia Friends who may include individuals, businesses, schools, places of worship and services. These Friends are trained to understand dementia and are equipped with the skills and knowledge to support Persons with Dementia (PwD) as they age-in-place. Since its inception, the FUN campaign has reached 13,500 individuals across 60 organisations in Singapore. Beyond outreach, the campaign has also been able to influence legislation and policies. An example is its work with the Association of Banks in Singapore to identify the legal roadblocks that prevent banks from flagging out vulnerable seniors.

A series of seminars organised by "Forget Us Not", an initiative by the Lien Foundation, Khoo Teck Puat Hospital and Alzheimer's Disease Association. Participants signed up as Dementia Friends to show support for the cause.

Source: Photos courtesy of Forget Us Not

How Singapore Could Become More Age-Friendly

1 INVOLVE PARTICIPANTS IN PLANNING AND IMPLEMENTATION

The success of policies, legislation, programmes and interventions to enable and empower seniors or Persons with Dementia (PwDs) to live confidently in the community is contingent on an approach which includes the voices of seniors and their care partners in design and implementation. For effective and positive outcomes, seniors—including those who have dementia—need to be advocates in their own right for their cause.

2 EVALUATE OUTCOMES

To date, there has been no systematic evaluation of the Dementia-Friendly Communities (DFC) to document their impact. Have they really achieved their goals? How many PwDs have been positively influenced by the programme? Are there areas that need improvement? While the FUN campaign has reached/trained around 13,500 individuals across 60 organisations such as banks, transport companies, supermarkets and voluntary welfare organisations, a proper evaluation of the programme would validate its effectiveness and identify gaps or areas for improvement. To encourage good practice and follow-up improvement, it is important to study the social and psychological impact of community programmes. This is the trend in developed countries such as USA and Australia as numbers alone may not tell the whole story.

A research evaluation component should be integrated at the planning stage of initiatives such as the DFC effort. A survey could be conducted on awareness and attitudes before a programme begins as well as some time (about one or two years) after the programme has kicked off.[9] It is important to involve families of PwDs and the main caregivers in programme planning and implementation, as their views can help shape a more culturally-relevant programme. For instance, personal communication with a staff from FUN conveyed that they have challenges in reaching out to minority communities (such as Malay and Indian participants). This could be a general challenge to bear in mind in future efforts.

> A research evaluation component should be integrated at the planning stage of initiatives.

3 CONSIDER A BROADER APPROACH TO THINKING ABOUT AGEING

If we look into the future, what may the experience of being a senior mean to the next few generations? Should we carry on

To fully expand the potential of our future generations of seniors, all sectors of society have to break out of traditional thinking about what it means to age.

doing more of the same, or should our policies, work practices and social norms be reframed to meet the full implications of the demographic shift in population? As a gerontologist, I think that our policies, services and approach towards solutioning may still be relatively conservative and silo-minded in engaging with the ageing phenomenon. To fully expand the potential of our future generations of seniors, all sectors of society have to break out of traditional thinking about what it means to age. The inter-dependency of our needs—i.e., physical, social, psychological and spiritual—at the individual level means that society's solutions also ought to be multidisciplinary.

4 USE TECHNOLOGY TO OVERCOME CONSTRAINTS

To meet the challenges of limited manpower and the need for efficient delivery of goods and services, the potential of technology and communications will have to be exploited. The separation of older generations into the side stream of society (as the current landscape suggests) will have to be reversed, because they will gradually become mainstream in numbers.[10]

5 SUPPORT A CULTURE OF CONTINUAL LEARNING AND GROWTH

An older workforce is a reality, so enhancing the productivity of seniors is something that must be taken seriously. This may be accomplished through upgrading of knowledge and skills (not only through our SkillsFuture framework but also informal learning opportunities) as well as shifts in mindset away from ageism. The lifelong learning strategy to keep seniors mentally and socially stimulated has already picked up momentum in the last decade. This is one of the main thrusts of the Action Plan for Successful Ageing (2015).[11] Opportunities are being promoted for older persons to pursue learning and improve themselves, through formal classroom activity, e.g., classes for seniors to pursue a passion or interest such as calligraphy and painting.

Nor should seniors be regarded as a liability to be compensated for. My own experience in the field bears testimony to the wisdom of older people. Through research interviews and focus group discussions with older persons ranging from 50 to 80 years of age on topics such as retirement, widowhood, family bonds and spirituality, and listening to the ways in which they have coped with adversities and overcome them—I have

INTERGENERATIONAL BONDING THROUGH SPORTS

In conjunction with Singapore's 53rd National Day celebration, Singapore University of Social Sciences (SUSS) Gerontology students and Alumni, together with community partners St Luke's Eldercare Ltd and Singapore Amalgamated Services Co-Operative (SASCO) and student volunteers from Central ITE Polytechnic, recently organised a successful Sports Day at the Singapore Sports Hub for about 150 seniors aged 65 years and above. The seniors played games and ran relays that helped them relive their youthful schooldays. These photos capture the sense of achievement and enthusiasm the seniors experienced that morning.

> Seniors may perceive problems and possibilities that the younger generations may overlook.

been amazed by their resilience. Seniors may perceive problems and possibilities that the younger generations (due to their limited life experience) may overlook.

6 MAKE SILVER INDUSTRY WORK MORE ATTRACTIVE

Another national strategy would be to make job opportunities in the silver industry more attractive to young people, as well as those who wish to switch careers. Remuneration is not the only method. In many countries, fully subsidised training in eldercare-related sectors, supported by well-structured career pathways, has attracted young adults to join the sector (including long-term care): Japan and Taiwan are good examples. Young adults may have the empathy and compassion to work in the eldercare facilities, but if career pathways are truncated, they are disincentivised. Intergenerational work spaces are healthy and rich environments for both young and senior individuals; most importantly, they nurture a sense of community and ownership for our people.

> Make job opportunities in the silver industry more attractive to young people, as well as those who wish to switch careers.

7 INVOLVE AND INCLUDE ALL, REGARDLESS OF BACKGROUND OR AGE

To retain Singapore's unique heritage and multicultural diversity, greater participation and advocacy by people of all ages and backgrounds is crucial. Policymakers should listen with their hearts. Collectively, there needs to be a social awakening to the importance of all generations working together to make our country a better home, and the world a better place. As different subgroups in society, be they cultural or generational distinctions, our apparent choices may be different—but human needs are the same and we have common aspirations. If we let this understanding guide our policies and practices, we will stay on the right course to steer through the challenges ahead. ■

For more information on the Master and PhD in gerontology degree programmes please visit http://www.suss.edu.sg/programmes/Pages/Graduate-Studies-Overview.aspx.

Notes

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CONVERSATION

Living with Independence and Purpose

by **Emi Kiyota**

Ibasho founder Dr Emi Kiyota envisions a future where seniors enjoy a life of meaning and dignity—and make a difference in their communities.

Dr Emi Kiyota, an environmental gerontologist, educator and organisational culture change expert, focuses on initiatives to improve the quality of the built environment for healthcare settings and long-term care services for elders.

1 Is there anything distinctive about ageing as a phenomenon in Asian cities, both in terms of how it takes place and how it is perceived?

We know that Asia is ageing more rapidly than the rest of the world: this is one of the most significant differences. We know that as education and the economy improve, people live longer but also tend to have fewer children.

In terms of perception, the family culture and relationships are very different. Friendship in the US context, for example, is different from what we call friends in Asia, where family ties, including the extended family, tend to be much stronger. Asia is really family-based, even in terms of community support.

At the same time, there tends to be a social obligation, especially on women, to look after the parents. I am not sure if it is a matter of Asians respecting their elders more, or if it is a matter of social norms. The tendency is that more women are involved in caregiving than men.

In general, Asian elders are healthier relative to the rest of their age group, but they have different expectations for themselves. In the US, older people tend to take charge of their own old age—they do not depend on children. In Asia, there might be expectations, because of strong family ties, that the family will take care of them at the end of the day. There is also the social expectation that older persons should not have to do too much, that they ought to be looked after. This contributes to a sense of dependency. But physically, Asians are actually healthier.

2 How does the social obligation to look after the elderly, along with the sense of dependency it engenders, influence the way we approach issues of ageing?

I think there is a sense of ageism. Older people may feel that they have become "too old" to do something and resign themselves to being dependents. This is a systemic challenge: society has conditioned the elderly for a long time to feel this way, and it will be really hard to shift it.

In Japan, there is a divide between young people and older people. Younger people I talk to feel that seniors get pensions and social security, at the expense of the future of those who are young. This creates some resentment towards older people, which I feel is unnecessary.

If you think about it, age 65, which in Japan triggers pensions and other social provisions, is an arbitrary number. It was set at a time when being able to survive until 65 years of age was an accomplishment. These days, it is much more common. Older people are not that frail. Plenty of people who are over 65 are much healthier, and much more experienced. What it means to be 65 years old now is very different from what it meant thirty years ago.

So the way we perceive ageing and the social role of elders has to change. But it cannot be only done by one segment of society. We can't expect older people to change overnight, and besides, everybody has got to change: young and old, policy and the public. The expectations have to change, and the social norms should follow through.

3 What are some ways to start shifting these social norms regarding ageing?

That's a complex question. Look at how the media portrays older people as dependents, and how nursing homes are viewed in a negative way. Everything has to change, and not only in terms of policy or the media.

> **What it means to be 65 years old now is very different from what it meant thirty years ago.**

The best place will be to start from the level of the community and the neighbourhood. Everything could begin from small changes and small actions. People want to volunteer; people want to reach out and I think older people want to change, but the challenge is that they don't know what to do.

A good way to begin is to make sure that at the level of a small community, people can get to know each other. This is what I am doing in helping to create a dementia-inclusive community: something visible that people can see, with something they can be a part of and do something for.

Young people should be a part of this. And it need not stop with playing cards with grandma or grandpa: it can be more

than that. There are plenty of things everyone can do. What needs to happen is that we should really stop thinking about "entertaining" older people. I want to see older people being change agents of society. They too have to take responsibility for their lives and to help create a better future. Ageing is a global issue. We don't have enough people or resources to just look after older people, and besides, it is one-sided to only provide care. Seniors also have to be part of the change and part of the solution.

I hear a lot about the narrative of harnessing the wisdom and experience of the elderly, but my question is how we are going to do it. I think a lot of older people don't know how to contribute. And we don't know how to have them contribute, so that is the discussion and the conversation that needs to happen.

We should really stop thinking about "entertaining" older people. I want to see older people being change agents of society.

4 How can we move from a top-down, medicalised view of ageing towards a more broad-based approach that empowers seniors?

The narrative is important but now I think what we have to do is to see how we can actually do that. We need a concrete project for people to see. That's very important. This is the value of Ibasho's physical facilities.[1] As a senior, you can go and find something in Ibasho that you want to do. But if you are in a community with only senior care centres and nursing homes, you feel like you don't belong; that you don't have a platform as a senior.

The public and private sectors could think about how to create more platforms for older people to be able to use their knowledge and wisdom. I think it's too much for us to ask seniors: "You have experience so why don't you create your own opportunities and find out what you can do today for other people?" We have to figure out what platforms seniors need so that they can make use of their talents and skills to help others and make a difference. I want to be able to see more places where people can go to help someone, perhaps once a week or once a day.

Older people tend to be socially isolated, but merely bringing them to a conversation table, is not going to create meaningful relationships with others. People need a purpose. Everybody wants to be useful. And everybody has something to contribute. Retired CEOs will have more things to do, so I won't worry about them too much. Other people might be good at doing the dishes, or cleaning, or teaching English, or fishing.

You don't want to do exercise for the sake of exercise; you don't want to volunteer for the sake of volunteering; you want to do something for others and see people being happy because of your service.

▪ Empowering Elders Through ▪
COMMUNITY OWNERSHIP

In 2011, over 18,000 people were killed and more than 65,000 people were displaced when a massive earthquake and tsunami hit northern Japan. When Ibasho and Operation USA visited the affected area to conduct interviews with elderly survivors in temporary community housing, they heard tales of extraordinary courage and hardship, and also of a strong desire to contribute to the rebuilding of their communities. The Honeywell Ibasho House was inspired and created by this spirit, as a partnership between the community of Ofunato in Japan, Ibasho, Operation USA and Honeywell.

Here, older people do not passively sit and be served. Instead, they actively join in the planning, management and operation of the organisation. It is a place where elders participate in significant discussions and working is a normal part of everyday life.

Source: Photos courtesy of Ibasho and Dr Emi Kiyota.
For more information on Ibasho, visit www.ibasho.org.

People need a purpose. You don't want to do exercise for the sake of exercise, you don't want to volunteer for the sake of volunteering; you want to do something for others and see people being happy because of your service.

—Emi Kiyota

What we need is something that gives meaning to the elderly. I feel like that is what is missing in the eldercare system.

5 What else can the public and private sectors do to empower seniors, and support others in doing so?

What I'm trying to do with Ibasho is not to replace nursing homes or other institutions. Instead, it is to add one more option—to empower older people to be able to do the things that they want to do, because that's missing.

In Japan, Ibasho is completely community-owned and a grassroots effort. Beyond a certain point, you can't work with the government or corporate sector without compromising the grassroots experience. It's a fine balance.

That said, the land is given to us by the local government to use for 10 years, and I don't think we could do it without rent-free use of the land. We will have to figure out after the 10 years are up, how we are going to proceed. Honeywell Corporation donated the upfront cost of construction for the building, as part of their corporate social responsibility. That's how the community was able to get going.

So I have a feeling that the government has to be part of the solution, and private companies want to be part of the solution. The question is how to work with the different stakeholders while still empowering older people to be change agents. I would love to sit down with policymakers and non-governmental organisations and figure out what might be the best way forward. And what works in Japan is not necessarily going to work in Singapore. The culture is different, as are the governmental functions and structures.

> **"A lot of older people don't know how to contribute and we don't know how to have them contribute."**

But if the government were to try to figure out what seniors and their families want, that again becomes top down. So it will be interesting to see a few stakeholders from various areas really sit down, determine what scenario they want to bring about, and how best to work together.

6 There are cultural, social, gender and other differences in engaging seniors to be more active. What other aspects of ageing should we be paying more attention to, as we think about how best to support seniors?

We can't really cater everything for everybody but to me, social determinants, such as education, health and so on do matter. I have a feeling that in Singapore there is less of a significant gap between the wealthy and non-wealthy in this context.

One big thing that tends to be missing from the picture is the dementia issue. It is something people don't want to talk about. When dementia surfaces, people always think we need an institution, or a dementia-specific environment. But dementia simply means a person has a memory problem and it's just like a physical disability or sensory impairment: they should be able to live in the community, but how we are going to actually integrate them into our living environment is something we should really think about.

Also, we tend to talk about everybody over 65 in the same bundle, but there is a 40-year difference between seniors who are 65 and those who are 105. We need to pay attention to these differences. At the same time, while we cater to specific populations, we have to be very careful about segregating people—for instance by designing facilities or services specifically for older people—as this can create more ageism and more stigma. Instead, what we want is for everyone to enjoy accessibility and an independent life.

> **While we cater to specific populations, we have to be very careful not to segregate people as this can create more ageism and more stigma.**

People do also become frail. We tend to avoid talking about frailty, but I think we shouldn't. Active ageing is a much more fun topic, so people like to discuss it a lot, but we have to have both conversations going to make things better. Otherwise, people are always going to be worried about old age because they are worried about being frail and what might happen. We don't want a polarised, backwards narrative where if you happen to have dementia or be frail, then you're not ageing successfully and you're marginalised.

7 Could technology help us to better engage with ageing-related issues?

I think the convenience and extensive usage of technology might create social isolation, because we don't have to interact with other people. But we should be using technology as a tool to help seniors be more independent and also to have better relationships with others. The technology by itself should be neutral, and the use of technology should not in itself be a goal: it is a tool, for people to be able to connect with each other, and to help get things done.

It's the same with architecture: it is not just about attractive design. We want to make people's lives better. If technology were too advanced, it can be intimidating and not helpful. Instead, a simple technology such as a telephone can help connect people. And just providing gadgets for people to kill time is not useful, because it doesn't give meaning and purpose.

8 How do you hope to spend your own senior years when the time comes?

I want people to treat me thirty years down the road the way they treat me now: as a normal human being. I don't want them to give me special treatment.

If I can't hear, I will just say, "Sorry my hearing is not good, can you repeat that?". I don't want to be treated like a child just because I might be older and might not be able to see or hear as well. I think I would have enough wisdom to be able to handle the loss of any physical or sensory abilities. I personally would like to be able to have enough wisdom to accept this, and not become a bitter person if I'm not able to walk or even to chat.

> **"I want people to treat me thirty years down the road the way they treat me now: as a normal human being."**

I want to make my own decisions about how to live my day, which is like how I live my life now. I'm such an introvert, that if I have to go a nursing home, I might not be interested in their activities: I'd rather just read my book. And I'd want those wishes to be respected. ■

Note

1. Founded by Dr Emi Kiyota, Ibasho is a non-profit platform to promote the integration of elders within communities. In Japanese, the name Ibasho means "a place where you can feel like yourself". See: http://www.ibasho.org