A positive attitude towards aging can literally add years to your life …

CHAPTER 7

The future of aging: How will I live?

by Ursula M. Staudinger

The last century has witnessed a breathtaking increase in longevity – and the trend is set to continue. By 2040, the average person in the developed world may expect to live to 85. Although this is clearly a positive thing, many people also fear the consequences of aging, both for their own lives and the societies in which we live.

Will we be, in 2040, a society of forgetful, helpless and lonesome octogenarians? Will the healthcare and pension costs associated with aging undermine solidarity in our societies and depress our economies?

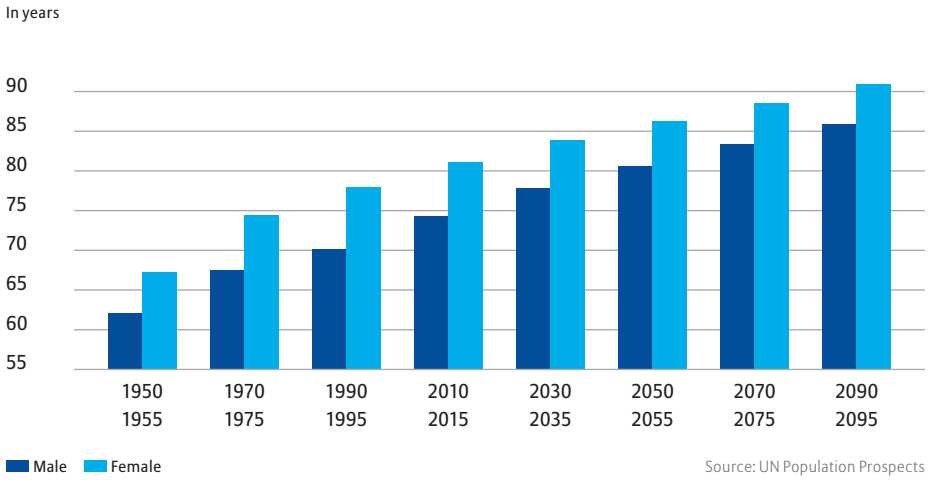
Will we be a society of forgetful, helpless and lonesome octogenarians?

In many respects, it is up to us to determine how we age and how we shape our aging and eventually also shrinking societies. There is an alternative future in which people age happily and healthily; in which education systems, healthcare providers and job markets cater for the needs of all generations; and in which we find new ways of living together that benefit us all. After all, we ought to remember: living is aging, and aging means living.

In the midst of big demographic changes

Before talking about the future of aging, we need to take stock and look back to where we came from. Why? Living in the year 2014 – that is, at the beginning of the 21st century – is something special when it comes

Figure 7.1 Life expectancy at birth in developed countries



Source: UN Population Prospects

to human life and human aging. In the course of the last 100 to 150 years, dramatic and unprecedented changes have taken place with regard to how long we can expect to live and how many children we have.

Between 1900 and 2000, average life expectancy in the developed world increased by 30 years to, on average, 80 years (see figure 7.1). Fertility rates – the average number of babies a woman can expect to have – have declined from around 5–6 to 1.3–2.2.

At first these changes were confined to the developed world. Since 2000, China, Brazil, and the four Asian Tigers, including Singapore and South Korea, have joined the "club of demographic change" – but at a stunning pace. Just to give you an idea of the dramatic differences in the speed of demographic change: in France it took 120 years to double the share of elderly people over 65 in the population (from 7 to 14 per cent). In China or South Korea, the same process took roughly 20 years.[1]

Demographic change seems closely linked with increases in living standards, improvements in the education and health systems and conditions in the labor market. Such improvements in living conditions also affect fertility rates: as life expectancy increased over the last 100 years, fertility rates have steadily declined. The causes of this decline are manifold. One of the most important is the fact that the probability of children surviving into adulthood has steadily risen. At the same time, investment per child has increased due to a more elaborate education system, with economies increasingly requiring a more skilled labor force.[2]

Demographers project that world population growth will come to a halt at 9.4 billion around 2070, stabilize and then slowly decline to 9 billion by the end of the 21st century.[3] This means that, in the future, we will have to come to terms with a finite amount of not only natural but also human resources. The combination of these two challenges, however, holds promise for economic and social innovation.[4]

Given the increase in average life expectancy in the last 100 years, the period of life reserved for retirement has lengthened tremendously. In 1889, Bismarck invented and introduced the old age pension program in Germany in order to provide a pension annuity for workers who had worked for a minimum of 30 years and reached the age of 70. But in those days, the average life expectancy in Germany was around 45, and only 2 per cent of the population lived to be 70 (see also box 6). Very few employees were able to take advantage of their pensions and, if they did, only for a rather short time.

Bismarck's old-age pension program provided annuities for workers over 70 – the average life expectancy was 45

In the US, when the Social Security system was established in 1935, workers who had paid into the system became eligible for benefits at the age of 65. Afterwards, they could expect to live another seven years on average. In contrast, actual retirement ages today have dropped to between 63 to 65 years (depending on the country), but average life expectancy at birth is 81 years in Germany and 79 in the US. In both countries, 65-year-olds can reasonably expect to live about 18 more years. This small historical excursion illustrates the enormous changes in the retirement phase of life, which have major implications for individuals, employers and societies alike.

18 years

the time that Americans and Germans can expect to live beyond the age of 65

The future of aging is up to us

We are witnessing – and shaping – fundamental historical changes in the nature of human development and aging. This is possible because human development and aging are not determined by the genetic information contained in our cells. They emerge out of the continuous interactions between our biology, our socio-cultural environment and our attitudes, decisions and behavior.[5] What aging means is up to us. Human aging is modifiable. We can illustrate this "positive plasticity" of human aging in five areas.

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number of deaths from tuberculosis per 100,000 people in the US in 1900, compared with 0.7 per 100,000 people in 2011

I We have expanded our lives

The enormous expansion of the average life expectancy is the first evidence that human aging is modifiable. The aging processes we have observed in our parents and grandparents will not necessarily apply to us in the same way; neither will our own aging process apply to our children and grandchildren.

Average life expectancy is easy to measure, which is why demographers have been using it to study historical changes in biological aging. They found that the human species has managed to increase its average life expectancy by 40 years since 1840.[6] This expansion of the life span shows how biology and socio-cultural contexts interact; not only biological but also cultural evolution plays an important role.[7] The cultural changes that have helped us live longer include improved hygiene and nutrition, better accident prevention (especially for children and young people), development of medical knowledge and practice, better education, healthier work environments and, last but not least, increased investment in preventing diseases.

II More years spent in good health

Many epidemiological studies have demonstrated that, throughout most of the years gained in life expectancy, we remain healthy and independent.[8] An 80-year-old today is about as healthy as a 70-year-old was 20 years ago.[9] Some developed countries, however, such as the US and Russia, seem to have fallen off this trajectory at present, which highlights the fact that this development is not automatic but the result of complex societal and individual efforts.[10]

An 80-year old today is about as healthy as a 70-year old was 20 years ago

III Cognitive aging 2.0

We tend to fear mental – cognitive – aging because of the negative stereotypes equating old age with dementia, or at least becoming forgetful and slow, and therefore unable to keep track of what is going on

around us. But we now have evidence that such an outcome is not necessarily our destiny. From one generation to the next (what demographers call "cohorts"), there are massive – and positive – differences in intellectual functioning. In other words, each generation is more intelligent than the previous one.

These improvements in cognitive functioning help to ameliorate the negative effects of the observed age-related slowdown, for instance, in processing new information. This tendency towards higher levels of cognitive performance in old age is so pronounced that, even though the UK, for example, will be a much older society in terms of its mean age in 2042, it will be cognitively younger.[11]

Moderate exercise three times a week is a good way to keep up cognitive performance

Moreover, researchers have found that we can actively influence age-related loss in mental capacity in later life. Aerobic exercise seems to work best: moderately strenuous exercise three times a week for 45 minutes is proven to keep up cognitive performance.[12] This increases the speed of information processing, with areas of the brain that have already undergone age-related decline showing signs of reactivation. The mechanisms that seem to be responsible for this change, which have been primarily established in animal research, are condensing connections between neurons (nerve cells), neurogenesis (the process by which new neurons are created) and changes in the dopaminergic metabolism that are crucial for the transmission of information in the brain, which undergoes age-related declines.

IV We are who we are, aren't we?

Older people are, on average, socially more competent and more agreeable

National and international studies have found that, as we age, our self-esteem, subjective well-being and ability to control our lives do not or only minimally decline. As we get older, we find it easier – not harder – to adapt. Emotional stability, conscientiousness and affability grow. Older people are, on average, socially more competent and more agreeable. They are better in defining goals as they have a better knowledge of their limits. Older people are also more effective in adapting their ways of reaching a goal.

On the downside, older adults are less open to new experiences. Therefore, while older people find it easier to adjust, and their social skills improve, their potential for personal growth declines.[14] This, however, does not have to be the case. If older people continue to be exposed to new activities and receive training for them, research shows that their

openness increases, rather than decreases, over time.[15] Thus, personality is not set in stone but rather depends on the incentives and disincentives to which we are exposed at various ages. Future societies may make use of this insight by helping older people to stay engaged and exposed to new situations.

V The power of belief

The way in which we think about aging also affects how we age. People who adhere to negative stereotypes about aging have less self-esteem and self-confidence and hence their motivation is lower and their mental performance declines.[16] In a long-term study, it was found that middle-aged people who believe they will be sick and helpless in old age tend to have shorter lives – on average, seven years less than those who believe that old age will bring them lots of freedom and opportunities to do things they never had time to do before.[17] The study made sure that individual socio-economic circumstances, objective health and subjective well-being in midlife did not skew the results. It showed that people with negative expectations of their old age actually lost their will to live.

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years is the difference that a positive outlook on aging can make to life expectancy

This self-fulfilling prophecy of the fear of aging has also been documented in the workplace. Older people who work in a company with negative

stereotypes about older workers also perform worse and are less motivated than others of the same age who work in companies where a more positive image prevails.[18]

These five examples show that if we – both as individuals and collectively as a society – keep a positive attitude towards aging and make the efforts necessary to enjoy our longer lives, then aging in the year 2040 and beyond will be a more positive experience than what we have known in the past. In the following, I will sketch the image of a society that is aging and possibly also shrinking, or what I call a society of longer and fewer lives. It is up to us to create this kind of society.

Five features of a society of longer of and fewer lives

I We will need to value education, health and work

A society of fewer people with longer lives will have to reshuffle its priorities. It must pursue three goals first and foremost: education for all ages and levels, healthcare for everyone and satisfying work at all levels of education.

With better education, a society can stay productive even with very low fertility rates

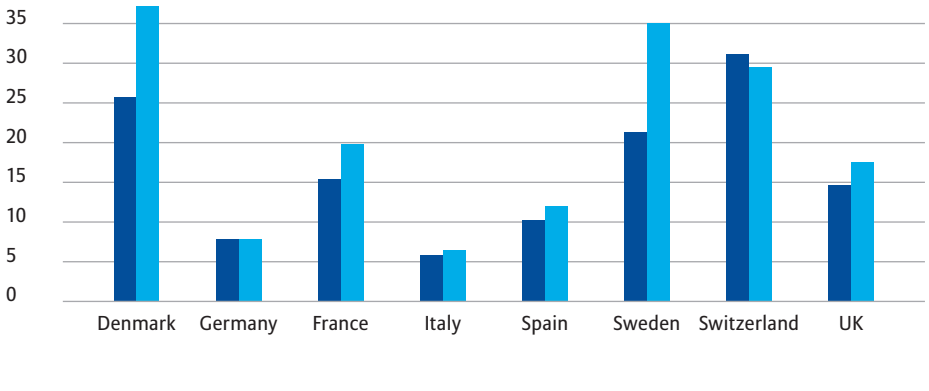
Econometric modeling, for instance, suggests that if we invest more in each individual's education, a society can survive and stay productive with fertility rates of only 1.4 to 1.7, rather than 2.0 or 2.2 – the rates generally defined as the replacement level.[19] Moreover, these simulations do not include the productivity-enhancing effects of lifelong educational investments but only focus on education in the first 20–25 years of life.

Another crucial factor in keeping a society of longer and fewer lives productive will be higher participation in the formal labor market. There are four major ways of doing this: getting more older people (over 55) into work; increasing the participation of women in the labor force; insuring more young people get a high-school degree and therefore have better job prospects; and attracting more qualified labor from abroad (see chapter 12). If Germany managed to increase its labor force participation to the higher levels in Denmark or Switzerland, for example, it could offset the potentially detrimental economic effects of demographic change.[20]

Additionally, good health cannot be valued highly enough in a society of fewer people with longer lives. Even if governments manage to keep a grip on their healthcare systems, it is a fact that longer lives will entail

Figure 7.2 Lifelong learning

Share of the working age population who have recently taken part in some form of training, in per cent, 2013



Source: Eurostat

higher health care costs. So, rather than fretting about these increasing costs, societies in which people live longer need to commit unequivocally to the investments required to keep citizens healthy. At the same time, they also need to put checks and balances in place that make sure that health-care providers and other participants in the health-care system do not unduly profit.

The health system of the future will truly deserve its name: rather than being a system for curing illnesses, it will promote health from the very beginning of life until its very end. Doctors shall be paid according to the health, not the illness, of their patients.

II We will reorder our lives

We can only achieve these health, education and work-related goals if we reorder our lives. The current structure of our lives focuses on education at the beginning, work in the middle and leisure towards the end. In future, we will rearrange this structure so that these three domains will run parallel across our the whole of our lives. We should then be able to switch back and forth between work and educational episodes at any time, but also between work and family or leisure. Employers will have to help make this possible (see chapter 12).

Education, work and leisure will run in parallel across the whole of our lives

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the age at which Allan Stewart from Australia gained his masters degree in clinical science, making him one of the oldest students in the world

We also need to find ways to finance such family or educational sabbaticals. For instance, it may be possible to use retirement funds not only at the end of life but also all along as we make contributions. A society of fewer people with longer lives shall cherish and incentivize different types of activity – not only paid work in the classical sense but also, for example, care provision for children and/or elderly parents as well as repeated learning episodes that increase productivity.

III Learning not just for the young

Crucial to this new life course structure will be an educational system that offers adequate opportunities for all ages and levels of qualification, is easily accessible to everyone and employs teachers qualified to train people of all ages (see box 9). A lifelong education system will help us deal with a rapidly changing world, both in our everyday lives and our jobs (see figure 7.2). Lifelong learning will allow us to maintain – even increase – our productivity and keep us employable as well as healthy. Educational investments pay off in general welfare. Therefore, governments must create better incentives for continuing education – for instance, tax cuts or social insurance benefits linked to further training.[21]

IV Work will be more flexible and varied

A new ordering of our life course also requires more flexible labor markets and pension systems. "Lifetime working-hours accounts" will enable each worker to offset periods of employment with time spent in child-care, retraining or leisure. Our pension systems will allow withdrawals not only at the end but also throughout a person's life.

Given that there will most likely be fewer workers, the competition for good employees will be stronger. Companies will be keen not to exhaust but continuously develop the productivity of their employees at all levels of qualification. They will put into practice long-term findings about what makes workers more productive – for example, giving them a certain amount of autonomy in as well as appreciation of their work. But most importantly, to avoid physical and mental exhaustion, it will be common practice to change tasks and/or professions during the course of a working life. We now know, for example, that assembly-line workers who alternate their tasks more often have higher levels of cognitive functioning than do those that perform the same tasks over a long period.[22]

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Aside from task and job changes, it will rejuvenate our bodies and brains to take a good break from work once in a while in order to return with new energy and ideas. Work is of the utmost importance for us as individuals and societies, not only economically but also to provide meaning and structure to our lives. In the future, older people will seek to be involved much longer than today – and diversify their activities (see chapter 12). While voluntary activities keep growing, there will be more opportunities for paid work throughout adult life because we will need the input of all generations for our economies.

It will become common practice to change tasks and/or professions in the course of a working life

These new life course patterns will result in a society that mixes age groups in all spheres of life rather than segregating them.[23] Thus, we will be able to make the most of each age group's strengths and counterbalance its weaknesses.

V Infrastructure and technology will serve all ages

In a society of longer and fewer lives the majority of citizens will live in or close to large metropolitan areas. New infrastructure and planning will help people of all ages to get the most out of urban living (see also chapter 9). For instance, neighborhood-based housing structures will allow different generations to help each other easily by exchanging what each has to offer, be it spare time or physical strength.[24]

Technological change will also make aging easier.[25] Innovations will include biotechnology – for example, techniques used in stem cell therapy – and the use of regenerative tissue, such as retina implants. But also more traditional, electronic, mechanical devices will play an important role, such as exoskeletons that allow paralyzed patients to walk or grip things. Electronic assistants will help older people in their jobs and at home – for example, electronic arms for lifting heavy goods and robots to help with cleaning.

At the same time, it will be crucial that such assistive technology does not discourage people from using their bodies and brains but only supports them when necessary. In the future, we will also use such technologies to train our brains and to support healthy lifestyles. Special gadgets, for instance, might be able to remind us to act in a way that supports our good health and give us feedback about the consequences of our behavior patterns.

Neighborhood-based housing structures will allow different generations to help each other

The future starts today

It is crucial for all of us to realize that, in shaping the future of aging and old age, we simultaneously compose the future of our societies. For better or worse, the human species is characterized by enormous adaptability. We need to become more aware of this opportunity for change and collect ever better information about exactly which socio-cultural features facilitate healthy, active aging. Societies in the year 2040 and beyond will no longer measure their success purely in terms of economic output. New measures of achievement will include investments in health and education across the human life span as well as the ability to combine work with other goals in life. Such indices will help citizens of this planet decide where they want to settle to shape and enjoy their longer lives.[26]

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