

Is human ageing setting the stage for prejudice transformation or for transhuman medicine?

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From population ageing to individual ageing, the reality and the image of ageing have radically changed since the last century. The composition of our society is changing. The proportion and absolute numbers, and often percentage too, of older people are increasing worldwide. What many do not realise, with far-reaching legal and ethical implications, are the following points

- today, not only 3 generations, but up to 4,5 and even 6 generations are living at the same time, sharing memories, linked or disrupted lives
- centenarians are doubling every 10 years
- the elderly population has already exceeded the child population (below age 15) and by 2050, for every child there will be two elderly persons.

This shift, a true «Agequake», which has come to be known as «the silent revolution», has far-reaching consequences. Old people have different expectations than younger generations and with each generation of older persons comes different ways of life.

Therefore, the notion of «old» today does not correspond to the «old» of last century. Today's elderly look younger, are healthier and live longer with a better quality of life. What is even more striking is that the next generation of older persons, the baby-boomers, are not behaving at all as their own parents and grand-parents. In line with the «continuity theory» of the life course proposed by Robert Atchley in 1971, they may well create another cultural revolution but this time of old age!

As a researcher in the field of ageing and medicine for more than 20 years, I witness a shifting paradigm in the way that not only scientists but practitioners and the public perceive ageing.

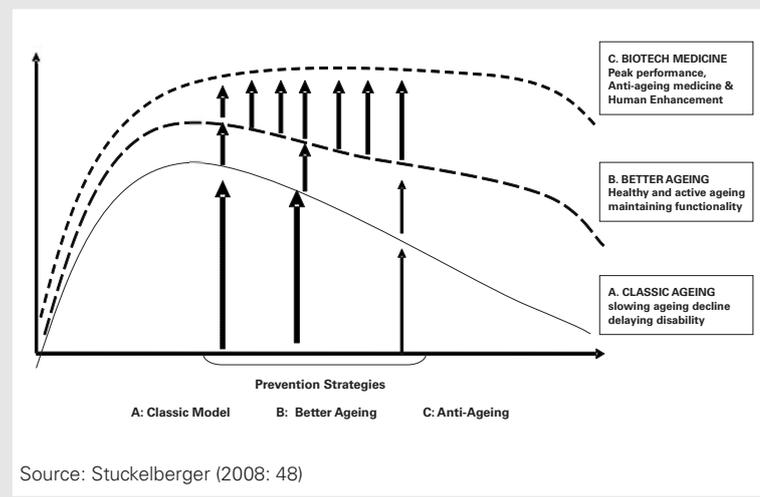
The model of ageing is radically changing and giving more options

The patterns of individuals' life course have radically changed in the past decades: the model of the ageing process has gone from a model of pessimism to a more optimistic view of the life course. When analysing the current comprehensive study of the ageing process, it seemed evident that we currently have three different ageing patterns based on the concept of the average bio-physio-psychological «gain» or «loss» (Figure 1).

Starting with the traditional and long-standing model of decline, to a model of successful ageing and sense of control over one's «ageing destiny» set by development psychologists of the Baltes School in the early 80s. Both conceptual trends are accepted by the majority. The new recently emerging baby boomer concept is following the trend of «science beyond fiction» by using new biotechnological findings and applying them to ageing. Some of the portrayers of this new model are movements such as anti-ageing medicine, human enhancement, predictive medicine and anticipatory medicine. To illustrate the concept: the Human Brain Project at EPFL, one of the six candidates of the EU star projects for the next decade, aims at mapping the brain system with a computer modelisation and mechanisms to cure illnesses, like Alzheimer disease and other currently incurable mental diseases. We really see a concept of the human machinery engineering emerging in front of us!

All of these models have their ethical flaws. One can wonder, depending on what we consider «normal ageing», if one is neglecting the potential for recovery in the traditional decline model, or one is pushing dangerously the limits of fantasising on a superageing being, in an abusive way, with the Biotech model. One can even start questioning if the new body norm of ageing will not be the typical «engineered body» with a pacemaker, integrated insulin pump, a neuro-stimulator, multiple prostheses in the legs, ears and teeth, eventually with a bionic arm and using an exoskeleton, and if it is not leading us to a «new human bionic ageing

Figure 1. Three different Models of Ageing in research, practice, business and minds



being». Furthermore, one can imagine the breaking point where body would be equal to a machine, where the brain would be wired ... and wonder if ageing is not taking us out of being human into transhuman with a new race of <cyberoldies>!

The fundamental question is «what is «normal» in ageing?»

Encyclopaedias today define ageing as:

1. the process of growing old or maturing
2. an artificial process for imparting the characteristics and properties of age
3. the effects or the characteristics expressed with increasing age
4. a desirable quality (as mellowness or ripeness), acquired by standing undisturbed for some time

The definition of ageing varies but as we can see it has a double meaning incorporating <gain> and <loss>. Psychologists and philosophers would argue for the <gain> of experience and knowledge while medicine would argue for the <loss> concept (irreversible decline), which is constantly providing a vision of ageing through a negative lens: What we see happening today is a schism between geriatricians and biomedical researchers on the very concept of ageing and the way they view ageing processes: the traditional medical view, which has predominated for centuries, but is slowly fading, is that ageing is associated with decline, polymorbidity and polymedication embedded in an incapacitation process. According to biogerontology researchers, ageing today is the cradle of all hopes. The discovery of phenomena leading to a reversal of decline such as cell regeneration and DNA repair paints a more glamorous image of the ageing process. It is on this basis that anti-ageing medicine proponents have built a very quick, perhaps too quick transfer from the laboratory into the clinical setting especially into the market and consumer's life! The paradox is striking! From irreversible decline to reversal process of ageing and fixing body parts, we really are at new frontiers: a micro-world unveiling a new comprehension of ageing and a macro-world filled with age discrimination and prejudice on how ageing should or should not be! The truth is we really do not know yet exactly where the biotechnological advances are taking us ...

In reality, the presumption that old age can only take the path of decline and inactivity is not only a very reductive approach but has become a discriminatory approach, especially now that we know that some situations can be transformed, a person can be rehabilitated, and life can be restored at any age with new activities and new endeavours.

Age discrimination is probably one of the most pervasive and difficult areas to address, but let us take a few examples of how this age stereotyping affects not only medicine but many areas of policy and research:

- «Absent priority» Ageing is absent from international organisations; children have their UN organ-

isation (UNICEF), women too (UN Women) but older persons not only do not have an agency for a socio-economic and demographic problem (that is at least as important as the one affecting children). Ageing is inappropriately poorly served by only 2 official positions in the UN, one in New York and one in WHO in Geneva, with no budget and virtually no staff, and very few documents produced. There are no specific rights for older persons, no agenda item devoted to them in any of the major UN conferences, and the Millennium Development Goals have ignored age!

- «Increasing age discrimination»: Discrimination against elderly persons is the most perceived discrimination in the European region, even compared to gender, race, sexual orientation according to the Eurobarometer, and it has increased since the last surveys [7].
- «Invisible elderly»: Numerous studies have demonstrated age stereotyping and prejudice leading to social exclusion, but also to neglect and abuse of the older population, especially the most vulnerable
- «Digital homeless»: ICT development is often leaving the frail and «e-illiterate» behind. The fact that older generations are a less computer-literate society is clearly creating a <digital homeless> population. The Assisted Ambient Living programme at the EU which I am part of the expert group is aiming at inclusion of older persons through ICT. The dominance of technicians in the project has given rise to many ethical problems such as the compatibility of man-machine when conditions such as early or mild Alzheimer symptoms are present and no informed consent can be implemented, or when in presence of multi-sensory deficits facing a technology addressing only one disability such as hearing, or finally when confidentiality of data is in question with a multi-care telemedical or telenursing or camera system in place. An interesting case was reported to me where a nurse providing care at the home of an elderly person refused to have a surveillance camera switched on while she was carrying out technical care, despite the fact that both the children and the older parent had agreed that a surveillance camera be put in place day and night so the children could better take care and intervene in the private sphere. The case was solved by a judgement in Lausanne which supported the nurse's position: the camera had to be turned off each time the nurse made her home visit. Such cases will emerge when new technologies come on the market, which can serve different situations.

Despite the evident <tectonic> shift with people living longer, in better health and with the majority of older persons living at home autonomous and active, despite the fact that medical progress can cure and rehabilitate age-related ailments to the point, where some medical conditions can be restored to a better level (e.g., cataract surgery, dental interventions, improvement of

muscle and bone mass, etc.), I am always astonished to see how many people have the «frozen perception» that aging can only be a one-way process of irreversible decline, pathology and death.

A reality-check in science is not only a must but an ethical responsibility. Ageing science is particularly important as it questions our very profound idea of what ageing is or what it 'ought to be'. When I take part in the debates on what is «natural ageing» and I see that we all use spectacles, false teeth, watches, make-up or take this or that pill, we can only wonder who is really «aging naturally»? Should we just live and let nature take over. Our norm of ageing and of how beneficial, harmful and socially desirable technology is, is to my mind going through a maelstrom.

The technological boom applied to counter the pathological ageing process is creating a range of paradoxes: can you replace the old with the new? Can you repair every part of the body until it functions «as new»? Isn't restoring body and brain function with technology ethically desirable if it heals lost functions? Isn't «bionising» the body to help a war combatant recover his limb functions a good thing? Can we go against employing a humanoid or a robot pet to help with tasks or just keep one company at home, when research shows it is beneficial for the lonely old person? Should we be flabbergasted by the Japanese culture of personalising robots and attributing a spirit to what we perceive as inanimate objects? Isn't technology an instrument of social justice, which will facilitate access to everything for all more than at any other time in history?

Conclusion

In conclusion, science and technology are on the verge of establishing a new culture of medicine and of ageing. Beside the bright future and the noble cause of solving the ailments and age-related deterioration, there is a shadow-side to it with the idea that ageing could disappear as we know it today. This might lead to a culture of obsession with life extension and the illusion of immortality, which is defended by the transhumanist philosophy. In both cases, a cautious note would allow us

to think that we still have not grasped how amazingly complicated and vastly superior even the most simple of human functions are to current, and possibly, future technologies.

The other question, which leaves me perplexed, is: Do we know where we are going to end? A psychiatrist once told me, «not knowing where you are going is the best way to end up somewhere else!» Venerable Thich Nat Hahn, the renowned Vietnamese Buddhist monk and peacemaker, illustrated the core issue of the galloping technology in a beautiful metaphorical story at the close of the World Economic Forum in 2001 in front of a floor of economists and technology-experts «A man is on a horse galloping through valley past mountains. One day a man stops him on the road with great difficulty, but as the rider finally manages to stop, the man asks him: «Where are you going so fast?». The man on the horse answers: «I don't know, ask the horse!». After a burst of laughter in the conference room, Thich Nat Hahn concluded: «Do not laugh so readily, you are the ones on the horse and the horse is technology! So think where are you going ...?»

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