When I'm older, it will be so great.

The Cambridge Handbook of Age and Ageing

Edited by Malcolm L. Johnson, in association with Vern L. Bengtson, Peter G. Coleman, and Thomas B.L. Kirkwood.

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Acquaintance with the details of fact is always reckoned, along with their reduction to a system, as an indispensable mark of mental greatness.

William James - Pragmatism

When I'm older

It will be so great

I can hardly hardly wait

When I'm older…

Tutter's song, from Bear in the Big Blue House, Volume 5

With seven parts, 72 chapters, 110 contributors, 744 pages, and God-knows how many facts, *The Cambridge Handbook of Age and Ageing* is a mighty tome. Reading it primes awareness of Miller's classic observation: we can, at best, store 7+/- 2 bits of information in working memory (Miller, 1956). Developing understanding in the field of age and ageing necessitates, amongst other things, remarkable working memory capacity. Elizabeth Maylor (Chapter 3.3) notes how working memory involves both the storage and the processing of information – it is the central scratchpad organizing controlled intellectual functioning. We generally get no better at using this limited space beyond midlife. And even when it peaks, our capacity is sorely limited. The facts about human development continue to accumulate at a rapid, accelerating pace. We do the best we can with what we have.

Using our limited capacity and the limited space available here, we will outline some of the ideas presented in this excellent handbook, while also passing comment on where the science of age and ageing is going.

Thinking about the problem

Biologically, the story of how ageing evolved is an interesting one. Thomas Kirkwood (Chapter 1.5) argues that, although there are no specific genes for ageing, a number of genes regulate the *durability* and *maintenance* of the soma. Other genetically determined tradeoffs exist between benefits to young organisms and their viability at older ages. These tradeoffs are important. Ultimately, evolution has not prepared us well for ageing. Paul Baltes and colleagues (Chapter 1.4) note that, because biological plasticity decreases with age, the *efficiency* of cultural interventions designed to optimize successful ageing naturally decreases. Even when those controlling culture recognise (and act on) the need to invest more and more psychological, social, and material resources into successful ageing, the equations of success don't always act in their favour.

So how do we maximize our 'investment'? One doesn't need to be a scientist to recognise that, from a social, economic, political, and cultural perspective, successful ageing is a major challenge. Many factors block efficient and effective movement in this sphere. For example, the intelligent elders in control of our 'disorganized' global economics (Phillipson, Chapter 6.2) have observed a new aggressive form of capitalism taking hold, elements of which are difficult to regulate. Aggressive capitalism tends to reinforce ageist thinking patterns. When aggressive capitalism dominates our social force fields, the weakest suffer first whenever there is a recession; priority given to maximizing returns distorts the socially identified needs of older people; the commodification of labour breaks families apart; and the sentiment amongst the cynics becomes that of 'older people are a selfish welfare generation'. As such, the biological, psychological, and social science of successful

ageing often operates in a misguided, not-so-friendly, economic, social, and cultural field.

At the same time, from a subjective, emotional perspective, old age is often experienced as a period of great resilience and positive growth (Chapters 3.6, 3.7, and 4.1). Theories of ageing and adaptation are unveiling the mechanisms whereby older adults remain resilient and happy in the face of loss (Heckhausen, Chapter 3.1). Malcolm Johnson (chapter 7.1) argues that views of old age as a 'problem' is a 'social construction'. Subjectively, ageing isn't *necessarily* a problem for older adults. Objectively, it *is* a problem for science.

History marches forward toward a period of unprecedented demographic change -- the long-defended, religiously ingrained beliefs promoting respect and care for older adults are less stable (Johnson, Chapter 7.1). Population growth and ageing have created new pressures. Pressure and stress are not conducive to developing an age-friendly culture. Pressure and stress stifle our cognitive-emotional complexity (Zautra, 2003), and our potential for integrated action (Labouvie-Vief & Márquez González, 2004). A new level of social order and coherence is needed to stabilize humanity during this period of great change.

But what forces will act to bring about this new level of order and coherence, this new stable power of humanity? Surely not the aesthetics and sentiments that have shaped our 'allegedly' romantic past! The science of systems change tells us that complex social, economic, political, and cultural systems do not change by force of sentiment alone (Richerson & Boyd, 2005). And when it comes to the 'intelligent design' of a system, the only 'controllable' positive force of nature producing the greatest adaptive success for the largest number, now and in the future, is the application of formal logic – collaborative, strategic, and practical thinking --

grounded in compassionate imagination. Using this force, the wise leaders of our world can, for example, help to inform the unseeing sceptics and unwise cynics of the economic and social value of ageing and longevity (Butler, Chapter 6.7). Both economic *and* social capital must feature in our models of sustainable development. Thankfully, economists are altering their formal logic and re-thinking their equations, but wise leaders are clearly needed to translate these new equations into positive action. Overall, the collection of thinkers contributing to *The Cambridge Handbook of Age and Ageing* offer us substantial hope that the 'incomplete biocultural architecture of lifespan development' (Baltes, Freund, and Li, Chapter 1.4) can grow-and-defend in a positive direction.

Thinking big!

It is difficult to conceive of a model that produces the greatest adaptive success for the largest number of people. Formal logic operates in one sphere of human action – human biology and human social dynamics operate in another sphere. Quality reason and quality action are difficult. The human mind is designed to reason adaptively, but not necessarily truthfully or rationally. Nonetheless, a thinking strategy that accurately models the structure, process, and function of the system is needed if rational solutions to difficult problems are to emerge. Human ageing is a global phenomenon: re-designing the incomplete biocultural architecture of lifespan development necessitates global thinking. In thinking 'adaptively', the human mind is better designed to reason locally, about self and kin in the present state and in the short- to medium-term future, not globally, about nation and world in the long-term future (Barkow, Cosmides, & Tooby, 1992; Boyd & Richerson, 2002; Durham, 1991; Laland & Brown, 2002). However, the ability to think and act in an efficient and

effective manner that reflects a balanced, global view that is applied to both local and global problems is one of the positives that can emerge with development in adulthood (Chapters 3.4, 3.6). At the same time, within these models of cognitive-emotional development, there is explicit recognition of our limited resources, particularly those resources supporting our working memory capacity. 'Integrated complexity' (Labouvie-Vief, Chapter 3.6) presents itself as a serious developmental challenge for those who aim to 'think big' in the field of gerontology. The storage and processing of facts necessary to intelligently design a grand social, cultural (economically- and ecologically-viable) system that optimizes development for the largest number, necessitates, amongst other things, a well-integrated working memory – better, a collaborative working memory, where, for example, each of the 110 minds contributing to the 72 chapters of the Cambridge handbook help design a new factual space. And, in order to build such a grand new scheme, we must 'hold the vision' for long enough such that it can be communicated well to others, and such that it can lead to effective action. Naturally, this will be difficult – it means that we must sustain a 'protracted state of doubt' until understanding is achieved (Dewey, 1910).

And so, if we are to 'think big' as we forge order and coherence into a collaborate model that optimizes collective action, let us consider re-casting Miller's (1960) equation of limited working memory into a Jamesian boom of mental greatness. There is nothing more useful than a comprehensive theory. With 110 minds, each carrying their favourite 7+/-2 bits of modelled data, we can envision 770 +/- 220 facts reduced to system.

Understandably, few thinkers propose we 'think big' in this way. Nonetheless, as a 'grand' collaborative ideal, the view is consistent with the aesthetics and sentiments shaping advanced systems science methods (Warfield, 2003). Systems

science is granted some lip service, but rarely accepted, funded, developed, and applied when thinkers work to find solutions to problematic situations embedded in a rich field of relations. Advanced systems science implies a view not yet operative in the structure, process, and function of theories in gerontology (Chapter 1.1).

One of the 'Future Trends in Social Gerontological Thinking' identified by Bengtson, Putney, and Johnson (Chapter 1.1) is consistent with Warfield's conception of systems science: the shift in emphasis from theories *of* ageing to theories *in* ageing. This is a theory-building process that starts with "the collective identification of the major problems in ageing research by practitioners of various disciplines and theoretical perspectives. The process then inquires what discipline-specific theoretical knowledge can be brought to bear on illuminating and/or resolving these problems. Engaging in such a process holds the potential for forging a cross-disciplinary fertilization of ideas and possibly new approaches. Such a process tests the usefulness of theories in gerontology in a very practical way. It also becomes possible to evaluate whether theoretical integration across disciplines is needed." (p. 17). A thorough reading of *The Cambridge Handbook of Age and Ageing* suggests to us that it is important that this trend in social gerontological thinking finds a solid root from which to flourish in the future, and we suggest that developments in systems science offer us the best hope of success.

Ageing and adaptation

Our population is ageing. Our science, society, and culture are ageing. A new historical era is shaping how it is ageing and adaptation is experienced (Chapter 1.2). We can consider the path of adaptation in science, society, and culture as akin to the lifespan path of adaptation in individuals. In both fields of action – individual and

social - development is multidirectional. In both fields, there is a shifting ratio of gains and losses along multiple paths of action potential. All paths of action potential operate in a multifactorial system of influences (Heckhausen, Chapter 3.1). In both fields of action, our motivation for adaptive efficiency and efficacy works to regulate, control, and manage the complexity that emerges as a consequence of growth, and when cognitive complexity exceeds our capacity for regulatory control, we observe non-integrated paths of development (Labouvie-Vief, Chapter 3.6). Fundamentally, models of human development inform us that our well-being is dependent on our ability to manage complexity.

And because the study of human ageing is a young science, a fragmented science, we observe a domain of scholarship that is being radically transformed and reconfigured with accelerating proliferation of research specializations and publications that remain poorly integrated. As a consequence, our ability to understand, predict, and control the psychological impact of population growth, ageing, and longevity upon the whole population lags behind the accelerating speed and complexity of the essential integrated description necessary to fuse components and relations in the system. New components and relations enter the field every year.

If we adopt a lifespan (or lifecourse) perspective (Chapters 1.4, 3.1, 3.7, 6.1) when thinking about the development of human action – the gestalt of motivation, emotion, cognition, and behaviour, embodied and embedded – then we need to consider our adaptation to ageing as experienced not only by older adults themselves, but by all those who co-exist in the relational context of age and ageing. It has been noted (Chapters 5.1 to 5.3) that, in the modern world, the acts of solidarity and conflict that influence the adaptive success of all members of our society are played out by up to five generations simultaneously. We see a whole new dynamic for the

experience of personal and relational history (Chapter 5.6), for the quality of family care (Chapter, 5.7), and for social relations more generally (Chapters 5.8, 6.3, 6.4).

Twentieth century history, science, and culture have opened up a new sphere of thinking for a new cohort of 'emerging adults' -- a new space of adaptive affordance and constraints within a new sphere of gene-culture co-evolution. Globalization is a reality, but not one that we have necessarily assimilated, accommodated, and equilibrated. History, science, and culture have opened the latest generation of emerging adults to a new 'global' view, perhaps making us too hyper-aware of ecological crises, aggressive competition, drug problems, the AIDs epidemic, famines, genocides, religious hatred, political fumbling, the limits of insight and outsight, etc (see Chapter 5.2 for an interesting analysis). There is the question of local adaptation in a global context: can we, the children of the baby-boom generation, work well with our parents, whose future we need to plan for? And, as our parents care for our grandparents and monitor our slow development, they may wonder how the system they have worked to put in place will sustain itself against destructive ecological, social, and cultural forces.

The thinkers contributing the *The Cambridge Handbook of Age and Ageing* remind us that, in many respects, every new generation is unique. Adaptation is contextualized. Each new generation is embedded in a new context, exposed to new ideas. Each new generation is both receptive to and sceptical of the professed wisdom of the generation ahead of them. Contexts change and thinking has to change accordingly. Development is always a balancing act, a journey to optimize action in the current field of affordances and constraints (see Chapter 1.4).

There are two sides to this adaptation game: we must defend against threats and we must grow in a positive direction (Hogan, 2005). For those who hope and

plan to age successfully, an understanding of how best to cope with stress is needed (Chapter 4.2), along with good understanding of the internal and external conditions associated with optimal health, well-being, and a good quality of life (e.g., Chapters 2.9, 4.12). Ultimately, wisdom is needed -- wisdom that allows for the best possible fit between the people of this world and their world -- or, as Sternberg (Chapter 3.4) has it, "the application of intelligence and experience as mediated by values toward the achievement of a common good through a balance among (a) intrapersonal, (b) interpersonal, and (c) extrapersonal interests, over the (a) short and (b) long terms, in order to achieve a balance among (a) adaptation to existing environments, (b) shaping of existing environments, and (c) selection of new environments." (p. 214).

As the new generation of gerontologists move forward, it is useful to be aware of some of the threats to the order and coherence in thinking that support wisdom in this context. If, for example, every 'solution' to a scientific question produces a new set of 'problems' (and this tends to happen), then it is possible that 'progress' gets confused with 'noise'. In electrophysiological terms, we can talk about the signal-to-noise ratio – too much noise and the specific brain signal associated with the specific relational act is drowned out. Advocating a path toward order, coherence, and equilibrium across all levels of scientific analysis, all levels of social organizational structure, and within and between all living generations is the only way to proceed. Engaging in dialogue with *The Cambridge Handbook of Age and Ageing* informs us of the need for wisdom; it offers each reader the opportunity to extract new facts and relations, and build new mind sculptures of understanding. Reading this handbook is one of the best ways to proceed if you wish to explore the richly diverse field of adult ageing and development.

In closing

Let us close as follows: the scientists who see the big picture and who wish to work with the big picture must also recognise that the grand problems and solutions they envision do not imply that all aspects of our well-being necessarily pivot upon our science, or our capacity for 'outsight'. As described by Marcoen (Chapter 4.11), the spiritual path – the path of insight - is a path toward self-realization, where everything connected with the self – time, space, life and death, good and evil, the rational and irrational dimensions of the mind, etc. – crystallize in an ego-transcendent state. Here, a new sense of uniqueness, inspiration, creative receptivity, and equilibrium between the internal and external worlds of experience opens, and allows for a new ethic of compassion, of giving of oneself to others.

When I'm older, it will be so great, I can hardly hardly wait!

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