

Chapter 2

The Definition and Delineation of Each Inflection Point

Abstract And so we postulate that the call to reinstate the themes of “fate and mutability, mortality and finitude, suffering and wisdom” (see Cole 1992, p. 243) are certainly noble ideals; nevertheless, they have been swept aside by the rising tide of a postmodern culture that has not only embraced the ever-expanding sphere of the “ageing industry” (Estes 1979, 1993) but has taken the scientific management of ageing and morphed it into many macro-level extensions of a “scientific-industrial” complex emerging out of the 1950s. There may be a “new ageing enterprise” (Moody 2004/2005, 2008) on the rise, but we argue that there has not been any relinquishment of the hegemony found with the “positive” pole of the duality (i.e., the striving toward an optimal ageing) and instead, ironically, there is the emerging value-laden zeitgeist in gerontology that seems to embrace only the *way forward*—exponentially—without much regard for premodern, modern or postmodern *values of ageing* at all.

Keywords Ageing as a reflection • Ageing as a problem • Ageing as a challenge • Ageing as a reward • Ageing as an artifact • Ageing demographics • Ageing population • Biomedical technology • Blue zones • Bioengineering • Human longevity • Senescence • Shortevity • Social disparities

2.1 [1.0]: Philosophy of Ageing (Ageing as a *Reflection*)

Wright (2008) proposed that the long grey trend line extended through such works as Sophocles’ *Oedipus at Colonus*, Marcus Aurelius’ *Meditations*, was later synthesized in Tim Parkin’s contemporary book, *Old Age in the Roman World: A Cultural and Social History*, and with Moog and Schäfer’s article, “Joannes Stobaios, ‘On Old Age’: An Important Source for the History of Gerontology” which also examines Cicero’s well-known text “On Old Age” (*Cato maior de senectute*). Re-conceptualized for our new approach of *inflection points*, this was the first positive derivative [1.0] for the curvature *Philosophy of Ageing*. We

propose that Arthur Schopenhauer (1788–1860) represents an exemplar contributor of the *Philosophy of Ageing*, and perhaps its zenith as well (Edman 1928; Hannan 2009; Magee 1997). We submit that the chapter, “The Ages of Life,” in Schopenhauer’s book (2008) *The Wisdom of Life and Counsels and Maxims* (see excerpt following) is an indication of Schopenhauer’s attempt to answer the “riddle of the world” (Hannan 2009) in terms of the human condition,

From the point of view we have been taking up until now, life may be compared to a piece of embroidery, of which, during the first half of his time, a man gets a sight of the right side, and during the second half, of the wrong. The wrong side is not so pretty as the right, but it is more instructive; it shows the way in which the threads have been worked together (p. 123).

This philosophical drive to solve the “riddle of the world” sounds like a continuation of the ancient riddle of the sphinx that confronted Oedipus with a supposed mystery along the life course: *What walks on four legs in the morning, two legs at noon, and three legs in the evening?* Of course, Oedipus solved the riddle, answering that it was man that crawls on all fours in infancy, walks upright on two legs in adulthood, and uses a cane as a third leg in old age. Hannan (2009) also offers an interesting insight that relates to our exposition here in this book,

Schopenhauer was a transitional thinker, bridging the gap between nineteenth-century and twentieth-century paradigms. It is typical of such transitional thinkers that are officially working within a framework that they are also (half-consciously) pushing toward a new epistemology in which both science and metaphysics, seamlessly blending into each other, both depend and do not depend on experience (p. 15).

Schopenhauer is the exemplar of the tradition of the *Philosophy of Ageing*, yet his influence and that of others before him (e.g., Marcus Aurelius, Seneca) still resonate as influential threads for scholars (e.g., Freud, Jung, Levinson) into the next inflection point [2.0] and beyond. It does appear that we have skimmed over many centuries of literature from the works of Sophocles, Seneca, and Marcus Aurelius to Schopenhauer, but we are attempting to stay engaged with the primary purpose of this book in the examination of inflection points and the ageing experience from a historical viewpoint. Nevertheless, we will privilege the following works to serve as supplementary texts for those professionals with an interest in the study of ageing who prefer to use the “long view” perspective and would then be well advised to consider for further reading to cover the significant transitions from the *Philosophy of Ageing*, [1.0] or ageing as a *reflection*, to the *Bio-medical Diseases of Ageing*, [2.0] or ageing as a *problem*:

From Dawn to Decadence: 1500 to present (500 years of Western Cultural Life) by Barzun (2000); *The Dream of Reason; A History of Philosophy from the Greeks to the Renaissance* by Gottlieb (2002); *A Secular Age* by Taylor (2007); *History of the Twentieth Century* by Gilbert (2001); *The Problem of the Soul* by Flanagan (2002); *The Crooked Timber of Humanity* by Berlin (1990), *Flesh in the Age of Reason: The Modern Foundations of Body and Soul* by Porter (2003), and *The Age of Wonder: How the Romantic Generation Discovered the Beauty and Terror of Science* by Holmes (2009); also recommended is the review of this book

by Freeman Dyson in *New York Review of Books*, Aug. 19, 2009). We would place the modern publication, *The Oxford Book of Ageing: Reflections on the Journey of Life*, edited by Cole and Winkler (1994), the publication *Journal of Ageing, Humanities, and the Arts* (JAHA); the book by Quinodoz (2010), *Growing Old: A Journey of Self-Discovery*; Charney's book (2009) *Wrinkled in Time: Ageing Shakespeare*; and *A Guide to Humanistic Studies in Ageing: What Does It Mean to Grow Old?* (Cole et al. 2010).

2.2 [2.0]: The Bio-Medical Diseases of Ageing (Ageing as a *Problem*)

The second positive derivative [2.0], the Bio-medical Diseases of Ageing (or ageing as a *problem*) is identified approximately with the beginning of the 20th century with the advent of both specialties investigating the phenomenon of ageing as a problem to be addressed scientifically: gerontology and geriatrics (Achenbaum 2001). Exemplars are represented by Sanford Bennett Dodd *Old Age: Its Cause and Prevention*, and readers should note the related stories of reversing ageing by Mircea Eliade, *Youth Without Youth*, and F. Scott Fitzgerald, *The Curious Case of Benjamin Button* (see Alexander 2009), both of which were recently made into movies, respectively by Francis Ford Coppola 2007, and David Fincher 2008. Then came Hall's (1922) *Senescence: The Last Half of Life* and another book, titled *Old Age: The Major Involution: The Physiology and Pathology of the Ageing Process*, by Alfred Scott Warthin (1930). And in the 1930s, there was Carl Jung's (1933) insightful chapter, "The Stages of Life" in *Modern Man In Search of Soul*, which we believe carries on threads from the Philosophy of Ageing [1.0] curvature. Moving upward along the positive curvature of [2.0], Ageing, *The Biology of Senescence*, was written by Comfort (1964) and soon after came the deeper reflections of de Beauvoir (1972) in her book, *The Coming of Age*. We then move upward to *Ageing and Mental Health: Positive Psychosocial Approaches* by Butler and Lewis (1973). We could explore the textured dimensions of ageing captured in *The Psychology of Adult Development and Ageing* edited by Eisdorfer and Powell Lawton (1973) and then continue on to another hallmark publication (and Pulitzer Prize winning book) by Butler (1975), *Why Survive? Being Old in America*. And, in the following year, *A Good Age* by Comfort (1976).

And it is here, in the time frame of the late 1970s and early 1980s that we propose that the third inflection point is initiated: [3.0] Demographics of Ageing (ageing as a *challenge*). Yet the active threads of [2.0] curvature are still present, but not as dramatically positive compared to the next derivative, and strongly identified in contemporary publications such as *Hazzard's Geriatric Medicine & Gerontology, Sixth Edition: Principles of Geriatric Medicine & Gerontology* (Halter et al. 2009). As Bass (2007) has noted, "Gerontology in the early 1980s was very much focused on the frailty, dependence, and decline in later life" (p. 135),

and we will further propose while it was the prevailing trend, it would soon be dominated by a more macro-level perspective that would take the “ageing as problem” theme and transform it into “ageing as a challenge” due to demographic transitions already underway in developed countries—and with the looming challenge of ageing baby boomers ahead.

2.3 [3.0] Demographics of Ageing (Ageing as a *Challenge*)

This change in direction along the curvature is clearly indicated by exemplars of several publications such as the edited book by Pifer and Bronte (1986b), *Our Ageing Society: Paradox and Promise* (see also Pifer and Bronte 1986a). As proposed by our heuristic model, there are also several publications that carry over the threads from previous inflection points such as Cole’s (1992). *The Journey of Life: A Cultural History of Ageing in America* which we consider more of meta-theoretical and historiography of both [1.0] and [2.0] curvatures. The publication, *The New Ageing: Politics and Change in America* by Torres-Gil (1992) clearly falls along the direction of the [3.0] inflection point. We consider Hayflick’s (1994) *How and Why We Age* as a continuing thread from the [2.0] curvature, while Amery’s (1994) publication, *On Ageing: Revolt and Resignation*, carried the philosophical gravity of the [1.0] curvature with strong narrative reflecting the philosophy of the ageing process. Then there was Posner’s (1995) *Ageing and Old Age* which strongly influenced the [3.0] positive derivative. We then capture Roszak’s (1998). *America the Wise: the Longevity Revolution and the True Wealth of Nations*, later expanded and revised to be published again in 2001 under the title of *Longevity Revolution: As Boomers Become Elders* (Roszak 2001), as a part of the [3.0] curvature, along with Peterson’s (1999) less than optimistic outlook about ageing as a problem, *Gray Dawn: How the Coming Age Wave Will Transform America and the World*, but then the counterweight publication of *Age Power: How the 21st Century Will Be Ruled by the New Old* by Dychtwald (1999). The publication *The Quest for Immortality: Science at the Frontiers of Ageing* by Olshansky and Carnes (2001) represents a cross-weave of threads for [2.0] and [3.0] curvatures and offers a cautious indicator into the curvature of [4.0]. Friedan’s (1993) *The Fountain of Age* served to break new ground between [3.0] and the next inflection point to follow, [4.0]: Optimal Ageing. Sheehy’s (1996) *New Passages: Mapping Your Life Across Time*, continues the trend of Betty Freidan’s work to become an influence on the [4.0] curvature toward optimal ageing.

But perhaps the exemplar for this [3.0] inflection point and representation of an ongoing thread for the previous prevailing theme was the publication, *International Handbook of Population Ageing* (Uhlenberg 2009) which offered thirty-four chapters on various topics ranging from migration patterns and economic issues, to the interconnection with health care issues. Of all those chapters, the one chapter that we see representing a “bridge” into inflection point [5.0]: Post Ageing was authored by Olshansky and Carnes (2009), *The Future of Human Longevity*. We

believe this is a bridge publication not so much for any “pro” post ageing stance they might have taken (which they did not); on the contrary, it is because they represented that rare breed of scholar that would look beyond their limited silo of research emphasis (and prevailing view of [3.0]) and critically examine the implications and consequences of technologies for human longevity. In that chapter by Olshansky and Carnes (2009), they present a very convincing and explicit profile for “pathways to longer life” and propose that there are three camps with differing perspectives and viewpoints about the prospect for human longevity. The three groups are: *the futurists*, *the optimists*, and *the realists*, and we will further discuss them in the next sections.

Relevant to the discussion of [3.0], however, Olshansky and Carnes (2009) believe it is the first group of researchers and writers, known as the *futurists*, who are invested in “yet-to-be developed advances in biomedical technology and the anticipated emergence of nanotechnology are going to radically transform the landscape of human ageing and longevity” (p. 731). It should be pointed out that Olshansky and Carnes (2009), fitting in the [3.0] curvature, do not find any compelling evidence for either the *futurists* or the *optimists* to gain traction for dramatically changing the limits of human longevity beyond the 88 years for women and 82 years for men, unless there were a technological breakthrough “capable of slowing the rate of biological ageing” and that the breakthrough could also be “broadly disseminated” (p. 732). Although we are assertively presenting a case for the next inflection point and we have a (now self-disclosed) degree of affinity with the “futurist” camp (although we do find the label a bit awkward and loaded with metaphysical trappings), we also find the “realist” label of Olshansky and Carnes (and their preferred stance) to be a sobering and needed counterweight to the overreach of several futurists involved in “post ageing” speculations (see also Bongaarts 2009). Nevertheless, it is our assertion that they have underestimated the potential impact for technologies to alter the current prevailing viewpoint from [4.0] Optimal Ageing to a [5.0] Post Ageing curvature. We also submit that they have over-extrapolated the lack of successes in the historical track record of human endeavors in trying to extend the life span. In other words, we do not think that past is prologue—especially in the case of technological advancements affecting the ageing process. Finally, we believe they have too narrowly defined the role of futurists as succumbing to the allure of immortality as the main motivation (or preoccupation) for who would study—and *advance*—the intersect of technologies in the domain of ageing. Yet, we do credit Olshansky and Carnes (2009) in identifying a weakness in the realist’s argument that is, ironically, related to the possible and potential advancement in bio-medical technologies exceeding the limits of human longevity. Our point is that Olshansky and Carnes (2009) (and also Bongaarts 2009) at least concede that going beyond these limits is possible, without seeing any near-term advancements to create this change on the visible horizon. A final point: we are in complete agreement with them that any developments and advancements in extending human longevity due to breakthrough technologies would have to be *broadly disseminated* to avoid the specter that only a select few—or an elite group—could benefit from such advancements.

The latest publications that represent the continuation of [3.0] would be: (1) the report hosted by the U.S. Census Bureau and National Institute of Ageing titled, *An Ageing World: 2008* (Kinsella and He 2009). This report indicated that although the world's population is ageing, children still outnumber older people as of 2008. However, projections indicate, that in fewer than 10 years, *older people will outnumber children* for the first time in history; (2) the two-volume publication edited by Hudson (2009) titled, *Boomer Bust? Economic and Political Issues of the Graying Society* (Volume 1: Perspectives on the Boomers; Volume 2: The Boomers and Their Future). Hudson (2009) presented an impressive array of authors primarily in the domains of economics, political science, and finance to *challenge* the notion that ageing baby boom cohort is a recipe for disaster; (3) the working paper by Preston and Ho (2009), "Low Life Expectancy in the United States: Is the Health Care System at Fault?" and, (4) research supported by the MacArthur Foundation, "Ageing in America in the Twenty-First Century: Demographics Forecasts from the MacArthur Foundation Research Network on an Ageing Society" by Olshansky et al. (2009) who propose that both the U.S. Social Security Administration and U.S. Census Bureau may have *underestimated* the rise in life expectancy for both men and women in the U.S. Olshansky et al. (2009) further indicated that the risk of death in the coming decades will be reduced by *accelerated advances in biomedical technology* that delay the onset and progression of major fatal diseases or that slow the ageing process.

2.4 [4.0]: Optimal Ageing (Ageing as a *Reward*)

The Longevity Dividend doesn't suggest that we live longer; instead it calls for living better. The idea is that if we use science to increase healthspan, not lifespan. In other words, tomorrow's 50-year-old would have the health profile of a 43-year-old.

~ *Gray is the New Gold: State of the Science in Two Thousand Nine* (2009). [Optimism in Ageing Research]. Kronos Longevity Research Institute (KLRI) (p. 4).

The next inflection point, and what we propose is the current prevailing theme in gerontology, is posited to have taken place in the mid- to late 1990s with the full positive derivative effect expressed with the turn of the century (the year 2000). The following represent exemplars of this change in direction for the curvature: *The Creative Age: Awakening Human Potential In The Second Half Of Life* (Cohen 2001); *Productive Ageing: Concepts and Challenges* (Morrow-Howell et al 2001); *Challenges of the Third Age: Meaning and Purpose in Later Life* (Weiss and Bass 2002); Valliant (2002) and his work, *Ageing Well: Surprising Guideposts to a Happier Life*; and *Positive Ageing* (Hill 2005). As stated in the proposal of inflection points there are threads of previous prevailing themes that carry over into the subsequent curvatures, and the book *Challenges of an Ageing Society: Ethical Dilemmas, Political Issues* edited by Pruchno and Smyer (2007) represents such an exemplar. We approach the final exemplars of [4.0] with Nuland's (2007) *The Art of Ageing: A Doctor's Prescription for Well-being*, and Goldsmith's (2008). *The Long Baby Boom: An Optimistic Vision for a Graying*

Generation, and then Butler's (2008) book, *The Longevity Revolution*. We propose that Robert Butler's book is the literary capstone work for indicating the incremental works on the experience of ageing as essentially an optimistic endeavor and the triumphal and prevailing theme (optimal ageing) for all of gerontology.

In other words, according to some, we have reached the point whereby we can begin to reap the benefits of the so-called "longevity dividend" (Kronos Longevity Research Institute [KLRI] 2009). However, Butler (2008) admitted that there is much work to be done and there were significant threats to sustaining an increase in longevity, notably in those geographic areas that are characterized by "shortevity" (International Longevity Center Global Alliance 2009). Nevertheless, Butler was cautiously optimistic that the future is now if we are to reap the rewards of increased longevity, and that there is an attitude of making good use of the tools that we have, and hope to have, to enjoy "the triumphant prolongation of life." So, although the longevity revolution has both benefits and challenges, the overarching tone is progressive and the faith in the scientific enterprise's ability to address the challenges of increasing longevity is unwavering. For example, Butler (2008) noted in the preface of his book that,

Scientific advancements should and will add vigor and health throughout life, and not just at its end. The ageing population increasingly consists of active, vigorous, robust people. We must not take them for granted, but the trend can continue and it should be celebrated. Above all, I hope that this book will convince people that our increased longevity constitutes a supreme achievement (p. vx).

More recently, Robine et al. (2013), as editors of *Healthy Longevity, A Global Approach* (Volume 33 of the *Annual Review of Gerontology and Geriatrics*) explore healthy longevity as a theoretical concept. We do not go so far as to claim a teleological argument or grand narrative to be found within the exemplars already, but we are in agreement with Cole (1992) that the "long-term transition from the existential to scientific tonalities" in our understanding of the ageing experience has led us to this point on the trend line. Cole elaborates,

Since the mid-nineteenth century, Americans have come to view ageing not as a fated aspect of our individual and social existence, but as one of life's problems to be solved through willpower, aided by science, technology, and expertise (pp. xxii—xxiii).

Having said that, Cole (1992) was not sure that the assumed outcome of all the supposed scientific activity was going to necessarily be a positive gain for humanity. Cole was skeptical about "successful ageing" models serving as the end game to such scientific endeavors as they tend toward the too idealistic while negating the harsh realities of decline and death. Cole believed that the authority of the scientific management model "with its drive to maximize health and organic functioning" had stripped away existential meaning that addresses the paradoxical nature of ageing and had instead replaced it with a "relentless hostility to physical decline and its tendency to regard health as a form of secular salvation" (p. 239). In other words, the scientific management of ageing has come at a high spiritual and ethical price. Cole (1992) believed that the emergence of a duality, a dichotomous

treatment of the ageing experience, had become the guiding paradigm in the field of ageing,

Rooted in the drive for unlimited individual accumulation of health and wealth, this dualism has hindered our culture's ability to sustain morally compelling social practices and existentially vital ideals of ageing (Cole 1992, p. 230).

And from this duality, the positive pole would facilitate the perspective of optimal ageing: "Old people are (or should be) healthy, sexually active, engaged, productive, and self-reliant" (p. 229). This perspective is also represented in the emergent domain of positive psychology as it intersects with ageing (Hill 2005) as well as with the call to understand and promote "blue zones" as viable geographic and social areas that encourage health lifestyles leading to a longer life expectancies (Buettner 2008).

And yet, Cole believed that the postmodern cultural era (see also Butler) able to reflect a deepening existential awareness of the ageing experience and thus seen as much more than a "problem to be solved." Indeed, Cole believed that the "modern quest for a rational, healthy, and orderly life course has reached a limit—or at least a turning point." Cole called upon the possibility of the postmodern self to "cultivate the existential nourishment" (perhaps through the arts as example) along the life course. But Cole's scholarly work was first published in 1992, and given that a substantial amount of time has since passed, it all begs the question to ask—and then determine—if his hoped for potential has actually been initiated, much less realized, as we approach the year 2015, some twenty two years later (see also Cole et al. 2010).

2.5 Forecasting a Significant Change in the Present Curvature

And so we offer a synopsis at this juncture of the book in order to provisionally measure the significant and substantial attainment of the hoped for emergence of "vital postmodern ideals of ageing" that perhaps relates to larger rubric of "humanistic gerontology" (Cole et al. 2000; Cole and Sierpina 2007). In other words, although we are posing the question, we will nevertheless take the tactical move in this book and advance our diagnosis, but we will then propose an entirely *different* prognosis, than what Cole and fellow supporters had hoped for, of what lies ahead. At this juncture, we also want to be clear about our stance on the premise and goals of a *humanistic gerontology*: We are in full support of this approach for the understanding of the ageing experience both personally and professionally. As faculty members in a gerontology program, we embrace the significance of interdisciplinary approach for the study of ageing and weave that structure and attitude into our curriculum content so that a full spectrum of conceptual models, theories, and methodologies are presented. This spectrum of perspectives ranges from the

molecular to the molar—from the study of telomeres to the examination of macro-level policies on ageing at the national and global level.

And so to put it most diplomatically, we are *not* convinced that such a movement (or any actuality) for any “postmodern ideal of ageing” has taken hold and gained traction in our culture. While we concede that *optimal ageing* is our prevailing theme (notice we did not say “paradigm”) in gerontology, and that there are a few exceptions representing the spirit of the ideal to be found with the intersect of ageing baby boomers and civic engagement (e.g., the work carried out by the Civic Ventures organization and Encore) we submit that the return to “meaning” (see Krause 2009), in large part a balanced return to the grand humanistic tradition of the ageing experience, has been left to fend for itself with well-intentioned advocates and devotees (to which Cole and Sierpina 2007, seem to agree as they identify this group as an “important minority” p. 252) in the few remaining and somewhat secluded islands of publications such as the emergence of the *Handbook of the Humanities and Ageing* (Cole et al. 2000), *A Guide to Humanistic Studies in Ageing: What Does it Mean to Grow Old?* (Cole et al. 2010), and the journal *Journal of Ageing, Humanities, and the Arts (JAHA)*. We entirely support these publications and outlets, but at the same time we are confident that the perspective of “humanistic gerontology” will not be able to withstand the emergence and forthcoming predominance of new and more powerful forces in scientific endeavors (which is the proposed [5.0] inflection point underway) resulting from the *convergence* of bioengineering and technology in gerontology.

And so we postulate that the call to reinstate the themes of “fate and mutability, mortality and finitude, suffering and wisdom” (see Cole 1992, p. 243) are certainly noble ideals; nevertheless, they have been swept aside by the rising tide of a postmodern culture that has not only embraced the ever-expanding sphere of the “ageing industry” (Estes 1979, 1993) but has taken the scientific management of ageing and morphed it into many macro-level extensions of a “scientific-industrial” complex emerging out of the 1950s. There may be a “new ageing enterprise” (Moody, 2004/2005, 2008) on the rise, but we argue that there has not been any relinquishment of the hegemony found with the “positive” pole of the duality (i.e., the striving toward an optimal ageing) and instead, ironically, there is the emerging value-laden zeitgeist in gerontology that seems to embrace only the *way forward*—exponentially—without much regard for premodern, modern or post-modern *values of ageing* at all.

In fact the postmodern era has splintered itself into a myriad of conditions with the prefix “post” to be found almost connected to everything traditionally studied and practiced (e.g., post-colonial, post-structuralist, postdigital, postbiological, postAmerican, and posthuman). In fact, some have proposed that we have already moved beyond postmodernism (if it ever existed; see Matthewman and Hoey 2006) and into a “digimodernism” that reflects more of the digital and technological culture (Kirby 2009). This grammatical and “paradigmatic” shift in tone and temporal development signals that some kind of conceptual train (i.e., epistemological, theoretical, methodological, ontological) has already left the academic station. Although some may wish for us to consider “gerontology’s future” by the

privileging of three main disciplines: *biology*, *psychology*, and *sociology* into an “integrative model” and perhaps even embrace gerontology’s entry into the disciplinary status due to identified accomplishments thus far (Alkema and Alley 2006), others such as Ferraro (2006) are not so sure that the critical mass is there yet. In either case, whether one is “pro-discipline” and advocates as though “it” has arrived, or if rather one believes like Ferraro (2006) that such a tipping point is still “several cohorts away” from achieving the laurel wreath representing a bona fide academic discipline, or perhaps if one believes that the *disciplinary evolution* will never happen, it is a major limitation to neglect to recognize the *bio-technological* in the tenets of a *gerontological imagination* in addressing the ageing experience as we begin to experience the next inflection point of Post Ageing [5.0].

And so despite the calls for a new focus in the field of ageing to balance the control of the natural sciences (Cole and Sierpina 2007) such as Haber’s (2009) suggestion of an “Empowerment Paradigm” for and about ageing boomers, we contend that this simply represents a continuation, an extension of the prevailing *optimal ageing* curvature [4.0] or the positive pole in Cole’s duality, that has already had its peak opportunity.

In other words, the optimal ageing theme has been the predominant pathway and compass within the gerontological literature, but we suggest that a new direction has already taken place in our contemporary era, and this new direction (a change on the curve—the [5.0] inflection point) does not simply overturn or replace the *scientific management of ageing*, but rather has changed via a metamorphosis in perspective and outcome into a “scientific-technological” *Weltanschauung* seeking to move beyond ageing as a necessary stage in the life course; rather ageing (biologically, socially, and psychologically) is something to be overcome and transcended, incrementally, and thus completely.

We further propose that another related, but vastly different trajectory of epistemological, ontological, and experiential approaches to ageing will soon eclipse the supposed penultimate goal (in our limited temporal horizon) of *optimal ageing* in gerontology. In other words, the momentum has shifted and the scientific activity within ageing is undergoing a transformation. The driving force in gerontology will no longer be a descriptive analysis of the “longevity revolution” (Butler 2008; Greenbaum 2010), but a proscriptive call to action in the implementation and practice of making extreme *longevity* no longer revolutionary, but normative and customary. And along with “normative” longevity will then come the expected [5.0] change—toward a “post ageing”.

Therefore, we are proposing a significant change in the present curvature and that there is another significant shift in the literature ahead. Will optimal ageing [4.0] and ageing as challenge [3.0] and ageing as problem [2.0] and ageing with reflection [1.0] still continue to influence the literature? Yes... *of course*. But we propose that these previous tracks of prevailing themes have already reached their zenith in terms of the cumulative effect of research momentum and activity, curriculum content and delivery, and public interest. Of course, there will always be enough rooms in the large house that is gerontology for the philosophy of ageing [1.0] and the understanding of the social construction of ageing—and for a

humanistic gerontology. But the soon-to-be *largest* room in the house, where the greatest proportion of interest and activity and exponential growth will take place, is the area where *bioengineering* and *technology* are discussed, showcased, and subsequently transform the significance of the ageing experience.

This proposed inflection point—this new tip of the spear in research, teaching, and application—is already underway; and, although such a claim may appear to be grandiloquent to those fully invested in their own research specialties and thematic tracks and service sectors that represent previous inflection points, we submit that the new transformation will be tectonic in scope and that the ripple effect will influence the very nature of our understanding of the ageing experience.

Butler’s (2008) book, *The Longevity Revolution* (see also review of book by Finch 2009), and the edited book by Greenbaum (2010) *Longevity Rules: How to Age Well Into the Future*, in our estimation, represent the culmination of the positive derivative (for inflection [4.0]) that has described and analyzed the deepening human condition influenced by the radical transitions associated with the exceptional and “unprecedented demographic transformation” (Butler 2008, p. xi) in the 20th century. We propose that it is also a part of a hermeneutical inflection point representative of a new direction in the ageing experience that will be increasingly directed by the monumental advancements in bioengineering and in bio-technology. This inflection point is summarized in the statement from the International Longevity Center (ILC) (2008) taken from their annual report “Embracing Longevity”,

We recognize longevity as a great human and social achievement that can only advance if we embrace it fully in all of its dimensions through knowledge, action and creative solutions.

And so while the scientific management of ageing and the drive towards an optimal ageing continues to generate energy for the wheels of normative science, we are suggesting that we are already moving into a *post ageing* era [5.0] inspired and being directed by the realm of *bio-techno-engineering*, which will overtake and proceed beyond the domain of optimal ageing [4.0]. Indeed, the [4.0] inflection point with its goal of ageing as a *reward* has served as precursor, a sentinel, and a harbinger. This post ageing *Weltanschauung* has the capacity to transform all aspects of existential and humanistic meaning of the ageing experience in the future (see also Kirby 2009). If anything, we are convinced that Cole’s concerns about the dominion of “scientific management of ageing” will pale in comparison to what is to come in the 21st century.

2.6 [4.0] Reviewing the Current and Triumphant Positive Derivative in the Field of Ageing

Before we present the evidence and the case for the next inflection point [5.0] of “post ageing”, ageing as an artifact, let us briefly review the current proposed positive derivative (and the curvature) that represents optimal ageing [4.0]. In our

current line of theoretical and conceptual understanding of ageing, we have witnessed not only an increased longevity but also an increased expectation that all will live not only longer but also significantly and substantially *better*.

We have quickly moved from contemplating a demographic revolution of “squaring the pyramid” (Pifer and Bronte 1986a) to the promotion of a “longevity revolution” (Butler 2008; Roszak 2001) in just a few decades. It appears that the Stoic tradition of embracing the shortness of life is but a quaint view from yesteryear, and that the concerns of population ageing (Siegel and Taeuber 1986) have been transformed into a philosophical attitude that we can “have our cake and eat it too”.

It used to be said that *life is short and art is long*; but in our high point for the era of the “scientific management of ageing” (Cole 1992) our goal is now the art of living longer, and *optimally so*. As Silvertown (2014) points out, “over the last two centuries our own species has increased its average life span by nearly a quarter”. Our current landscape for understanding the experience of ageing is represented by the following indicators of the “received view” which illustrate but do not exhaust the examples in the literature: *age wave* (Dychtwald 1990); *fountain of age* (Friedan 1993); *from age-ing to sage-ing* (Schachter-Shalomi 1997) and that we have entered into phase of *age power* (Dychtwald 1999), and the power years, (Dychtwald and Kadlec 2005); *the creative age* (Cohen 2001); *third age* (Sadler 2000); *successful ageing* (Rowe and Kahn 1999); *prime time* (Freedman 2000); and *encore* (Freedman 2007); *ageing well* (Valliant 2002); *positive ageing* (Hill 2005); *healthy ageing* (Weil 2007); *the art of ageing* (Nuland 2007); *productive ageing* (Morrow-Howell et al. 2001); *transcendence in later life* (Tornstam 1999–2000); *vital ageing* (Achenbaum 2005); *self-empowerment* (Maples and Abney 2006); *elder culture* (Roszak 2009); and *ageing well* (Greenbaum 2010).

These indicators represent a collective premise (not a paradigm) that captures the essence of optimal ageing [4.0] as the prevailing theme in gerontology. It is the resulting effect of previous inflection points that have guided the scholarship of ageing. Thus we are in agreement with Bass and Ferraro (2000) that gerontology is yet again in transition, but we do not forecast an evolving paradigm or the possibility of an emergent discipline for gerontology. Our field will sustain itself in a more robust way as “interdisciplinary” by letting go of the need to identify a paradigm, per se, for the field. The evolution that is taking place in our field is a highly complex set of interrelated threads of scholarship representing previous prevailing themes that increase (along a curvature with time passing) as a positive derivative, but with a change in direction along the curve. The change is due to intersecting forces within and outside of the permeable boundary for gerontology, which is the quite natural effect of the interdisciplinary foundation and operation that is gerontology. Our science and our inquiries into the ageing experience are influenced by the operations and activities from other fields, specialties, disciplines, and organizations. They too are investigating the domain of “ageing”—and many of their activities represent “sentinel” operations that “mainstream” gerontology or those engaged in normative science (or “puzzle-solving” as Kuhn called it) are simply not aware of or ignore because it does not fit their assumptions. Although Kuhn described the process of “revolutionary science” as the

break point set against “normal science”, it appears to me that in gerontology, there is more of an ascent and then gradual flattening of one predominant theme, while other themes emerge and enter the landscape of potential inflection points. A select idea will gather momentum and critical mass, and rise as a different (but positive) increase against the previous curvature. There does not appear to be any revolutionary “flip” or “break point” in gerontology. Our field is simply too broad and too interconnected with other disciplinary ventures and professions to have one pristine “gerontological paradigm” dominate the field. Although there is the distinct possibility, in fact the probability, that there may be a bona fide paradigm to refer to in other connected fields or disciplines, gerontology will be driven less by shifts dependent on revolutionary science than it will be by shifts due to inflection points. These inflection points do not replace the existing order but rather build upon it, and then change in direction from the previous arc in curvature (see also Agamben 2009). We have a *prevailing theme* (a meta-theoretical position) serving as an implied “lodestar”, a *raison d’être*. In the current manifestation of the curvature, we have reached the zenith of optimal ageing [4.0] which—and let us be clear here—will continue to be a research track, a publication category, a curriculum offering, a service mission, and “quasi-paradigm” for some in the field. In effect, this also means that we have taken the “meaning” of later life to be more—that is, we want to be productive, vital, successful, positive, and as engaged as before (that is before ageing “took place”). There is no stoic acceptance or resignation or revolt, only the conquering of all that represents senescence. We have elected to have it reframed, re-packaged and re-tooled to become an anti-senescence. We don’t retire, we re-career. We don’t age, we transcend. We don’t decline, we transform. We pay homage to Longevity as the Prince, but the ultimate loyalty is to Immortality as the King.

So, perhaps we have not quite reached the destination of human progression in relation to the ageing experience. Is there something more to be gained and achieved *beyond* optimal ageing, which could completely transcend the ageing experience altogether? The next inflection point [5.0] is labeled *Post Ageing*, reflecting an array of technologies and bioengineering that could forever alter the landscape of life’s journey. We propose that humanity is crossing the threshold into the next positive derivative.

2.7 [5.0] Post Ageing, or Ageing as an Artifact

The metaphysical traditions and reflections of Seneca and Marcus Aurelius have been turned on their head so that we now assume life can never be *long enough*. The only time we are wasting in our modern/postmodern condition is by not allowing or supporting the scientific and technological movement in being *fast enough* in the quest for a “post ageing” condition and the possibility of removing the “final constraint” of existence, death itself. We may think of death as

inevitable, but it has also become more of a nuisance than a fulcrum for existential significance and metaphysical reflection.

What is wanted now is the active investigation and implementation of strategies and tactics that will create a longer and longer interval between birth and death (see Greenbaum 2010)—with the ultimate goal of *post ageing*. Scientists and researchers differ on what they believe has brought us this far, to this level of longevity. However, we believe we will come to see this inflection point and resulting curvature as the prevailing theme within gerontology, and with it the socio-cultural expectation that science and technology continue to serve as the catalyst for optimal ageing transforming into post ageing. Many will see this a necessary transition, as an entitlement for simply being alive—so that having a life can be extended for as long as possible with minimal ageing, or ultimately with no manifestations of ageing at all.

But before you think this is all irrational exuberance on our part (and others who share our perspective), we want the reader to realize that we are aware of the many daunting issues that would counter any post ageing [5.0] scenario. We too can appreciate and understand the contra-scenarios suggested by others (see Peterson 1999) who see living in a world of increasing Methuselahs who are *beyond ageing* and would thus contribute to some hellish context, which would result in diminishing the quality of life for almost everyone else—*both economically and environmentally*. We do acknowledge that any notion of a “post ageing” could be seen as representing ageism, or as a titanic denial (see Gillick 2006), or discounting any possibilities of “shortevity” (Butler 2008), or ignoring the realities of an “ageing world” that sees demographic ageing and its attendant “problems and challenges” (representative of [2.0] and [3.0] themes) as a “slow burning fuse” (see special report from *The Economist*, June 27, 2009). However, while there is cause for considerable concern about many issues, as Schulz and Binstock (2006) have shown, with smart individual choices and a variety of sound policies and programs in place, the elderly could prosper and a demographic tsunami does not become inevitable (see also Hudson 2009). Nevertheless, we will cite just a few examples that illustrate substantial threats to sustaining *optimal ageing* as our current prevailing theme in gerontology and serve as possible barriers to the realization of *post ageing* as the prevailing theme in our future.

2.8 Perceived Barriers to Change

As previously mentioned, the “ageing as challenge” [3.0] theme has generated important research findings that investigate the demographic transitions from various levels—from the city block and census tract level to the other end of the scale at the global level (see Christensen et al. 2009; Crampton 2009; Uhlenberg 2009). This has led to some innovative re-conceptualizations of both the meaning (and definition) of *age* and *ageing* to better understand and compare people who live in periods and places where life expectancies differ by using the concept of

“prospective age” (Sanderson and Scherbov 2008). For example, Fonseca and colleagues (2012), in their dynamic stochastic model of health production, assume in their baseline that “agents suffering from chronic conditions have access to better care, and optimally choose to spend more on medical care”. This model, as expected, subsequently predicts that “life expectancy should continue to rise despite the noted increase in the prevalence of chronic conditions”. Yet the disparities in health, as evidenced from the data generated from various parts of the world, are of great concern. They indicate that not only is increased longevity not a given universal expectation but also that “shortevity” may indeed be the reality for many geographic areas across the globe, including some areas within the United States, due to a myriad of conditions that affect health status and the quality of life.

For example, in a recent study by the Robert Wood Johnson Foundation (2009), “Reaching America’s Health Potential Among Adults: A State-by-State Look at Adult Health,” it was found that almost half of all adults 25–74 in the United States reported being in less than very good health, and that the rate differed depending on one’s level of education. Adults who did not graduate from high school are more than two and half times as likely to be in less than very good health as college graduates. Those who graduated from high school but not college are nearly twice as likely to be in less than very good health as college graduates. This specific study revealed

substantial shortfalls in the health of American adults at the national level as well as in every state. Shortfalls in health are greatest among the most-disadvantaged adults, but even those considered middle class are less healthy than adults with greater social and economic advantages (p. 3).

These findings obviously highlight a major concern that *optimal ageing*—and for that matter any potential *post ageing* experience—may be limited to a *select group of people* who have “greater social and economic advantages”. Geographic patterns of disparities in mental health across the U.S. indicate significant variations in unmet mental health care needs (Moriarty et al. 2009). They also reveal spatial patterns of natural hazards mortality in the United States (Borden and Cutter 2008). Both of these patterns point to a greater need for preventive measures in emergency planning, a strengthening in the public health sector, and an educational awareness for all socio-economic groups—particularly those most vulnerable, including older adults without social capital. We have learned that a concentrated effort in this country to reduce fine-particulate air pollution has resulted in increased life expectancy (Pope et al. 2009), which is an “across-the-board” dividend for all age groups from the enforcement of environmental protections; yet as Ezzati et al. (2008) have reported in their study on trends in county mortality and cross-county mortality disparities, including the contributions of specific diseases to county level mortality trends, there was a steady *increase in mortality inequality* across US counties between 1983 and 1999 as a result of stagnation and even increase in mortality among the worst-off segment of the population. Female mortality increased in a large number of counties, primarily

because of chronic diseases related to smoking, overweight/obesity, and high blood pressure. So while *optimal ageing* [4.0] may be the current prevailing theme and predominant goal in gerontology, there are still serious social, cultural, public health, and environmental conditions that create and sustain disparities across the human life course (see also Frey et al. 2009). The investigation, intervention, and hoped for prevention of these disparities not only represents a continuation of the [3.0] and [2.0] curvatures of research, teaching, and practice as it relates to the ageing experience (see Institute of Medicine 2009, report, “Retooling for an Ageing America: Building the Health Care Workforce”), but is imperative so that these issues of inequalities by race, ethnicity, class, and geographic region are adequately addressed *before* we claim that optimal ageing is the normative experience for older adults (see Glymour et al. 2009). It is one thing to state that optimal ageing is the prevailing theme and predominant goal, but it is another to then state that it is the prevailing and expected *experience* for the majority of older adults in this country. Thus, while the optimization of ageing is the prevailing theme in gerontology and serves as the current lodestar for the longevity revolution that is underway, there is also the need to see it as the *expected* experience toward the latter part of the journey of life, for all citizens.

Another concern is the expectation from the public that to experience a triple-digit chronological age experience is practically an entitlement. With this regard, we need to heed the wisdom of Hall (2008) in an editorial in the *Archives of Internal Medicine*, who offered that,

Of course longevity is a Pyrrhic victory if those additional years are characterized by inexorable morbidity from chronic illness, frailty-associated disability, and increasingly lowered quality of life (p. 262).

In other words, the continued momentum for the optimization of ageing [4.0] and the subsequent emergence of the [5.0] post ageing curvature is very much dependent on the continuation of biological and medical research (see Michel et al. 2008; Norris et al. 2007). This research into the issues of senescence and the policy issues regarding health care for older Americans with multiple chronic conditions, is vital in continuing to compress morbidity and disability “into a smaller time frame near the end of life as predicted by Fries in the ‘compression of morbidity’ hypothesis” (Hall 2008, p. 263).

Yet, despite these potential gaps in the sustained momentum of *optimal ageing* [4.0] and the emergence of a *post ageing* [5.0] curvature, there is also evidence that the overall experience of “growing old in America” is summarized in this statement: *the older people get, the younger they feel* (Pew Research Center 2009). Interestingly, this landmark study found significant generational differences in the expectations and realities of the ageing experience. The share of younger and middle-aged adults who report expecting to encounter potential problems related to old age is much *higher* than the share of older adults who report actually experiencing them. Our point here is that the actual experiences of older adults is better than what most people realize, and that not only is there a compression of morbidity, there also appears to be a compression of the “feeling” of senescence

into the later years of life. This sense runs parallel to the notion that, in general, *ageing can be optimized* up to a point, which appears to be (according to this survey) approximately the age of 90. After that point, the expectations for any significant *quality of life* (optimal ageing) are significantly lowered.

But this issue of “living to a good old age”—whether that be 85, 90, or 115 years—represents a cogent segue into the next dimension of this book. That is, is there a realistic possibility that not only can age be optimized into the ninth decade (see Greenbaum 2010), but also for life to be extended, *and optimized*, beyond that? Can we, given the expansion and growth of bioengineering and technology, contemplate an aggressive life extension beyond the centenarian mark into the decades that follow? Can we expect that there will be dramatic successes in optimizing ageing with anti-ageing medicine? Or with nanotechnology? Or with biotechnology?

Is it even possible that we should contemplate—and thus pursue—the possibility of immortality in our lifetimes? Will we move beyond ageing itself into the realm of a *post ageing* curvature [5.0]?

2.9 Ending Ageing

We are suggesting that this change in direction, this new positive derivative (see Adler 2012) for the *investigation, understanding, and experiencing* of ageing will be driven, guided, and fueled by the intersect of the theory and research associated with biotechnology, computer technology, and molecular biology (Critser 2010; Liu et al. 2014; Stipp 2010; Weiner 2010). One could argue that these intersecting influences on the study of ageing may simply represent an extension of *optimal ageing* (thus, a [4.1] version), but we will argue that the goal in this new theme is simply *not* to optimize ageing, but rather to surpass it, to transcend it, *to end it*. The theme that will emerge is to move beyond ageing so that the cultural history, the existential landscape, and the humanistic interpretation thereof will all be dramatically transformed by what Nicholas Carr (2008) referred to as the “the big switch,” what Kirby referred to as “digimodernism,” what Pettman (2006) referred to as “tectonics”, and Joel Garreau (2005) referred to as a “radical evolution” in the human condition. Garreau (2005) proposes that these new technologies will offer both promise and peril in the enhancement of our minds, bodies, “and what it means to be human” (see also Mehlman 2009). We further propose that the *future of gerontology* will be in embracing this new inflection point [5.0]—and that the study of ageing will undergo a change in direction in guiding research, teaching, and practice. As we have stated before in this book, previous themes from other inflection points continue onward in gerontology as focal points for some scholars in the field, but each subsequent inflection point is understood in terms of becoming the primary guide for the field: its *raison d’être*. Thus, optimal ageing will continue as a theme, but we propose that it will yield to the next inflection point (and resulting curvature) that is now underway. We will

end this section with a few excerpts to set the stage for what we propose is the next inflection point in gerontology and the study of ageing—[5.0]: Post Ageing (ageing as an *artifact*). We propose that the initial signs and the sentinel activities are already in place, giving us a preliminary look into the new direction:

There will soon be as many artificial neurons on earth, in all of our ‘intelligent’ machines, as in all our ‘natural’ brains (120 billion neurons each). Are we not running the risk, after the elimination of dark matter, of an exhaustion of all grey matter, from the point when the stock of Artificial Intelligence exceeds the symbolic capital of the species, this latter ceasing to exist once it’s much more efficient artificial counterpart comes into being? Is there room on the earth for as many artificial as natural species, for as much computer-generated substance as organic matter, dead or alive, for as much Artificial Intelligence as natural intelligence? Is there room for the world and its double?

—Jean Baudrillard (2005). *The Intelligence of Evil or the Lucidity Pact*. Berg: New York. p. 193–194.

Two revolutions will affect the well-being of older Americans in the twenty-first century: the demographic revolution of an ageing society and the scientific revolution of molecular biology.

—Catherine Read, Robert C. Green, Michael Smyer (Eds.) (2008). *Ageing, Technology, and the Future*, The Johns Hopkins University Press. Baltimore, MD. p. xi.

It is possible that we are now entering a new Romantic Age, extending over the first half of the twenty-first century, with the technological billionaires of today playing roles similar to the enlightened aristocrats of the 18th century?... If this new Romantic Age is real, it will be centered on biology and computers, as the old one was centered on chemistry and poetry.

—Freeman Dyson (2009). When Science and Poetry Were Friends. *New York Review of Books*. August 13, 2009 (#13) [a review of the book: *The Age of Wonder: How the Romantic Generation Discovered the Beauty and Terror of Science* by Richard Holmes. Pantheon]

To the reader of 2009, some of these changes {biotechnology} may sound freaky or unsettling. But a century from now, they’ll seem as normal as pacemakers, hip replacements and in vitro fertilization have become today. Our descendants, like us, won’t just be technology’s judges. They’ll be its products too.

—William Saletan (2009). *You: The updated owner’s manual*. *New York Times Book Review*. Crossroads—A Series of Essays. August 2, 2009; p. 23.

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