

## **The meaning of age: cultures meet biology**

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**Times of our Lives: Growing Up, Growing Old**

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The complex temporal horizon that is presupposed when we want to ‘make sense of aging’, or explore the ‘times of our lives’ is in aging studies usually reduced to chronological time. This results in an overemphasis of chronological age that is supposed to represent what has been called ‘biological’ ‘functional’, or even ‘real’ age. One of the paradoxes we are confronted with is that all human beings are constantly aging, but at a certain moment in life they will be labeled ‘aged’ or ‘older’ (older than whom?) and life *beyond that point* is labeled ‘aging’. The expressions ‘aged’ and ‘aging’ are without any justification understood as references to a special and abnormal group, although these expressions actually indicate a universal and continuous process of living in time.

Persons are transformed into an ‘aging’, ‘aged’ or ‘older’ body at a particular chronological age without any evidence that important changes are taking place at that age, apart from this sudden cultural relocation. This relocation into the category of the ‘aged’ or ‘older’, which may – as we have seen above - already take place at the age of 40 years, depends on contexts and changes with them. This means that these practices are not grounded in a process of senescing which runs with an even pace, like a biological clock inside human beings.

The usual question that will be posed is whether the female menopause would not represent a clear sign of aging that is biologically grounded? There is some truth in this objection, but the specific phenomenon of the menopause can hardly explain the organization and interpretation of aging. In historical perspective, the societal organization of the life course has turned around the male head of the family; it would be surprising if the biological senescing of female reproductive capacities would suddenly serve to explain aging processes in general, at a moment when developments in reproductive technology make this transition less clear. The historical importance of the menopause is related to the onesided role of women as sexually attractive procreators but this biological transition can hardly be seen as a clear indication that creativity or

productivity in other areas has ceased or should be terminated. Even the role of the mother does not end cease when her children have grown up. There are no biological transitions that are not interpreted, influenced and co-constituted by persons in historical, cultural and social contexts.

### ***An overemphasis on chronological age***

The organization of aging processes has many complicated aspects; one of them is the way this organization is informed by statistical overviews and aging studies which are based on calendar age or chronological age. The vast majority of studies of aging begin by defining their population in terms of chronological age and present their results in diagrams where we find 'age' on one axis and on the other axis certain (social, economic, health etc.) characteristics that are shown to change with increasing 'age'. Such visualizations suggest that 'aging' processes can be clearly and unequivocally related to chronological age, although the presented data are mostly unexplained connections. This may lead to an accumulation of data, but in itself not to *explanatory* knowledge.

Human aging cannot be simply conceptualized as 'getting a higher chronological age'. This does not imply that chronological time is not an important tool for many purposes, nor that chronological age should be banned. For the purpose of understanding human aging, however, the relevance of chronological age is quite limited and its use often serves to *evade* the question what aging actually is. That aging is poorly indicated by higher chronological ages may sometimes be admitted but this does not appear to lead to much change in research practices.

Chronological time serves many purposes well but becomes a source of problems when it gets more credit than it deserves. There is an unreflected overemphasis on chronological time which leads to problems, as if the precision of chronological time would in itself give a solid foundation to the study of aging. The grand ambition of many studies of aging still seems to be to establish how the chronological or calendar age of persons determines the characteristics of aging persons or even of all humans. This would eventually result in a straightforward set of simple formulas in which scientific precision and practical use would be united. Almost fifty years ago this option was already stated with much self-assurance: "Chronological age is one of the most useful single items of information about an individual if not the *most* useful. From this knowledge alone an amazingly large number of general statements or predictions can be made about his anatomy, physiology, psychology and social behavior." (Birren 1959, p.8). Although the author of these lines has later expressed serious reservations about these claims, most institutions and organizations that finance research on aging and ask for data about 'the aged', 'elderly' or 'seniors' are still under their spell.

The scientific precision that is associated with chronological *time* has led to an uncritical acceptance of certain constructions of chronological *age*. We have reasons to doubt whether chronological age is really the "independent" or even "explanatory" variable much research assumes it to be, which leads to the question whether the age related definitions of 'aged' populations make sense.

The chronologization of aging – the assumption that chronological age determines characteristics of ‘aging’ persons - presupposes and reinforces an organization of the life course in which chronological time has become an important instrumental perspective (Kohli, 1986; Mayer & Müller 1986). Concepts as ‘age groups’, ‘age norms’ or ‘age grading’ presuppose chronological age which has become the typical instrument to regulate many transitions or entitlements. Concepts used in the discussions of ‘aging’ societies, such as ‘age-structure’, ‘birth cohorts’, ‘dependency-ratio’, ‘age-cost profile’, ‘age-associated diseases’ and all kinds of tables in which ages are associated with particular characteristics, pretending to give a quick informative overview, have become so general that their specific meaning is rarely questioned.

The problem with this chronologization of aging and the life course, is that this approach suggests that the exactness of measuring chronological *time* would also give exact results in terms of *age*-related properties. Although aging processes can be *measured* chronologically they are not regulated by chronological time. The step from chronological time to chronological age should be taken very cautiously if we want to take aging seriously, especially because chronological age is widely used in contemporary societies to regulate all kinds of processes and distinguish categories of people from others, with many consequences for the persons concerned.

To counteract these tendencies it is good to emphasize that the search for general aging characteristics that could clearly be related to chronological ages has produced many unclarified data that demonstrate the many differences in aging. Such counterevidence comes hardly as a surprise when we try to imagine persons with the same chronological age but living in very different circumstances. Think for instance of sixty year olds: one would expect enormous differences in terms of empirical data and personal experiences between, let us say, a contemporary poor African woman, a Japanese man or a homeless American of that age; not to mention sixty year olds in pre-historic times, in the Roman Empire, in classical China or among 19<sup>th</sup> century factory workers. The fact that in Western Europe the average life expectancy for males has practically doubled in the last 150 years (Oeppen & Vaupel, 2002) implies that chronological age cannot by itself explain aging processes.

Chronological projections of life expectancy and mortality rates also offer no explanation of aging processes. Although they may have a certain relevance at a governmental level, they tend to play an underreflected role in the institutionalized overemphasis on chronological age. They are major generalizations – and often extrapolations of trends reaching half a century or more into the future - across whole populations where different backgrounds, for instance, in education, labor markets, pension systems, housing, care arrangements, genetic codes, medical histories or available medical technology are likely to result in different life expectancies. Even a "cohort identity", established by contrast with other cohorts within the same historical context, remains to a high degree an abstract construction which has to tolerate a considerable amount of internal differentiation. Therefore, the analysis of inter-cohort differences has to be supplemented by an analysis of intra-cohort differences (Dannefer, 1984, 2003). Major longitudinal studies like the

Berlin Aging Study (Baltes & Mayer 1999) or the Seattle Longitudinal Study (Schaie, 1996) offer many examples of these differences (cf. also Daatland & Biggs, 2004).

Because 'aged' human beings with the same chronological age can show – even from a mere biological point of view – very different characteristics that may be relevant from the perspective of senescing, we can no longer assume that such processes develop in synchrony with chronological time. The many faces of aging between the extremes of a teenager suffering from *Progeria* and a vibrantly alive centenarian are like laughing mirrors in which the prejudiced citizen, scientist or bureaucrat who count the ages should be able to see their own distorted views.

### ***Intrinsic time and intrinsic malleability***

There have been some attempts to emancipate the study of aging from this superficial or 'extrinsic' chronological time and develop a more 'intrinsic' time perspective for aging processes. Such an intrinsic measure of senescing, at least in biological perspective, would require establishing clear indicators of 'normal' functioning for different biological 'ages'. Differently marked *ages* would ideally have to be synthesized in a continuum, as subsequent *phases* which would demonstrate a structured development away from a state of adult 'health' or 'normality'. It is doubtful whether all biological processes of human senescing can be adequately seen as *continuous* functional deterioration; some may just suddenly collapse. If we define senescing in terms of biological reliability theory (Gavrilov & Gavrilova, 2006) as a phenomenon of increasing risk of failure with the passage of time, the question returns in what way a statistical notion of increasing risk can lead to an understanding of senescing. Even if we would have reliable biomarkers of *age*, such as the aspartate racemization in the teeth which is used in forensics, this would not allow us to explain why a person who would have a 'biological age' of 62 years dies within a year, while another person with a 'biological age' of 82 years will live for another twenty years.

From a functional perspective, the complicated processes of human senescing in cells, tissues, organs or different parts of the brain may have their specific dynamical properties, but these usually include – to make it even more complicated – an openness to the environments inside and outside the human body, extending through personal lifestyles to ecological or social contexts. These processes must be discovered in their *specificity* and in the course of this discovery chronological time can only function as an instrument and should not be extended to represent human aging.

Tensions between intrinsicness, specific contexts and generality are also manifest in the experiments with fruit flies, nematodes, mice, rats, birds or monkeys, as their senescing processes are manipulated in laboratory contexts to investigate whether these processes can be generalized for use in understanding human senescing (usually, but inadequately, expressed as 'aging' cells etc. cf. Masoro & Austed, Eds., 2006.). Such experiments illustrate the *intrinsic malleability* of senescing processes (Kirkwood, 2005; Westendorp & Kirkwood 2007) which is also demonstrated in the large differences in life expectancy that we find when we compare several historical and contemporary countries or regions with each other. We know from demographic research on mortality rates and life

expectancy what impressive changes have taken place in the rich countries during the last 150 years; changes that cannot be explained by a major evolutionary shift or mutation in the bodily substrate of human life. Seen from an evolutionary perspective our bodies basically didn't change since the ancient Greeks, let alone since the 19<sup>th</sup> century. Yet the chances to live longer have changed impressively. Social and cultural contexts with their still advancing technological possibilities appear to become increasingly important and may necessitate a rethinking of evolutionary theory (Promislov et al. 2006).

***Age: Time working as a regular cause?***

Generalizations about people with a certain calendar age actually presuppose a *causal* concept of time: because time has worked for a certain duration in aged people, certain inevitable effects should be reckoned with. Moreover, the effects are assumed to develop steadily and universally according to the rhythm of the clock. However, such a causal concept of time in aging can never generate knowledge that might explain something of the differences that exist between human beings of the same age, nor allow us to understand that aging is a generalizing concept that is actually composed of many specific processes. While it is true that all causal relations are *also* temporal relations, or relations working "in time," it would be wrong to identify causality with time or to reduce the process of aging to the causal effects of time. The same Jim Birren whose high expectations of the predictive power of chronological age I quoted earlier, has later dealt with time extensively and articulated a similar view: "By itself, the collection of large amounts of data showing relationships with chronological age does not help, because chronological age is not the cause of anything. Chronological age is only an index, and unrelated sets of data show correlations with chronological age that have no intrinsic or causal relationship with each other." (Birren 1999, p. 460). Although *processes* (which, like all processes, can be measured in chronological time) will have their effects, time by itself does not have any effects. To assume this leads away from an understanding of aging although it may produce neat distributions of average characteristics of persons according to their 'ages'.

***Age: Time working as an isolated cause?***

It is impossible to study processes of aging as we would study many other processes because we cannot observe aging in an experimental group and compare the results with a control group which does not age. We are, like everything that exists around us, embedded in time and although (unlike stones or trees) we can be aware of this, we cannot step out of time or aging to observe it purely. Getting a clear understanding of time is not only hard because it is always difficult to distance ourselves from what we take for granted. Time slips away *because we are living in time* and cannot distance ourselves from it. This fundamental human condition leads to problems even in the most sophisticated research strategies.

The notorious Age-Period-Cohort problem (cf. Baars, 2007 b; Schaie, 2007) confronts us with questions about what we have actually established when we have found, for instance, that a high percentage of a group of 70-year olds suffers from obesity. Is this because of their age? Is it part of their specific 'cohort identity'? Is it because they grew up and older in a specific period in a specific society? Is it 'a little bit of all that'? Human aging cannot be studied in a *pure* form: even a scientifically controlled life in a laboratory

would be a life in a specific context which would co-constitute the processes that would take place. The epistemological riddle of this Age-Period-Cohort problem is another example of the *enveloping* and *elusive nature* of time: we cannot step out of time to pinpoint it clearly. We can never find aging in a *pure* form: aging can only be experienced or studied in specific situations which influence and co-constitute the processes that are involved.

### ***Behind the numbers of time***

Every step in studying or even discussing aging already involves metaphors, images or vague ideas about time, and they make often an implicit but major contribution behind the scene to the results of these studies or discussions. Moreover, as aging involves many different processes at different levels, all these processes must be precisely understood in their own temporal qualities, which requires adequate theories and concepts. Because time and aging cannot be perceived directly, the dynamics of aging cannot be grasped *without* concepts. More clarity about concepts of time should be a major priority for aging studies because only if we can specify more precisely the nature of different aging processes will it be possible to arrive at better explanations of the variations in aging among humans of the same chronological age, which are often hidden in average scores.

This specific chronological approach to time has many important limitations but is nevertheless quite dominant as its measurements and age-related generalizations seem to offer a superficial clarity that can be applied in policies regarding aging and the lifecourse. Through such applications, the interrelated complex of gerontological research and age-related policies further strengthen the chronologization of the *life course*. Not only are contexts co-constitutive for aging, this also holds for *research* on aging (Baars 1991). In all instances where age-related generalisations are presented without further questioning their suggested meanings, conventional prejudice about aging and the aged are reproduced or new ones introduced. That such generalizations are unfounded does not imply that they are without any effect; even unfounded statements about categories of people with certain ages can be implemented in policies regarding, for instance, specific forms of care or housing for 'the aged' and thus contribute to a reality which forces aging people to fit in, because they have no other options than those that were organized for them. Consequently, later research can affirm the earlier generalizations, not because they grasped the realities of aging, but because the researchers have played their uncritical role in co-constituting the realities of aging. In such cases, research on aging runs the risk of becoming an uncritical instrument catering to all kinds of organizational contexts, in which aging people are mainly relevant as the subjects of planning procedures and average estimates, even if the objective is to help and support them.

Chronological time appears to be indispensable, also for research on aging processes as it can be used to measure and compare *durations*, but this covers only a part of the complex realities of aging. As far as aging studies limit their approaches to chronological age, because of its readiness to be used in generalizations and planning procedures involving large numbers of people, they tend to neglect the meaning that comes from non-bureaucratic agents. But the one-sided emphasis on chronological time tends to neglect not only personal meaning but *all* meaningful dimensions of aging. The abstract nature of

chronological time is increasingly pervading aging processes and voiding them of meaning as chronological *age* and chronological *duration* are used as main instruments in the organization of the life course (Leisering & Leibfried, 1999). To understand human aging this can hardly be satisfactory.

To avoid any misunderstanding: these arguments are no denial of the finitude of human life, nor do they deny that "aging" can be observed in any human being, if we compare characteristics of the same person over a relatively long period of time. The question is *how* to approach these themes to get a *better* understanding. To achieve this it is essential to understand the specific significance and relativity of chronological time and its unfounded seductions in relation to aging.

Confronted with the enormous quantity of unexplained empirical data gathered in the last decade, demonstrating the differences among 'the aged', Settersten (2005, 2006) has given an overview of what gerontologists say makes 'old people' different from other adults. He sums up: losses in physical and cognitive capacities; increased likelihood of failing health, and a centrality of health concerns in self-definitions; shorter time horizon and a more pressing need to come to terms with one's mortality; personal loss, bereavement and more restricted social networks; being perceived and treated by others in ageist ways; a greater acceptance of things that cannot be controlled *in* life, coupled with a greater fear of losing control *over* one's life.

Rather than being typical of 'old people', these are important issues that humans can be confronted with as they are aging. There are different forms of 'increased likelihood' of these losses, for instance according to the socio-economic contexts of the persons concerned, but they are in an essentially *uncertain* way part of finite human lives. Themes such as 'a shorter time horizon' and 'the need to come to terms with one's mortality' presuppose a more personal involvement in temporal living than can be understood from chronological time.

The seduction of chronological measurement is that it could represent directly and exactly the natural (physical and biological) rhythms that are constitutive of aging as this remains a process that is 'bodily driven', but the complexity, variability and intrinsic openness of these rhythms cannot be grasped by establishing chronological age. The biological processes or rhythms co-constitute the materiality or corporeality of human aging in interaction with physical, social and cultural contexts. Especially in premodern times, natural rhythms have been seen as the foundation of the 'seasons', 'phases' or 'ages' of human lives (Burrow, 1986; Sears 1986). Such ideas derive their meaning, however, from the socio-cultural narratives which articulate how these natural rhythms should be seen. Such meaningful content has been stripped from chronological time. Characteristic of this form of time is that it contains only instrumental properties of measurement. Besides the difference between precise or imprecise measurement it contains no meaning of itself; all meaning of chronological time has been ascribed to it from the other two dimensions.

Behind the chronologization of aging there is a chronologization of time that is one of the aspects of contemporary culture which tends to occlude the richness of experiences and reflections of time we can still find in many traditions. Let me finally distinguish three approaches to (living in) time which allow more elaboration of personal experiences of aging as living in time.

A first has been initially developed by the 5<sup>th</sup> century philosopher Augustine and had a major influence on contemporary philosophers as Husserl, Heidegger and Merleau-Ponty (Augustine, 1961; Ricoeur, 1988; Baars, 2007b). This approach offers opportunities to understand that we experience a *present*, in which we read a text, speak with somebody or listen to music. Such a 'broad' experience of the present gets completely lost in the blur of rapidly rolling digital numbers. Moreover, although the duration of each event or experience could be measured, such measurements are completely irrelevant for the intensity of the experience. Even short moments, in which 'time seems to stand still', may be unforgettable and life changing.

This experience of the present is inherently connected with a remembrance of the *past* and an anticipation of the *future*. This opens a different perspective on time as becomes clear when we experience that something which happened 'a long time ago' (from a chronological perspective) can be vividly remembered as if it happened yesterday; whereas something (for instance a personal relationship) that was important a year ago can be experienced as way back in the past. Experiences of the past, present and the future do not follow the orderly arrangements of chronological time. This does not exclude the possibility to locate the situations and experiences in chronological time, but this occurs in another perspective and consequently we can wonder about the differences between them.

Memory as presence of the past does not just comprise what or how we *want to* remember. We only evoke a part of our memories consciously; a much greater part evokes us or keeps asking our attention, although we might prefer to forget it. In this context, Hannah Arendt (1958) referred not only to memory as a typically interhuman characteristic, but also to forgiveness. Resentment or bitterness can be a destructive form of what Augustine called the presence of the past in which painful events remain as vivid as if they took place only recently and no time seems to have passed since. Ultimately non-forgiving obstructs one's openness to the present and to the future so that the past cannot be a source of inspiration for the future.

We may be able to understand our lives backwards, but must, as Kierkegaard (1987) remarked, live forward and are inevitably confronted with uncertainty about a *finite* future; an uncertainty which opens, however, the opportunity to live one's life. That there are nowadays no generally accepted structures of meaning in aging can be seen as a loss but the obligation to follow fixed patterns or phases of life might weigh heavily and frustrate creativity. The awareness that our confrontations with the contingencies of life are not based on unquestioned structures of meaning, makes life more insecure but also potentially richer. We may not know how to live with fundamental uncertainty, but cannot live well without it either.

A second temporal concept is even older than Augustine's path breaking work and can already be found in Hesiod (2006). This is the idea of '*kairos*' which plays an important

role in early Greek Pythagorean philosophy and in Stoic thought: the idea that the present offers or denies a particular opportunity. The idea has clearly pragmatic origins in experiences of sailing, fishing and agriculture. For the Stoics it was important to live according to what opportunities were given (*ευκαιρια*) or denied (*ακαιρια*) by the gods or the course of nature. This concept of time is still presupposed when we are thinking about when the 'time is ripe' to do or say something and when not. We know this from everyday expressions such as: "If you want to do it, do it now"; 'It's now or never'; "Now is not the right time". This sensitivity for the right moment cannot be derived from chronological time. The idea of *kairos* has in the past often been interpreted in relation to life's phases or 'seasons', which may be adequate if it does not unnecessarily limit the opportunities of persons. It is more generally relevant for important situations in life.

Finally, human aging is always interpreted through *socio-cultural narratives* that are interrelated with articulations of personal experiences. Moreover, socio-cultural narratives are not just 'stories', but are connected in complicated ways to structural contexts which co-constitute aging processes. Socio-cultural narratives about aging that articulate when 'aging' is supposed to begin, what its challenges, qualities and drawbacks are; how the 'aged' should be approached; whether they are respected or not; what counts as 'young', 'normal', 'old', 'very old', 'innocent', 'experienced', 'wise', etc.. All this depends on interpretations of what it means to 'age' and these interpretations are transmitted and renewed through socio-cultural narratives. These narratives are not just 'stories': they carry structural weight in the way markets are organized, political power is exercised, income and lifechances are distributed, etc.

Human aging is, inevitably, interpreted and connected with narratives about the value, glory, misery, happiness and finitude of human life. When aging is only approached from a chronological perspective the necessarily abstract character of chronological time discussed above will empty human aging from the meaningful contents that are essential to understand it. Once time perspectives have been emptied of all content, commercial images tend to fill up the void. Many contemporary narratives about aging that are based on an idealization of youth, resulting in ideas of aging as 'staying young' or submitting aging to standards of 'success' or 'productivity' can hardly be seen as adequate for an inspiring and supportive culture of aging where people can continue to participate actively but where limitations and loss are *dignified* and not seen as a personal failure.