

**Releasing the Potentials of
Senior Scholars and Scientists
Emerging Productivity in a New Era**

Henk A. Becker and Johannes J.F. Schroots

Editors

ERGO
European Research Institute on Health and Aging
2008

© Stichting ERGO, 2008. All rights reserved.

ERGO | European Research Institute on Health and Aging
Amsterdam, The Netherlands
Request for copies: <http://www.igitur.nl>

Content

<i>Preface</i>	5
<i>Contributors</i>	7
Prologue	
Renaissance of Senior Researchers in the European Research Area <i>Johannes J.F. Schroots & Henk A. Becker</i>	11
Part I: Potentials and Productivity	
The Hidden Potentials of Senior Researchers <i>Johannes J.F. Schroots</i>	25
Generations in European Science and Society <i>Henk A. Becker</i>	51
Active Aging: Mandatory Retirement as Barrier <i>Rocio Fernandez-Ballesteros & Juan Diez-Nicolas</i>	81
Changes in Academia: Retirement, Productivity, and New Roles <i>Janette C. Brown, James E. Birren & Robert R. Scales</i>	109
Part II: Role Models	
Humanities	
Autobiographic Survey of Career <i>Hermann von der Dunk</i>	129
A Life far more Light than Dark <i>Piet F.M. Fontaine</i>	139
From Discovery to Justification: In Search of a Scientific Approach to Ethics and Theology <i>Harry M. Kuitert</i>	149
More than Fifty Years of Medieval Studies <i>Johanna M. van Winter</i>	159

Natural and Life Sciences	
Routine Medicine is only for Those with a Routine Mind <i>Evert J. Dorhout Mees</i>	167
“Crossing Borders...” <i>Marian C. Horzinek</i>	177
The Sun, Giant Stars and Climate <i>Cornelis de Jager</i>	187
Heart of the Wood Collection <i>Alberta M.W. Mennega</i>	197
Behavioral and Social Sciences	
Science and Management: Search for a Proper Balance <i>Pieter J.D. Drenth</i>	205
My Life with Sociology <i>Ivan Gadourek</i>	217
Becoming a Geographer <i>Gerard A. Hoekveld</i>	229
Realism and Idealism in Political Science <i>Andries Hoogerwerf</i>	239
Epilogue	
The EU Strategy for the Human Resources in Science and Technology: Career and Mobility in the European Research Area	251
About the Editors	
Fascinated by Progress in Sociology and Social Methodology <i>Henk A. Becker</i>	261
Late Bloomer <i>Johannes J.F. Schroots</i>	271

Preface

Since 2000, the European Union has followed the Lisbon strategy to transform Europe into a leading knowledge-based economy. Major efforts have been exerted to realize the European Research Area (ERA). In the context of the Lisbon agenda and the creation of the ERA, a human resource policy has been debated and policy initiatives have been developed to improve the market for researchers.

Europe needs researchers, but the impending retirement of a generation of researchers is aggravated by young people's declining interest in scientific careers. This situation compels us to reflect on senior scholars and scientists' potential contributions. Mandatory retirement is a major obstacle to the release of these researchers' potential. In view of the aging populations in Europe, it is about time we broaden our knowledge of this potential pool of researchers who wish to carry out research and disseminate their knowledge of and expertise in ERA after their retirement.

This book focuses on the renaissance and emerging productivity of senior researchers in a new ERA. It exposes mistaken ideas about older scholars and scientists, as well as presenting their research potential and how this can be released. The book also includes a series of career autobiographies of academics who continued working after mandatory retirement and who may serve as role models for future generations.

This volume is partly based on a 2003 mini-symposium on the emeriti policy of Utrecht University, organized by Henk A. Becker, and partly on the activities of the European Research Institute on Health and Aging (ERGO), of which Johannes J.F. Schroots is the director. ERGO's aim is to disseminate knowledge on and expertise in healthy aging to the member states of the European Union and other interested countries. The present book is the final product of Becker and Schroots's efforts to advocate the necessity of an EU policy on senior researchers.

This book is highly relevant to senior academics, coordinators of research units, deans of faculties and university board and staff members. For researchers and policy makers, it expounds (a) the hidden resources and life-course dynamics of academics, particularly the lifespan development of their physical and mental abilities; (b) the consequences of the pattern of generations in science; (c) the negative effects of mandatory retirement on active aging and the availability of scien-

tific personnel; (d) senior scholars and scientists' various role models, and (e) the research activities needed to release senior scholars and scientists' potential in the new ERA.

It is our pleasure to acknowledge the support of Utrecht University and the ERGO Foundation, which provided Henk A. Becker and Johannes J.F. Schroots with the opportunity to serve as editors of this book. We are also grateful for the encouragement of the EC Directorate-General for Research, who helped us to bring the Epilogue to a favorable conclusion. Finally, the editors would like to thank the European Federation of National Academies of Sciences and Humanities (ALLEA) for their organizational and administrative support.

The Editors

Contributors

Henk A. Becker

Faculty of Social Sciences, Utrecht University, The Netherlands

James E. Birren

Andrus Gerontology Center, University of Southern California, Los Angeles, USA

Janette C. Brown

Emeriti Center, University of Southern California, Los Angeles, USA

Juan Diez-Nicolas

Department of Sociology, Complutense University of Madrid, Spain

Evert J. Dorhout Mees

Department of Internal Medicine, Utrecht University, The Netherlands

Pieter J.D. Drenth

Faculty of Psychology and Pedagogics, Free University Amsterdam, The Netherlands

Hermann W. von der Dunk

Department of Modern Cultural History, Utrecht University, The Netherlands

Rocío Fernández-Ballesteros

Department of Psychobiology and Health, Autonomía University of Madrid, Spain

Piet F. M. Fontaine

Department of History, Utrecht University, The Netherlands.

Ivan Gadourek

Department of Sociology, Groningen University, The Netherlands

Gerard A. Hoekveld

Department of Regional Geography, Utrecht University, The Netherlands

Andries Hoogerwerf

Department of Public Administration, University of Twente, The Netherlands

Marian C. Horzinek

Department of Veterinary Virology, Utrecht University, The Netherlands

Cornelis de Jager

Department of Space Research, Utrecht University, The Netherlands

Harry M. Kuitert

Faculty of Theology, Free University Amsterdam, The Netherlands

Alberta M.W. Mennega

Department of Wood Anatomy, Utrecht University, The Netherlands

Robert R. Scales

Emeriti Center College, University of Southern California, Los Angeles, USA

Johannes J.F. Schroots

ERGO Foundation; Department of Psychology, Free University Amsterdam, The Netherlands

Johanna M. van Winter

Department of Medieval History, Utrecht University, The Netherlands

Prologue

Renaissance of Senior Researchers in the European Research Area

Johannes JF Schroots and Henk A. Becker

Europe needs researchers. Since the turn of the century it has become clear that knowledge production and knowledge transfer are of paramount importance for Europe's ability to meet its economic, social and cultural challenges and to achieve a sustainable knowledge society. As early as 1977, Danzin argued that Europe may well slip towards underdevelopment. He was not without optimism, however,

“Hope comes from the heritage and the forces of change that the future requires. Moral and cultural values are still alive and form the background of challenge; even if they are discussed, their questioning may be viewed as the sign of an effort to adapt, a move towards the renewal of progress, towards a new Renaissance. The world has never had such a great need of a social laboratory to overcome the difficulties caused by the very excesses of human success. Europe is under pressure and appears predestined to become the melting pot of a resurgence”.

Today this vision of a *new Renaissance* has not lost its challenge. Danzin pointed out that Europe's almost sole wealth is the quality of its inhabitants, who are anchored in a culture. Bertrand, Michalski and Pench (2000) continued the discussion in their scenario study *Creative Societies* and stated that Europe may open the way to a new Renaissance, if it could command enough economic and intellectual power and count on enough allies to realize this mission. The following are fascinating questions: Does Europe have enough hidden intellectual and moral resources to enforce a new renaissance? How can we take stock of these hidden resources, and how should we mobilize these potentials?

European Research Area

Since 2000, the European Research Area (ERA) has become the mantra of European and member state research policies. ERA's underlying idea was not new, however (André, 2006). The European Research

Area is a rediscovery of a concept dating back to the 1970s. It was revived several times, but was never actually implemented. ERA, as perceived since the 1970s, envisages coordinating national research activities and policies, and creating an internal market for research with researchers, ideas and technology circulating freely. However, it was only in 2000 that the concept was put on the political agenda and gained visibility. The European Commission's communication *Towards a European Research Area* generated the necessary momentum, while the political context played a major role, thus creating a threefold awareness: firstly, of the major challenges facing Europe; secondly, of the potential of science and technology (S&T) to deliver solutions for these challenges; and, finally, of the weaknesses of the European S&T system, which needed to be overcome to realize this potential. In March 2000, the Lisbon European Council recognized ERA as an EU objective and paved the way for its implementation (EC Communication, 2000).

Despite the optimism at the Lisbon European Council meeting in 2000, economic growth was slow, and Europe's competitive position was feeble. Not enough jobs were being created, and too few of them were highly skilled. Substantial regional diversity and inequality characterized the European Union (EU), despite the general perception of a high quality of life compared to many other world regions (EC Green Paper, 2007).

This diagnosis of Europe's condition was complemented by another belief. Around the turn of the century, a new policy context had emerged, which was based on the conviction that the key to facing these challenges consisted of making the transition to a knowledge-based economy. This transition would specifically occur through more and better investment in the knowledge triangle of research, education and innovation. Society had high expectations of research as more and better research and development (R&D) appeared capable of improving economic performance, promoting employment, improving public health, tackling demographic, cohesion and environmental challenges, and so on (EC Green Paper, 2007). However, currently the aging of the European population and the expected shortage of human resources in academia might be serious obstacles to realizing the new renaissance.

Aging in Europe

The European population has undergone important changes during the past decades, with an increase in life expectancy and a decrease in birth rate causing a significant increase in the number of older people. The effects of this demographic transition towards a much older population will be felt at the middle of the century. As the baby boom generation moves through the age pyramid, older cohorts will be more numerous than younger ones. The total EU-25 population grew from 350 million in 1950 to 418 million in 1975 and 450 million in 2000. In 2025, the population is expected to grow to 470 million persons, but is thereafter likely to decrease to 449 million in 2050. In other words, it will take two more decades before aging starts to have a negative effect on the absolute size of the EU-25 population. On the other hand, the effects of aging on age composition come at a much earlier stage and are therefore of major concern for the European Union. The first effects of a greying society are already being felt in the field of social services, employment and health. The demographic variable is destined to be an essential factor in guiding policy and practice throughout Europe.

Aware of the challenge that the knowledge society will face due to the aging population, the EU is increasingly guided by the understanding that older persons can make social and economic contributions. The aging population should therefore be considered an opportunity rather than a burden for society. This insight was already fostered by two EC Framework studies, *EuGeron* and *EXCELSA*, in the 1990s.

EuGeron, which is an acronym for the EC's concerted action on gerontology was initiated by ERGO (the European Research Institute on Health and Aging) in the Netherlands. The final *EuGeron* book, *Aging in Europe*, was stimulated by a desire to make a modest inventory of aging-related research in the European Union and to present the *EuGeron* project, whose main task was to prepare a cross-European study of aging, health and competence in successive steps (Schroots, Fernandez-Ballesteros & Rudinger, 1999). The central research question of the planned study - designed as a cross-sectional study with a longitudinal perspective - concerned the relation between age and competence, and the extent to which intervening factors – such as sociodemographic, environmental, psychosocial, biophysiologic and lifestyle factors – are related to the differences observed with age. In order to answer the central research question, a preliminary outline was devel-

oped for a field survey – in the form of a home visit – of a representative community-based sample (aged 30-85) per participating European country. Eventually, a draft European Survey on Aging Protocol (ESAP) was developed, which essentially includes three types of variables: biobehavioral, health and psychosocial variables.

The EuGeron project was followed by the multidisciplinary EC Framework study *EXCELSA*, an acronym for Cross European Longitudinal Study of Aging (Fernandez-Ballesteros et al., 2004). *EXCELSA* aimed at developing a European knowledge database on contributions to the study of competence and its biobehavioral, psycho-social and socio-environmental determinants across the life span. To this end, the draft ESAP protocol was translated, adapted to and evaluated for a set of seven European countries by means of a cross-sectional pilot study, the first step of a broad longitudinal study. The results reported so far are consistent with other cross-sectional and longitudinal studies on aging. The main findings can be summarized as follows (Fernandez-Ballesteros et al., 2007):

“... four latent variables have a direct effect on objective competence (measured by digit symbol and digit span, peak-flow and tapping); age (years); SES (education and income); subjective capacity and health (subject’s appraisal of his/her fitness, strength, flexibility, endurance, and speed, and subjective health); and lifestyle (physical activity, smoking, and alcohol consumption). Subjective capacity and health are a buffer that mediates the influence of the social network (relationships with family and friends, and caregiving), and of internal control and illness (chronic health problems and sleep disturbances)” (p. 210).

In brief, the *EXCELSA* pilot test revealed four main domains of research: physical and cognitive fitness of individuals, health and behavioral lifestyles, internal control, and social functioning. It should be noted, however, that both EuGeron and *EXCELSA* were designed as population studies, which do not allow statements about subgroups of individuals, like senior researchers. By way of illustration, we will therefore briefly present some data on the academic workforce, as well as the results of a limited case study.

Aging in academia

In *Science, Technology and Innovation in Europe*, Eurostat (2008) presents some data on the number of researchers in the EU. This study defines 'researchers' as professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems, and in the management of the involved projects. In 2005, the EU-27 had a total of 1,277,090 researchers (28.3% women) with an annual growth (FTEs) of 2.9% . By way of comparison, in 2004, Germany and France had a total of 271,000 and 200,000, respectively. Outside the EU, competitors report larger numbers, *e.g.*, Russia (2005) 465,000 FTE; China (2003) 862,000 FTE; and Japan (2003) 675,000 FTE.

So far, Eurostat has only registered researchers who are younger than 65 – the mandatory retirement age in most European countries; consequently, there are no EU statistics available on retired researchers. Obviously, the study of this subgroup is still in its infancy. However, a growing number of researchers continue to work after formal retirement, either full-time or part-time. This trend will continue in the next decades. For example, if we look at the population in general, in the US (2003) 18,5% of those aged between 65 and 74 continue to work either full-time or part-time. In the EU (2003) 5,6% of those aged 65-74 work full-time or part-time (EC Green Book, 2005). We expect EU researchers aged 65-74 to follow the developments in the general population.

The lack of hard data in respect of senior and retired researchers does not mean that there is no soft information on this academic group. Becker and Verhoeven (2001) conducted a case study on aging in academia, the *Utrecht Emeriti Study*, consisting of a survey and a number of group discussions. The main findings can be summarized as follows:

- At Utrecht University, many professors continue to work after reaching the retirement age of 65. Of the 200 professors who retired between 1995-2000, about 100 continued to teach and do research for approximately twenty hours per week after their retirement.

- A majority of professors stated that they preferred to be invited to continue their work in science at Utrecht University. They wanted to avoid their successors and/or former colleagues and staff regretting their continued activities and frequenting of the institute. If they were not invited to stay, they went to another university or research institute, or left science altogether. In the latter case, they turned to volunteer work, or simply concentrated on their hobbies.

- In the survey, the professors were asked to provide an overview of what they had published in the ten years prior to their formal retirement. The number of scientific publications prior to retirement proved to be a valid predictor of what the professors published in science in the five years after their retirement.
- A majority of the interviewed professors had systematically prepared for their retirement after reaching the age of 55. They had, for instance, arranged for financial resources for the research they would do after retirement. Some of these professors had undertaken commercial research or consultancy after retirement to generate funds for their projects.
- Some of the respondents had migrated to another country and continued their work in science elsewhere, especially, for instance, if the mandatory retirement age in the other country was higher than 65.

Utrecht University values the contribution of its emeritus professors and, partly due to the above findings, has set up a special *emeriti policy* to facilitate their work. As soon as a professor approaches mandatory retirement at 65, he or she has a meeting with the dean of the faculty. At this meeting, they discuss possible ways of cooperation and, if both parties agree, they can sign an arrangement for a period of up to two years. Examples of such arrangements are:

- The provision of a number of basic facilities (library, email);
- A 'hospitality arrangement' that provides more elaborate facilities, such as a workspace at the university;
- A specific assignment, such as a series of lectures, or a research project;
- A longer-term arrangement for a wider set of duties. The professor retains his terms of employment, but does not receive a salary;
- A temporary contract for full-time employment: the emeritus receives a salary.

The working emeritus professors at Utrecht University have set up a network that meets three to four times per year. On the agenda are topics such as the contribution of senior scientists. Compared to younger scientists, senior scientists are often at an advantage when scientific problems have to be solved that require the designing and testing of hypotheses belonging to areas in science whose potential relationships have not yet been explored. The members of the social network also discuss their experiences with activities in their prolonged scientific careers. These activities include:

- Undertaking research

- Supervising doctoral dissertations
- Lecturing in the Netherlands and elsewhere
- Lecturing at the University of the Third Age
- Consultancy
- Governance
- Providing commercial firms, government agencies and Non-Governmental Organizations with task force facilities

Utrecht University has appointed a coordinator for its emeriti policy and actively seeks cooperation with other universities to exchange ideas about this policy. In the near future, the emeriti policy will have to be broadened into a policy directed at all of the University's retired scholars and scientists.

Releasing potentials

Europe needs researchers. The European Union does indeed provide many incentives in an effort to enlarge its pool of researchers. For several reasons, however, a huge reservoir of academic manpower has escaped notice: *the hidden resources of senior scholars and scientists*. This book focuses on their renaissance and emerging productivity in a new ERA; it shows what their research potentials are and how to release them. The book is divided into two parts: 'Potentials and productivity' (four chapters) and 'Role models' (twelve contributions), followed by an Epilogue that summarizes the EU strategy for the human resources in science and technology.

Potentials and productivity

The first part of the book explores the demographic and social context of senior researchers, their adjustment to academic retirement, and their late life potentials and productivity in science. The chapter on *The Hidden Resources of Senior Researchers* by Schroot starts with the critical issue of age discrimination in science and society. The author demonstrates that mandatory retirement is a dated practice that restrains the research potential of senior researchers. He systematically discusses the health, physical, mental and social potentials of older people and of senior researchers in particular. Based on a computer simulation with the Janus model of life-course dynamics, he shows that older scholars

and scientists' productivity is not merely determined by their focused experiences as juniors in science. Their research potential later in life is also enriched by socio-cultural and multidisciplinary learning experiences, which give them the advantage of contextual problem solving and a broader view of scientific complexity. The chapter is concluded with a discussion of the significance of the release of senior researcher's resources for the production and transfer of sustainable knowledge in the new European Research Area.

Becker's chapter on *Generations in European Science and Society* explores the pattern of generations, focusing on hidden resources. Contemporary sociological research on life courses and generations is based on methods developed in epidemiology. Discontinuous macro-change is analyzed with regard to its effects on human behavior in cohorts and on institutions. Three generations in science live side by side in our times, confronting its members with contradictory values and norms. This pattern of generations has significant consequences for universities and other organizations in the system of science, particularly with regard to evaluations and accreditations. In society at large, a pattern of generations leads to diverging prescriptions regarding contemporaries' behavior.

The chapter *Active Aging: Mandatory Retirement as a Barrier* by Fernández-Ballesteros and Díez-Nicolás focuses on the preponderant negative impact of mandatory retirement on active aging, and discusses the rationale for its abolition in Europe's labor market legislation. An aging world requires a set of policies to increase health, security and participation throughout the lifespan and in old age. In this context, the authors quote the EC Commissioner for Employment, Social Affairs and Equal Opportunities who states that the European approach to reform is an 'active aging policy' that aims at encouraging older workers to stay in the labor market for a substantially longer period. Several reasons can be adduced for the abolition of mandatory retirement, varying from human rights (age discrimination), demographic and economic reasons (flexible retirement does have economic benefits) to psychological and social reasons (abolition will result in a positive image of the elderly).

The chapter *Changes in Academia: Retirement, Productivity and New Roles* by Brown, Birren and Scales discusses several issues in relation to academic retirement. Since there are large individual differences at any age, there is a need to evaluate the working capacity and

talents of individuals. Societies can use the productivity of persons of all ages, therefore flexibility should be introduced in the rules and regulations governing retirement rather than having a fixed retirement age. The archaic notion of a fixed retirement is particularly pertinent to academic personnel, since well-educated people have been shown to have longer life expectancies than the general population. Flexible retirement rules would permit institutions to take advantage of the experience and productivity of older faculty who wish to pursue their career work. This requires modifying pension systems for the continuing accumulation of benefits for years of service. The chapter ends with an overview of the activities of the first international Association of Retirement Organizations in Higher Education.

Role models

The second part of the book presents the career autobiographies of twelve senior scholars and scientists from the Netherlands who are role models of senior faculty who continued working after mandatory retirement. In society, the roles of scholars and scientists have been widely institutionalized in a relatively stereotypical way. In contrast to these stereotypes, researchers continuing their work in science after formal retirement have not yet acquired a social role known to the general public. We expect the collection of role models from the sciences and humanities to contribute to senior researchers' public acceptance and reputation. The implicit question, however, is why we introduce these role models in the unorthodox form of career autobiographies. The answer is revealing in its simplicity.

It is almost impossible to obtain a detailed view of the emergent workforce of retired researchers and their institutions without consulting those who contributed to its development. In this book, we have urged those scientific pioneers who continued working after retirement to describe the development of their careers so that we might gain an understanding of the conditions and influences that stimulated their interest and which supported or resisted their ideas and efforts. In addition to the purely intellectual account of their careers, the authors have been encouraged to provide details of their lives that characterize their career pathways between pitfalls and good fortune, depressions and wars, antipathies and attractions, and influential stereotypes and social lag effects (Birren & Schroots, 2000).

Autobiographies can reveal how chance and accidents help determine the flow of events and choices, as do the shifting balance of resources and the interests of institutional administrators, family members, and peers. Autobiographies reveal different career paths to contributions and achievements and, perhaps, to lingering disappointments. Without an understanding of personal career pressures and attractions, it would be difficult to grasp how to release the potentials of senior scholars and scientists.

The selected authors were asked to emphasize the growth of their career before and after retirement and to present an account of their scientific activities as influenced by events, conditions, and personalities. The selection of authors presented several challenges. Choices had to be made between academic institutions and subfields of interest. As the interest in the subject has only recently developed, there are relatively few first generation researchers who continued working. In order to be regarded as a pioneer, these researchers had to be older than 65. The editors were then faced with the task of inviting authors from a wide range of science. A balance was sought between pioneers representing subfields such as the humanities, natural and life sciences, as well as the behavioral and social sciences. Furthermore, the development of women's careers had to be represented along with those of men. In view of the diverse retirement legislation in Europe, it was decided that the authors should have primarily been affiliated with Dutch academic institutions before their retirement.

The reader will notice the overrepresentation of career histories from Utrecht University. The selection bias is not the result of an explicit strategy, but – evidently - the editors' familiarity with the field played an important part in the final selection (Becker & Verhoeven, 2001). The editors regret not being able to include more scholars and scientists and wish to express the view that inclusion in the volume does not represent an implicit evaluation of career contributions.

New Renaissance

In the introduction, we discussed the vision of a new Renaissance in Europe and the idea that such a renaissance would have to be based on a revival in the area of arts, sciences and humanities. A revival in this area would require the release of hidden resources in the European Un-

ion's member states. This book reveals and releases the potentials of senior scholars and scientists, but not in a vacuum. In many European countries, social changes are taking place that form a breeding ground for the new European Research Area. In *The Rise of the Creative Class*, Richard Florida (2002) broadly outlines the development of this new renaissance:

"The number of people doing creative work has increased vastly over the past century and especially over the past two decades. This book charts the growth in people who are paid principally to do creative work for living. These are the scientists, engineers, artists, musicians, designers and knowledge-based professionals, whom collectively I call the "Creative Class". In 1900, fewer than 10 percent of American workers were doing creative work – most worked on farms or in factories (...) by the turn of the new century, the Creative Class included nearly a third of the workforce. This is not just true for the United States. The ranks of the Creative Class have reached 25 to 30 percent of the workforces across European countries"

The rise of the creative class is an ongoing process, as the renaissance of senior researchers will be. Both North America and Europe are experiencing demographic change and the rise of creative seniors from the ranks of the baby-boomer and later generations. It is evident that the renaissance of senior scholars and scientists will provide the European Union with a fine opportunity to meet the challenges of the new European Research Area.

References

- André, M. (2006). European Research Area (ERA): History of a concept. *J. European Integration History*, 12, 131-150.
- Becker & Verhoeven (2001). *Utrechtse emeriti, een sociologische verkenning* [Utrecht Emeriti Study]. Utrecht: Utrecht University.
- Bertrand, G., Michalski, A. & Pench, L. R. (2000). *European futures: Five possible scenarios for 2010*. Londen: Edward Elgar (European Communities).

- Birren, J.E. & Schroots, J.J.F. (2000). An introduction to a history of geropsychology in autobiography. In J.E. Birren & J.J.F. Schroots (Eds.), *A history of geropsychology in autobiography* (pp. 1-5). Washington, DC: American Psychological Association.
- Danzin, A. (1977). *Science and the renaissance of Europe*. Brussels: EEC (European Committee for Research and Development).
- EC Communication (2000). *Towards a European Research Area*. Brussels: COM (2000)6.
- EC Green Book (2005). *Demographic change: Towards a new solidarity between the generations*. Brussels: COM (2005) p. 9.
- EC Green Paper (2007). *The European Research Area: New perspectives*. Brussels: COM (2007) 161 final.
- Eurostat (2008). *Science, technology and innovation in Europe*. Luxembourg.
- Fernandez-Ballesteros, R., Zamarron, M.D., Calero, M.D. & Tarraga, L. (2007). Cognitive plasticity and cognitive impairment. In R. Fernandez-Ballesteros (Ed.), *Geropsychology: European perspectives for an aging world* (pp. 145-164). Cambridge, MA: Hogrefe & Huber Publishers.
- Fernandez-Ballesteros, R., Zamarron, M.D., Rudinger, G., Schroots, J.J.F. et al. (2004). Assessing competence: The European survey on aging protocol (ESAP). *Gerontology*, 50, 330-347.
- Florida, R. (2002). *The rise of the creative class*. New York: Basic Books.
- Schroots, J.J.F., Fernandez-Ballesteros, R. & Rudinger, G. (1999). From EuGeron to EXCELSA. In J.J.F. Schroots, R. Fernandez-Ballesteros & G. Rudinger (Eds.), *Aging in Europe* (Biomedical and Health Research, Vol. 17, pp. 144-156). Amsterdam: IOS Press.

Part I
Potentials and Productivity

The Hidden Potentials of Senior Researchers

Johannes JF Schroots

Need for researchers

At the end of the last decade it became clear that Europe - and the European Union (EU) in particular – had to invest more in knowledge production and knowledge transfer to stay abreast of global developments. The production and transfer of knowledge in our society is paramount for Europe's ability to meet its economic, social, cultural and political challenges. Traditionally, sciences and the humanities play an important role in this respect.

Since 2000 there have been three major developments in European science policy: (a) the launch of the *European Research Area* (ERA), (b) the *Lisbon* declaration: Europe has to be the most dynamic and competitive knowledge economy by the year 2010, and (c) the *Barcelona* declaration, which states that EU investments in research should be raised to 3% of the members states' GDP (Gross Domestic Product). The question now is: what has become of these good intentions?

Halfway through this decade, the number of researchers is well below that of countries that are approaching or have achieved the EU's 3 % target. It soon became clear that the initial objectives had been far too ambitious and that if the current trend were to persist, there will be a major shortage of highly qualified researchers by the year 2010 (European Commission, 2007). It was then, more realistically, decided to re-focus science policy on economic growth and on the employment of researchers (Fayl & Fayl von Hentaller, 2008). The employment issue was emphasized due to the 'brain drain' phenomenon, i.e. the flight of promising, young researchers from their home countries to non-European countries with more opportunities for doing research, and due to the legal and social 'barriers' to researchers' mobility in Europe (immigration, visa, social security, health and pension plans, etc.).

To turn the brain drain trend into a 'brain gain', the European Union has developed a human resource management strategy that has promised increasing funding for the training, mobility and career development of junior science and technology researchers. There are at least two reasons for assuming that the selected management strategy will be sub-optimal for the production and transfer of knowledge. Firstly, the

one-sided advancement of science and technology ignores the contribution of the humanities (including the social sciences) and the importance of cultural diversity in Europe (Schroots, 2007a). Secondly, the almost exclusive attention to junior researchers suggests some form of age discrimination and ignores the research potential of senior and retired researchers (Schroots, 2003a).

In the following section, information will be presented about the concept of age-discrimination or 'ageism' in science. Next, it will be demonstrated that mandatory retirement is a dated practice with restraining influences on the research potential of senior researchers. To this end, a brief overview will be given of the health parameters of aging scholars and scientists, followed by a description of their physical and mental abilities over the life-course, as well as their changing roles in science. The chapter will be concluded with a discussion of the significance of the release of senior researchers' resources for the production and transfer of sustainable knowledge in the European Research Area.

Age discrimination

As a social perception, people tend to categorize others rather automatically along three major dimensions: race, sex, and age (Kunda, 1999). Much empirical and theoretical attention has been devoted to the study of racism and sexism, but in the social and behavioral sciences comparatively little research has been directed at understanding what some refer to as the third '-ism': *ageism* (Barrow & Smith, 1979). For a comprehensive understanding of the implications of ageism in science, the conflicting relationships between classical and modern concepts of time should first be discussed, followed by a discussion of calendar age and, thereafter, of the ageism concept.

On time and age

In Western society, Newton's physical time – also called calendar or clock time – plays the role of a standard continuum, a frame of reference for other continua of changes such as biological or psychological time. Different concepts of time may have different clocks and time scales, but their scales are always compared with and expressed in

terms of calendar time (days, months, years) or clock time (hour, minutes, seconds).

Newton's physical time does not have intrinsic direction; there is no difference between its past orientation (t-) and its future orientation (t+). As such, the classical concept of time violates generally accepted natural laws. Natural phenomena are described by the second law of thermodynamics, which states that chaos or disorder will increase irreversibly with energetic processes. Thus, the direction of physical time is defined by the irreversible destruction of macroscopic order, or the increase of entropy.

The modern concept of time as linear and irreversible has not changed our conception of calendar age as 'additive', that is, a quantity that can be added, subtracted, multiplied, and divided regardless of the age of the individual or organism. The implication of this traditional notion is that all of the individual's possible calendar ages are equal. For instance, the first 20 years of life are equal to the middle or last 20 years. Similarly, the first half of an academic career (25-45 yrs) as a junior scientist would be equal to the last half as a senior scientist from 45 to 65 years, which is the mandatory retirement age in most countries of Europe. This makes sense from a purely calendar time perspective, but not from a personal or social perspective; it also gives rise to age discrimination (Schroots, 2007b).

Ageism

During the past two centuries, the place of calendar age has shifted. In comparison with the 19th century, it has assumed surpassing importance, corresponding to a general quantifying trend in science. This trend corresponds to a generally egalitarian norm within society to treat people regardless of personal characteristics – except for age (Back, 1995). Analogous to sexism, *ageism* can be defined as *the negative stereotyping and discrimination against people solely because of their age*. It should be noted that this definition makes no distinction between people of different ages. Both young and old people, or younger and older scholars, or scientists for that matter, may be discriminated against or stereotyped. More common, however, is the definition of ageism as negative stereotyping of and discrimination against 'older' people. Following the latter meaning, ageism is manifest in a wide range of phenomena on both individual and institutional levels – stereotypes and myths, discriminatory practices in housing, employment, and services

of all kinds, intergenerational segregation, education, health care, etc. Some of the myths of age include inflexibility, senility, disengagement and unproductivity. As we will see, gerontological research shows that these stereotypes are spurious – they are based on myths and are contradicted by empirical facts (Schaie, 2005).

Generally, the persistence of ageism is attributed to its roots in basic values, such as the glorification of youth, individualism, economic competition and the reduction of human worth to economic utility. In this context, Nelson (2002) makes a striking observation: "One of the unique features of ageism is that age, unlike race and sex, represents a category in which most people from the in-group (the young) will eventually (if they are fortunate) become a member of the out-group (older persons). Thus, it seems strange that young people would be prejudiced toward a group to which they will eventually belong. Where does this negative affect originate?" (p. x).

There are two standard explanations. Firstly, research shows that people have multiple, often contradictory, views of older persons. Today's elders are regarded as incompetent, which is associated with low status, but also as warm, which is associated with a passive attitude (Cuddy & Fiske, 2002). Secondly, Greenberg, Schimel and Mertens (2002) suggest that age prejudice arises from fear of our own mortality; that is, merely thinking about (or seeing) an older person tends to arouse anxiety about the fact that one has a short time on earth, and the fear associated with such cognitions tends to provoke the perceiver to dislike the individual (or group) who elicits such fear. To these accounts, a third explanation should be added, which is based on a special characteristic of human memory, the 'bump' phenomenon. In the next sections, we will discuss this phenomenon under the headings of mental and social potential, but first information is presented on the health and physical potential of senior researchers.

Health potential

The last century saw a demographic revolution: people are living longer and in better health as a result of advances in public health and the introduction of basic social protection systems. At the beginning of the 20th century, life expectancy at birth was 47 years, it is now about 76 years for men and more than 81 years for women. In the 20th cen-

tury, more years were added to the average life expectancy than were in the period between Roman times and the 19th century. Currently, a 60-year old person in most European countries can expect to live 20 to 24 more years. This means that one-fourth of a person's life remains to be lived after retirement at age 60 (Eurostat, 2007).

Living longer is not, however, the most important indicator of health; the quality of life as expressed in a measure of good or bad health seems to be much more interesting. The European Commission (2005) has recommended a rough measure of health, the Disability-Free Life Expectancy (DFLE), which represents the number of remaining years that a person of a specific age is expected to live in a healthy state. According to the Commission, in most European countries the average DFLE at birth is about 70 years for men (total LE ca. 76 yrs) and almost 73 years for women (total LE ca. 81 yrs). In other words, the health potential of the average European citizen is less promising than his/her life expectancy at birth would suggest. However, if the difference between the DFLE at birth and the conservative estimate of DFLE at 60 years is taken into account (as far as we know, there are no exact figures for the DFLE at 60 yrs), a more optimistic perspective emerges for 60-year-old persons, who can expect to live an average of 15 more disability free years. In other words, an average 60-year-old person may expect to live another 15 years in a healthy state, but after the age of 75 the disability trajectory commences irrevocably.

By now there is sufficient evidence that the health perspective of people with high socio-economic status, like scholars and scientists, is much better than that of the general population. Marmot (2006) presents some striking results from the Whitehall studies and concludes that there is a fourfold difference in the average mortality of civil servants with high and those with low socio-economic status: "In the first Whitehall study, which shows the average mortality for the whole population of British civil servants, we found that top-grade civil servants, the administrators, had about half the average mortality at age 40 to 64. The professional executive grades had 20 percent lower mortality than the average. The clerical offices had about 30 percent higher, and the office support grades – the messengers and paper keepers and so on – had about double" (p. 1). Starting from an above average life expectancy of 84 years for (primarily) male administrators and professionals, *i.e.* 60-year-old seniors, the above average DFLE of this high socio-economic status group will be an estimated 17 to 18 years. According

to Marmot, autonomy (control of our own lives) and social participation (in society) are the most important parameters of a long life in good health; needless to say, the high values of these parameters are characteristic of senior scholars and scientists par excellence. Consequently, after mandatory retirement at 65 they can expect to live in a healthy state for at least 12 more years.

Physical potential

The physical appearance of people is the most visible component of aging. Everybody knows people like the older adults mentioned above who are about the same chronological age but differ greatly in their biological age. How do these differences come about? Human aging as a total process becomes noticeable in late middle age when the outward signs of aging, such as greying hair, wrinkling skin, and diminishing muscle strength become apparent. But are these changes in appearance a matter of pathology?

Gerontologists have difficulty in distinguishing between true biological aging processes and pathological changes, as expressed in dysfunction, disorder, disability or disease of the organism. However, most gerontologists agree with Birren and Renner's (1977) definition of aging as "the regular changes that occur in mature genetically representative organisms living under representative environmental conditions as they advance in chronological age" (p. 4). As one ages, there are decrements in physiological function. All systems involved in the physiological functioning of the body appear to be affected by the aging process to some extent. These systems include the sensory, cardiopulmonary, musculoskeletal, metabolic and neurological systems. Following the above definition, the basic question then is at what age the human body reaches maturity.

In 1993 Kemper and Binkhorst presented the idealized life trajectory of general physiological performance (see also: Smith & Serfass, 1981). They noted that for human beings the achievement of maturity and maximal stability occurs at approximately 30 years of age, at which time the capacity of many physiological processes is at its peak. After that time, functional capacity declines gradually at varying rates, depending on the individual and the organ system. Death from old age occurs when the physiological losses beginning at maturity have pro-

gressed to the point that stability crosses the minimum threshold required for individual autonomy.

The traditional conception of ‘aging starts at maturity’, *i.e.* the moment that individual development has come to an end, is not entirely undisputed if viewed from the Gompertz mortality curve for population data. This exponential function can be characterized by two or three distinct phases, depending on the theoretical orientation. The first of these is a rapid decrease in mortality rate during infancy and childhood (*i.e.* birth to about age 10). This is followed by a period roughly between 10 and 30 years of age during which there is a slowly increasing mortality rate. The third phase consists of a period of logarithmic increase in death rate – the Gompertzian period – which extends from about age 30 to age 90 in a variety of different human populations (Strehler, 1977). Thus, dependent on the theoretical emphasis on or neglect of the second phase (ca. 10-30 yrs), aging (or senescence) starts either at the onset of puberty, or at about age 30. Conversely, development (growth) ends at puberty or at 30 years of age. The question, then, is whether mortality rate as a criterion of biological aging processes is suitable for a clear understanding of physical potential.

In order to clarify the issue, Schroots and Yates (1999, p. 420) followed a dynamic approach with (neg)entropy as a criterion for processes of development (growth) and aging (senescence): “In dynamic terms the life span trajectory of the self-organizing system begins with growth, development, and differentiation, all of which are internally negentropic processes that initially mask the ongoing entropic process of senescence. After maturity is reached, the entropic processes become dominant or manifest, leading to a destruction of order in the organism.” In other words, the process of aging is considered as running concurrent with growth, development, and differentiation in a self-organizing system, but until the growing phase is completed, senescing is masked and not easily detected. The point to be made is that both aging and development start at birth (or conception) and end with death. Consequently, mortality rate can no longer serve as a criterion of life-long processes of biological aging.

In the early eighties, Schroots (1982; Birren & Schroots, 1984) already took the radical position that development and aging should be conceived as two simultaneous processes of change, from conception to death, which manifest themselves successively in the form of a unitary

life trajectory, *i.e.* the solid line of the so-called ‘butterfly’ diagram in Figure 1.

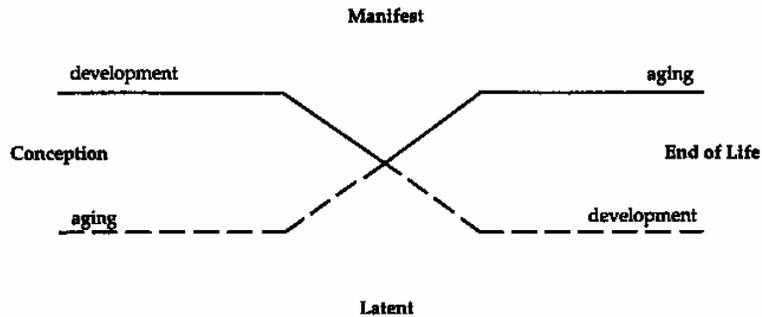


Figure 1. Butterfly diagram of development and aging (Schroots, 1982; Birren & Schroots, 1984).

The butterfly diagram indicates that at the start of ontogenesis (conception), the developmental process is most visible or manifest (solid line) while at the same time the signs of aging are still obscure or latent (dotted line) – and *vice versa* at the end of life. Note that the transition point of maturity is depicted in the middle, but can vary across the lifespan from function to function, from system to system, and from individual to individual.

Since the eighties, the theoretical position of development and aging’s simultaneous processes has been defended with the help of metaphors like the butterfly diagram (see Kenyon, Birren & Schroots, 1991). However, eventually this pure, metaphorical approach demonstrated its limitations with regard to the integration of empirical data and theory. Recently, however, new progress has been made thanks to the introduction of computer modeling and simulation techniques. By way of illustration, we will simulate the idealized life trajectory of general physiological performance, as described by Kemper and Binkhorst (1993) and simulated in detail by Schroots (2008), in two simple steps. The first step in computer simulation relates to the construction of a theoretical model on the basis of metaphors for development and aging, *i.e.* the butterfly diagram (Figure 2).

Figure 2 shows three curves: Curve 1 and 2 represent the mathematical equivalent of development (negative growth) and aging (positive growth), respectively, as shown in the butterfly diagram in Figure

1; the bell-shaped Curve 3 is the mathematical product of development and aging (solid line in Figure 1), and represents the unitary life trajectory of a virtual system.

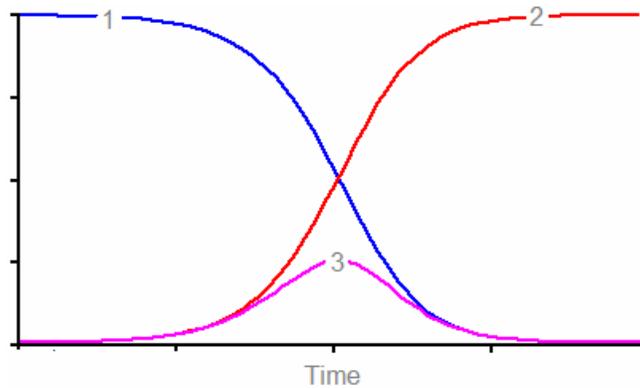


Figure 2. Computer simulation of the butterfly diagram.

It should be noted, firstly, that the representation of development as negative growth seems paradoxical, but is in fact logical viewed from Minot's (1908) conception that the growth rate is highest at birth (or conception) and steadily declines thereafter (see Medawar, 1957). Following the same line of reasoning, aging is conceived, conversely, as the process with the lowest growth rate at birth and the highest rate at the end of life. The second note is that the mathematical equivalents (or equations) of the three simulated curves are the basis of a dynamic life-course model, which is called *Janus* after the Roman god with two faces – one face looking into the future and one into the past. The Janus model has simple and more complex versions (Schroots, 2008). The simple version has been used for the next step.

The second step relates to the simulation of empirical data, in this case the idealized life trajectory of the functional capacity in human beings, based on a simple version of the Janus model (Figure 3).

Figure 3's graph clarifies that the Janus model (bold line) fits the empirical dataset of functional capacity (dotted line) almost perfectly over a period of 10 to 90 years, with a peak performance of 100% at ca. 30 years and 80% performance at the age of 60.

Specifically, the combined forces of growth and senescence (not shown in the figure) influence the life trajectory of development and aging in such a way that the apex of functional capacity is reached at

about 30 years, after which the vitality or functional capacity declines gradually, varying between 0.5 and 1.0 % per year depending on the individual and the organ system, but in this case declining with ca. 0.7 % per year (see Sehl & Yates, 2001).

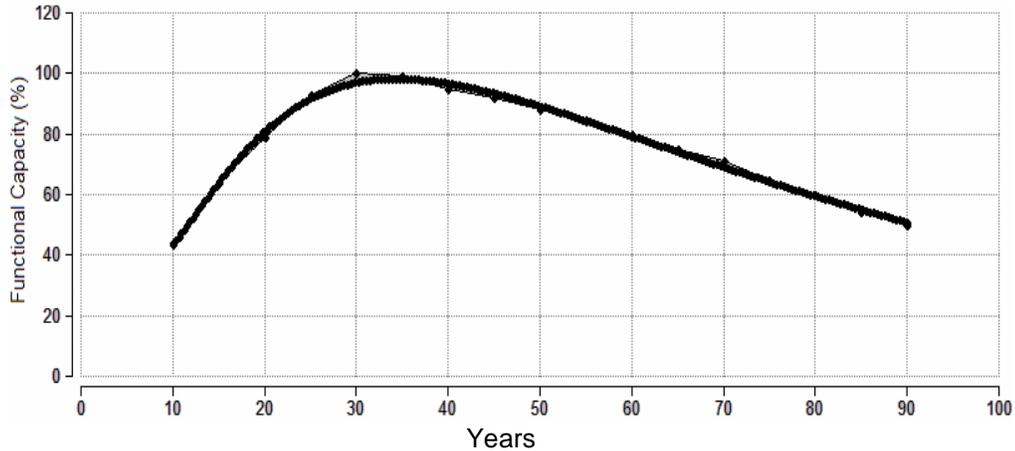


Figure 3. Optimal fit of functional capacity (dotted line) and the Janus model (bold line).

The implications of the Janus model for the physical potential of people in general can be demonstrated by means of two well-known sayings *Soon ripe, soon rotten* and *Live fast, die young*. Peak capacity relates, for example, to the phenomenon that rapid growth in the phase of development leads to rapid decline (*Soon ripe, soon rotten*), with the result that the functional capacity of the individual reaches its critical capacity for survival at a younger age than would have been the case with slow growth (on the condition that the rate of senescence is constant). Peak time, on the other hand, is related to the rate of senescence: higher rates of senescence (at a constant growth rate) mean that the individual reaches his or her peak and critical threshold at an increasingly early age (*Live fast, die young*). Generally, it may be stated that the Janus model explains (a) the lifespan trajectory of physical potential in terms of two forces, growth and senescence, from birth (conception) to death; (b) explains the transition of development into aging, and (c) explains the transition point in terms of peak capacity and peak time. The question is whether the two forces of life can somehow or other be manipulated to influence the physical potential.

The answer to this question should be ‘Yes, but only indirectly’ for the simple reason that the forces of growth and senescence are confounded and cannot be manipulated separately without keeping one of the two forces constant. In addition, the genetic factor plays a modest role in the potential plasticity of the older organism, insofar as genetics accounts for about 30% of both physical health and longevity (Rowe & Kahn, 1998). Nevertheless, indirect attempts to influence growth and senescence (and their derived product of health and longevity), have been very successful, as healthier habits in the form of lifestyle changes (e.g., diet and exercise) not only make us live longer, but are also likely to shorten the period of time in our later years that we are disabled (Aldwin, Spiro & Park, 2006).

Mental potential

As discussed before, simple life trajectories show two phases: development and aging, and one transition. Development is often compared with incremental processes of change while aging is compared with decremental processes. The classic metaphor for biological processes of change is that of the *hill* with the top at about 30 years for general physiological performance (Schroots, 1991). For a few decades, however, the notion has been growing that psychological processes of change do not necessarily parallel biological changes along the lifespan. The psychological attribute of wisdom, for instance, represents a progressive aspect of change in middle and late adulthood and challenges the traditional decline view of aging (Birren & Svensson, 2005). The question now arises whether there is a fit between the Janus model and, for instance, general intelligence or mental abilities.

Traditionally, general intelligence is divided into two types of mental abilities: ‘fluid’ or spatial-analytical abilities (abstract reasoning), which refer to basic processes of speed of information processing, and ‘crystallized’ abilities, which refer to the storage of information (e.g., cultural knowledge and experience). The lifespan patterns of both abilities rise rapidly until early adulthood, followed by a period of relative stability in respect of the crystallized abilities until the age of about 60-70 years, but a distinct decline in the fluid abilities after early adulthood (Garlick, 2002). As such, the lifespan curve of fluid abilities bears a strong resemblance to the general physiological performance curve

(two phases, one transition), while the crystallized abilities curve includes an extra relative stability phase between early adulthood and the later years, i.e. three phases and two transitions. In order to simulate these divergent lifespan patterns, a more complex, but essentially similar, version of the Janus model has been used. In figure 4, the lifespan curves of fluid (Gf) and crystallized (Gc) intelligence are presented (dotted lines, copied from: Li et al., 2004), as well as the simulated fluid (Jf) and crystallized (Jc) Janus curves (bold lines)(Schroots, 2008).

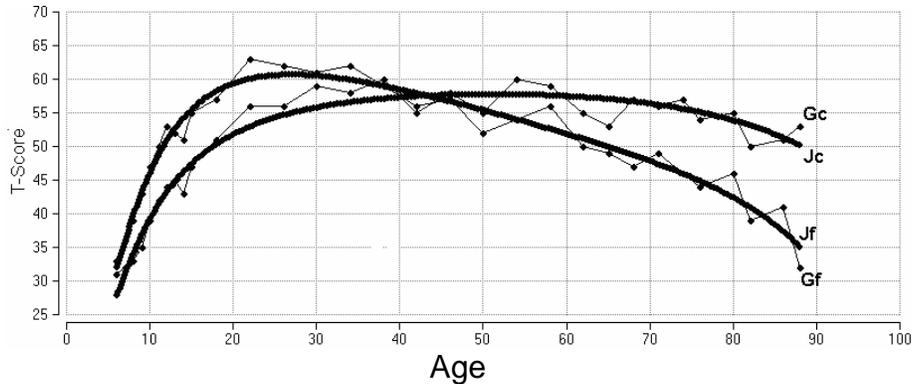


Figure 4. Computer simulation of fluid and crystallized intelligence (dotted lines) with the Janus model (bold lines): Fit between Janus curves (Jf, Jc) and intelligence plots (Gf, Gc).

Figure 4 shows a satisfactory fit between the simulated Janus curves and the empirical fluid and crystallized intelligence graphs. As expected, fluid intelligence follows the traditional pattern of development (6-27 yrs) and aging (27-88 yrs) with the peak at about 27 years. Birren and Fisher (1995) explain this pattern by noting that fluid abilities are primarily based on the neurobiological property of information processing *speed*. As such, the dynamics of fluid intelligence generally corresponds to the life-trajectories of many other biological systems that reach their peak performance in early adulthood and decline afterwards (Sehl & Yates, 2001; see also fig. 3). The neurobiological roots of fluid intelligence imply that the individual's fluid potential is as little modifiable as his or her physical potential.

In contrast to fluid intelligence, crystallized intelligence continues to develop, though more slowly, from age 27 to the peak age of about 50

years; then stabilizes more or less at peak level until the 60–70 age period, thereafter finally declining more rapidly until the end of life. If fluid intelligence relates to speed of information processing, then crystallized intelligence relates to *storage* of information (memory, knowledge, experience), which is less susceptible to neurobiological decline. Information processing precedes storage of information, which makes it likely that crystallized intelligence is composed of both information processing and storage of information. From a dynamic systems perspective, crystallized intelligence therefore rides piggyback on fluid intelligence, which explains crystallized abilities' period of relative stability after early adulthood until their distinct decline at an advanced age. The partly neurobiological, partly cognitive and cultural roots of crystallized potential imply that specific mental change processes, like life-long accumulation of knowledge, wisdom and experience, are a reality until late in life. This finding goes directly against the ageist stereotype of general mental decline in middle-aged and older people.

As discussed in the section on age-discrimination, there are two standard explanations for the persistence of ageism: (1) contradictory views of older persons in terms of incompetence and a passive attitude, and (2) fear of our own mortality. To these accounts a third explanation, based on a special characteristic of human memory, should be added: (3) the 'A(utobiographical) M(emory) bump' phenomenon.

Autobiographical memory can be broadly defined as a type of episodic memory for information related to the self in the form of memories. As such, autobiographical memory generally obeys the classical principles of remembering and forgetting, for example, that the distribution of memories follows a power function similar to the classic forgetting curve. Contrary to these principles, the AM *bump* phenomenon represents a disproportionately higher recall of memories from the period between the tenth and thirtieth year, as systematically observed in middle-aged and older adults. Peoples' favorite films, music, and books come from this period and they report the most important world events to have originated or occurred in it (Rubin, Rahhal & Poon, 1998). Schroots and van Dijkum (2004) have successfully simulated the autobiographical memory bump with a precursor of the Janus model (Figure 5). In search of an explanation for the bump, they hypothesized that the paradoxical peak of memories from between the ages of 10 and 30 years stems from the simultaneous action of two life forces: the force of growth and the force of decline (senescence), resulting in relatively

more intensive, neural encoding and storage of information (life-events). In retrospect, it may be stated that their hypothesis has been confirmed by both the dynamics of general physiological performance and fluid intelligence.

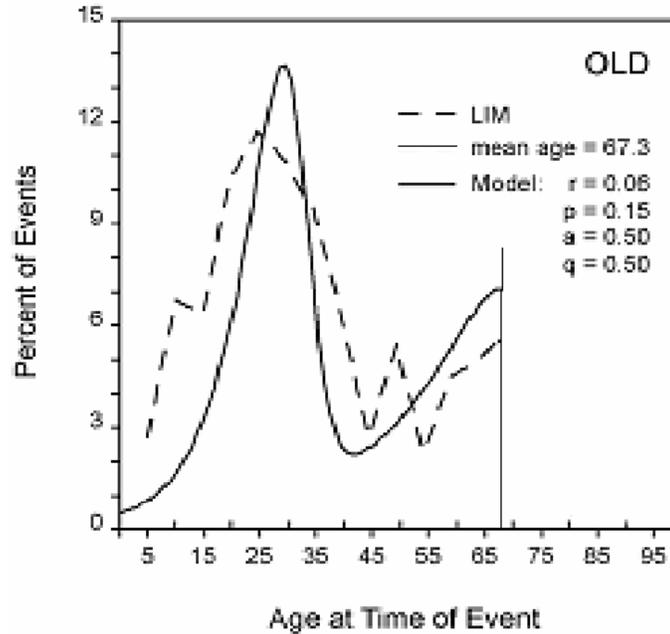


Figure 5. Computer simulation of the autobiographical memory bump (dotted line) with a precursor of the Janus model (bold line). Autobiographical event data originate from 98 older persons (mean age = 67.3 yrs), interviewed with the LIM (Life-line Interview Method)(Schroots & van Dijkum, 2004).

The significance of the memory bump can be demonstrated by way of a very simple formula:

$$P_w = C + (20 \pm 10)$$

in which: P = Period (yrs)
w = world-view
C = Cohort (birth)

This formula states that an individual's world-view or frame of reference (P_w) is formed in the period between the ages of 10 and 30. For

example, in 2008, the world-view of a 65-year old scientist or scholar was formed in the historical period between 1953 and 1973. It is the task of cultural historians and sociologists to characterize that period, but one may safely say that the majority of today's 65-year old scientists and scholars experienced or witnessed the student revolution at the end of the sixties while studying.

In the bump period of their life, people start dating, have their first relationships, are educated, look for their first job, feel physically strongest, become politically aware, go to the best movies of their life, read the most memorable books, listen to their most loved music, and experience their most intensive learning. In brief, the bump period is the cognitive-affective frame of reference, from which middle-aged and older people view life in general, and relations, work, health and education in particular. No wonder that the older generations in science who live and work *exclusively* from this perspective, are stereotyped as unproductive and are discriminated against because of their age. However, this ageist view *ignores* the late-life, mental potential of bump and crystallized experiences, as well as the changing roles of scholars and scientists over the course of their careers.

Social potential

We have just introduced the term 'generation', which generally denotes successive groups in time (see also Becker, this volume). Generations occur within lineages or descent lines – but not necessarily so. The individual and his/her parents and children comprise three distinct (biological) generations. Similarly, the researcher and his/her mentor and students could be conceived as three generations in science. From a biological perspective, the temporal distance between two generations will generally represent a time-frame between 20 and 30 years. With the bump formula in mind,

$$P_w = C + (20 \pm 10)$$

it is conceivable that science generations are also 20-30 years apart. This means that at a specific point in time, one can distinguish approximately two generations of scholars and scientists who are active in their field, either as a student or junior researcher at the start of his/her

career, or as a professor or senior researcher. As will be explained in the next paragraph, researchers from the sciences will generally reach seniority at age 40, while researchers from the humanities reach seniority approximately one decade later. However, mandatory retirement starts at age 65 for most researchers in Europe.

Mandatory retirement is without a doubt one of the many positive achievements of the modern welfare state. However, the enormous increase in average life expectancy indicates that social policy measures, which were originally designed for the good of older people, might nevertheless have a negative impact in the long run. Marmot (2007, p. 22) describes a meeting with Linda Fried, the founder of the Experience Corps, who coined the 'social capital' concept. In explaining this concept, she raised a couple of questions: "How do you bind people together? How do you give older people a role in society that gives them a reason for getting up in the morning? What she (*i.e.* Linda Fried) says is that people who volunteer to go into the elementary schools and help children tell her that doing this gives them a reason to get up in the morning. They feel that they're being useful, that they're doing something. Linda's whole idea is social capital. It's actually binding people together. We know that social isolation kills older people. The evidence is really very strong".

In 2001 Becker and Verhoeven reported on the Utrecht Emeriti Study of retired professors who had been in retirement for at least two years and had not yet reached the age of 75. The study showed that the professors had worked an average of 50 hours per week between the age of 55 and 65. After mandatory retirement, they continued to work in science for an average of 20 hours per week. Their number of publications during their last ten years of formal employment allowed a valid prediction to be made of the number of publications they would produce after retirement. Obviously, retired professors represent a thus far hidden resource of academic capital, but even more importantly, viewed from their different roles and activities in academia, the Utrecht Emeriti Study suggests that senior researchers have a high social potential.

Generally, roles and activities in science can be classified into research, teaching, lecturing, mentoring, consulting, administration, and – last but not least - the writing of books, grant proposals and articles. In a 20-year longitudinal study of 1,400 community residents of 50 years and older, Robert Atchley (2005) has shown that seniors drift towards

personal relationships and away from organizations, and that they spend more time on providing others with personal services: “Roles that offer opportunities to manifest wisdom include grandparenting, mentoring, participating in informal peer support groups, maintaining close relationships with friends or family, and providing compassionate listening and counseling to upcoming generations” (p.12)(see also Brown et al., this volume). Owing to their long-standing experience and learning, senior scholars and scientists would be excellent mentors of junior colleagues. Unfortunately, there is relatively little empirical evidence to support the linkage between the social potential of senior researchers and their productivity in science and society (Taylor & Bengtson, 2001).

Research potential

The development of a mature management strategy for human resources in the European Research Area (ERA) is inhibited by at least three factors: (a) the one-sided emphasis on the training, mobility and career development of junior researchers, (b) the one-sided emphasis on science and technology at the expense of the humanities, and (c) the mandatory retirement age of 65 in most European countries. The idea of a new renaissance, as proposed in the Prologue (this volume), transcends the limited scope of the traditional knowledge-based ‘economy of science and technology’ and includes many other sources of knowledge (cultural, historical, social, political). If ERA is to undergo a new renaissance, then any ‘policy for science’ objective should release the hidden research potentials of senior as well as retired researchers from both the humanities and the sciences.

In exploring mental and social potentials, one needs to keep the following in mind: in a recent publication, Drenth (2006, freely paraphrased) discusses the old distinction between quantitative and qualitative methods. Quantitative or nomothetic methods are dominant in science and have been very successful, but are also weak in addressing real life problems (cultural, social, political, etc.), which are usually characterised by a complex organizational structure. Qualitative or ideographic methods, on the other hand, are more suitable for the description of contextual complexity, the detection of patterns of events, etc. In this context, Drenth refers to Gibbons and colleagues (1994)

who distinguish between Mode 1 and Mode 2 research. Mode 1 that of knowledge production, is described as disciplinary and homogeneous and the scientific orientation as basically structural / nomothetic. Mode 2 is transdisciplinary and far more heterogeneous in terms of methods and approaches; also descriptive and other methods of data gathering are allowed.

The quantitative, nomothetic, mode 1 research represents a culture that is not only dominant in the sciences, but is often also financially successful. Top research is conducted mainly by junior scientists at the peak of their fluid abilities (20-30 yrs); researchers from science and technology will reach seniority relatively early in their career at the age of ca. 40. The qualitative, ideographic, mode 2 research, on the other hand, is exemplary of the humanities. This type of research does not provide any direct economic utility and appeals largely to the crystallized abilities of scholars, who reach their career peak relatively late at the age of ca. 50. The differential career patterns of scholars and scientists explain why senior scientists – once over the hill at the age of 30 and living on their successes from the bump period – become increasingly obsolete from a short-term, economic perspective (publish or perish, no longer innovative etc., etc.), while the accumulated knowledge and experience of senior scholars allow them to mature until far in their sixties and seventies and become even more productive in respect of the analysis of complex cultural, historical, social and political problems.

From the above it seems that junior scientists and older scholars have a clear advantage, and that particularly senior scientists have hardly anything to offer. Such a viewpoint is rather short-sighted for the following two reasons: Firstly, the older scientist has acquired a wealth of experience, even though society may not fully appreciate this, which he or she can pass on to the next generation in the role of mentor, or share with his or her colleagues from less-privileged countries. Secondly, in spite of appearances to the contrary, older people do have an as yet unexplored potential for personal, mental and social growth that is waiting to be discovered and released in daily life (Schroots, 2003b). Modern brain research supports this view (Goldberg, 2005).

In *The Mature Mind*, Gene Cohen (2005) presents an overview of what happens to the brain as it ages, and what effects those changes have on our lives: (a) the brain has the capacity to ‘remodel’ itself – certain genes are activated by experience as we age, allowing our per-

sonalities to grow and change in surprising ways; (b) the brain can ‘re-cruit’ areas of itself that were formerly underused, thus these strength and agility reserves can compensate the aging effects in other parts of the brain; and (c) it is in the latter stages of life, at age 60-80, that the brain’s ‘information processing centre’ achieves its greatest density and reach.

In sum, the brain-behavior capacities of senior scholars and scientists form an unexpected source of research potential waiting to be further developed for the sake of both individuals and society. In the last couple of decades, a start has been made with the development of this potential under a variety of terms, including healthy aging (Schroots, Birren & Svanborg, 1988), aging well (Vaillant, 2002), successful aging (Baltes & Baltes, 1990), competent aging (Schroots, 1993), productive aging (Morrow-Howell, Hinterlong & Sherraden, 2001) and active aging (Fernandez-Ballesteros, 2007). The exploration of hidden resources in the sciences and humanities should join the relatively ‘young’ European research tradition on aging and the human life-course (Schroots, Fernandez-Ballesteros & Rudinger, 1999).

Summary and conclusion

This chapter discusses the hidden potentials of senior researchers from the perspective of ageism in science and academia. Different generations in the sciences and the humanities have different strengths and weaknesses regarding their physical, mental and social potentials over the lifespan. Senior researchers are, however, stereotyped as unproductive, while younger researchers are looked upon as inexperienced. From a short-term utilitarian perspective, older researchers are generally less valued, but in the long term and in view of their potentials at an older age, they can have a strong impact as mentors of future generations, a quality completely ignored in modern society as expressed, for example, in the mandatory retirement age of 65. Younger scientists, on the other hand, are highly esteemed for their creative contributions to the economy, but lack experience to put their findings in a broader socio-cultural context.

In view of the urgent need for researchers in the European Union, the consequences of ageism in science are rather dramatic: junior researchers at the start of their career and family life are, via competitive

funding programs, (over)stimulated to invest heavily and one-sidedly in their research career, while inevitably neglecting other aspects of life (family, recreation, etc.), which results in overburdening (Pinker, 2008). Senior researchers, on the other hand, are either overloaded with management tasks and administrative responsibilities, or are advised to take early retirement for economic reasons (high wages) and/or low output (scientific productivity defined according to auditing criteria for top quality research in the natural sciences). In both cases, older researchers are discouraged from staying actively involved in research (negative discrimination).

From the perspective of human resource management in ERA, ageism is a wastage of research potential, the more so because many scientists and scholars resume or continue their research activities in one form or another after early or mandatory retirement. If Europe is truly striving towards a new renaissance in the form of a sustainable knowledge society, then the hidden potentials of senior researchers should be fully released, both in terms of productivity and organization. After all, our aging populations are a huge source of manpower.

In conclusion it is recommended that – through mature human resource management of research and scholarship – a progressive science policy of flexible retirement, continuous education and career development should be developed for both junior and senior researchers in the European Research Area.

References

- Aldwin, C.M., Spiro III, A. & Park, C.L. (2006). Health, behavior, and optimal aging: A life span developmental perspective. In J.E. Birren & K.W. Schaie (Eds), *Handbook of the psychology of aging* (6th ed)(pp. 85-104). Amsterdam: Elsevier Academic Press.
- Atchley, R. (2005). In the spirit of service: How we reach out in later life. *Aging Today*, xxvi, 5, 12.
- Back, K.W. (1995). *Age norms*. In G.L. Maddox (Ed.), *The encyclopedia of aging* (pp. 36-37). New York: Springer Publishing Company.

- Baltes, P.B. & Baltes, M.M. (Ed.)(1990). *Successful aging: Perspectives from the behavioral sciences*. New York: Cambridge University Press.
- Barrow, G.M. & Smith, P.A. (1979). *Aging, ageism, and society*. New York: West Publishing.
- Becker, H.A. & Verhoeven, N. (2001). *Utrechtse emeriti, een sociologische verkenning* [Utrecht Emeriti Study]. Utrecht: Utrecht University.
- Birren, J.E. & Fischer, L.M. (1995). Aging and speed of behavior: Possible consequences for psychological functioning. *Annual Review of Psychology*, 46, 329-353.
- Birren, J.E. & Renner, V.J. (1977). Research on the psychology of aging: Principles and experimentation. In J.E. Birren & K.W. Schaie (Eds), *Handbook of the psychology of aging* (pp. 3-38). New York: Van Nostrand Reinhold.
- Birren, J.E. & Schroots, J.J.F. (1984). Steps to an ontogenetic psychology. *Academic Psychology Bulletin*, 6, 177-199.
- Birren, J.E. & Svensson, C.M. (2005). Wisdom in history. In R.J. Sternberg & J. Jordon (Eds), *A handbook of wisdom* (pp. 3-31). New York: Cambridge University Press.
- Cohen, G. D. (2005). *The mature mind: The positive power of the aging brain*. New York: Basic Books.
- Cuddy, A.J.C. & Fiske, S.T. (2002). Doddering but dear: Process, content, and function in stereotyping of older persons. In T.D. Nelson (Ed.), *Ageism: Stereotyping and prejudice against older persons*. Cambridge, MA: MIT Press.
- Drenth, P.J.D. (2006). *Walks in the garden of science: Selected papers and lectures*. Amsterdam: ALLEA | All European Academies.

- European Commission (2005). *Health in Europe. Data 1998-2003*. Brussels: Commission of the European Communities.
- European Commission (2007). *Green paper. The European Research Area: New Perspectives*. Brussels: Commission of the European Communities.
- Eurostat (2007). *Europe in figures – Eurostat yearbook 2006-07*. Luxembourg: Eurostat – Statistical Office of the European Communities.
- Fayl, G. & Fayl von Hentaller, U. (2008). Understanding European Union research policy. In M. Burguete & L. Lam (Eds), *Science matters: A unified perspective*. Singapore: World Scientific.
- Fernandez-Ballesteros, R. (Ed.)(2007). *GeroPsychology: European perspectives for an aging world*. Göttingen: Hogrefe & Huber Publishers.
- Garlick, D. (2002). Understanding the nature of the general factor of intelligence: The role of individual differences in neural plasticity as an explanatory mechanism. *Psychological Review*, 109, 116-136.
- Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P. & Trow, M. (1994). *The new production of knowledge*. London: Sage.
- Goldberg, E. (2005). *The wisdom paradox: How your mind can grow stronger as your brain grows older*. New York: Gotham Books, Penguin.
- Greenberg, J., Schimel, J. & Mertens, A. (2002). Ageism: Denying the face of the future. In T.D. Nelson (Ed.)(2002). *Ageism: Stereotyping and prejudice against older persons*. Cambridge, MA: MIT Press.

- Kemper, H.C.G. & Binkhorst, R.A. (1993). Exercise and the physiological consequences of the aging process. In J.J.F. Schroots (Ed.), *Aging, health and competence; The next generation of longitudinal research* (pp. 109-126). Amsterdam: Elsevier Science Publishers.
- Kenyon, G.M., Birren, J.E. & Schroots, J.J.F. (Eds.)(1991). *Metaphors of aging in science and the humanities*. New York: Springer.
- Kunda, Z. (1999). *Social cognition*. Cambridge, MA: MIT Press.
- Li, S.-C., Lindenberger, U., Hommel, B., Aschersleben, G., Prinz, W. & Baltes, P.B. (2004). Transformations in the couplings among intellectual abilities and constituent cognitive processes across the life span. *Psychological Science*, 15, 155-163.
- Marmot, M. (2006). *Why care? How status affects our health and longevity*. New York: International Longevity Center.
- Medawar, P.B. (1957). *The uniqueness of the individual*. New York: Basic Books.
- Minot, C.S. (1908). *The problem of age, growth, and death*. New York: Putnam.
- Morrow-Howell, N., Hinterlong, J. & Sherraden, M. (Eds)(2001). *Productive aging: Concepts and challenges*. Baltimore: The Johns Hopkins University Press.
- Nelson, T.D. (Ed.)(2002). *Ageism: Stereotyping and prejudice against older persons*. Cambridge, MA: MIT Press.
- Pinker, S. (2008). *The sexual paradox: Men, women, and the real gender gap*. New York; Scribner.
- Rowe, J.W. & Kahn, R.L. (1998). *Successful aging*. New York: Pantheon Books.

- Rubin, D.C., Rahhal, T.A. & Poon, L.W. (1998). Things learned in early adulthood are remembered best. *Memory & Cognition*, 26, 3-19.
- Schaie, K.W. (2005). *Developmental influences on adult intelligence. The Seattle Longitudinal Study*. Oxford: Oxford University Press.
- Schroots, J.J.F. (1982). Ontogenetische psychologie: een eerste kennismaking [Ontogenetic psychology: Introductory remarks]. *De Psycholoog*, 17, 68-81.
- Schroots, J.J.F. (1991). Metaphors of aging and complexity. In G. M. Kenyon, J.E. Birren & J.J.F. Schroots (Eds.), *Metaphors of aging in science and the humanities* (pp. 219-243). New York: Springer.
- Schroots, J.J.F. (Ed.)(1993). *Aging, health and competence: The next generation of longitudinal research*. Amsterdam: Elsevier Science Publishers.
- Schroots, J.J.F. (2003a). Ageism in science: Fair-play between generations. *Science and Engineering Ethics*, 9, 445-451.
- Schroots, J.J.F. (2003b). Life-course dynamics: A research program in progress from The Netherlands. *European Psychologist*, 8, 192-199.
- Schroots, J.J.F. (2007a). *Are senior scholars an endangered species? On ageism, knowledge and the role of academies*. In: Collected papers of the Bern Workshop 2005 on 'The ethical commitment of scientific and scholarly academies'. Organized by ALLEA's Standing Committee on Science & Ethics. Amsterdam/Bern: ALLEA | All European Academies.
- Schroots, J.J.F. (2007b). Time: Perceptions and concepts. In J.E. Birren (Ed.), *Encyclopedia of gerontology* (2nd ed.)(Vol. 2, pp. 634-640). San Diego: Academic Press.

- Schroots, J.J.F. (2008). *The Janus model of life-course dynamics*. Amsterdam: Stichting ERGO | European Research Institute on Health and Aging.
- Schroots, J.J.F. & Dijkum, C. van (2004). Autobiographical memory bump: A dynamic lifespan model. *Dynamical Psychology*, <http://www.goertzel.org/dynapsyc/2004/autobio.htm>
- Schroots, J.J.F. & Yates, F.E. (1999). On the dynamics of development and aging. In V.L. Bengtson & K.W. Schaie (Eds.), *Handbook of theories of aging* (pp. 417-433). New York: Springer.
- Schroots, J.J.F., Birren, J.E. & Svanborg, A. (Eds)(1988). *Health and aging: Perspectives and prospects*. New York/Lisse: Springer Publishing Company/Swets Publishing Services.
- Schroots, J.J.F., Fernandez-Ballesteros, R. & Rudinger, G. (Eds.) (1999). *Aging in Europe* (Biomedical and Health Research. Vol. 17). Amsterdam: IOS Press.
- Sehl, M.E. & Yates, F.E. (2001). Kinetics of human aging I: Rates of senescence between ages 30 and 70 years in healthy people. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 56, B198-B208.
- Smith, E.L. & Serfass, R.C. (1981). *Exercise and aging, the scientific basis*. Hillside, NJ: Enslow.
- Taylor, B.A. & Bengtson, V.L. (2001). Sociological perspectives on productive aging. In N. Morrow-Howell, J. Hinterlong, & M. Sherraden (Eds)(2001). *Productive aging: Concepts and challenges* (pp. 120-144). Baltimore: The Johns Hopkins University Press.
- Vaillant, G.E. (2002). *Aging well*. Boston: Little, Brown and Company.

Generations in European Science and Society

Henk A. Becker

Silver-grey academics

Sir Karl Popper continued his work in science up to the age of 90. After having finished his activities in the field of philosophy, he donated his archives and his library to a university and adopted a new hobby, outside the system of science. Popper is a typical example of a scholar who prefers to keep engaged in his calling as long as mentally and physically possible. He is an early member of the league of silver-grey academics carrying on after their formal retirement, as a rule at 65, sometimes at 70.

In this decade, the league of silver-grey academics in Europe is expected to increase substantially (see Prologue). Here we would like to draw attention to discontinuous social change to be expected in the next decades. The first baby boom cohort was born in 1946. It will reach the age of 65 in the year 2011. The last baby boom cohort was born approximately in 1970 and it will reach the age of 65 in 2030. The relatively large baby boom cohorts host more scientists and scholars than prior and later cohorts. The formal European Research Area, which registers researchers being 25 to 64 years of age, will be reduced considerably by the exodus of the baby boomers between 2011 and 2030. However, many of these researchers carry on between the age of 65 and about the age of 79. Many of them will do so for on the average 20 hours a week. As a consequence, the informal ERA will be relatively large in 2011 and the following years. In 2008 already early retirement has contributed substantially to the growth of the informal ERA. This development is one of the generational effects to be taken into account concerning the future of science in Europe.

In this chapter we will explore generations in European science and society. First, this will require a discussion of basics in generations. Second, generations in science will be dealt with. Third, the pattern of generations in society at large will get attention. Four, we will list the major policy options related to generations in science and discuss their potential consequences. Five, we will do so regarding the policy options regarding generations in society.

Normally, at the beginning of a publication in science the key definitions are presented. In this chapter, we will not act according to this rule. We will first deal with the history of the study of generations and present a number of examples of generations and after that we will state the definitions. This procedure prevents that the definitions are used without taking their frame of reference into consideration.

Basics in generations

In 1928 and 1929, Karl Mannheim published his essay on *The problem of generations*, in two parts. This article marks the beginning of the study of generations in sociology. Mannheim presented an ideal type of the emergence of a generation, its dynamics and the characteristics of a mature generation. As a practical example, he took the youth movement in Germany of his time. Mannheim's publications in those days had the general purpose of revealing the social factor in the development of conflicting styles of thought (Remling, 1975).

Mannheim tells us in his article that he used two major sources. Firstly, he was intrigued by an art historian, Wilhelm Pinder (1926), who wrote on the *non-contemporaneity of the contemporaneous*. Pinder argued that generations in art do not walk on in a single file, like a gaggle of geese. A number of generations always live side by side in the same time period. Secondly, Mannheim refers to two ideal types presented by Max Weber. A 'class' will evolve into a 'status group', given certain conditions (Bendix, 1962). Ideal types trigger an urge in their originators, or in fellow scientists, to match them with real types ('Realtypen'). Real types bridge the gap between stereotypical simplifications and models for research programs.

Mannheim has resisted the urge to operationalise his ideal type. He did not elaborate on generations but concentrated in later years *inter alia* on the sociology of religion. Why did he adopt this strategy? In later years, other sociologists have taken over and they have turned the analysis of generations into successful research programs. On the one hand as a contribution to the sociology of culture, following the example of Mannheim. On the other hand because discontinuous macro-change turned patterns of generation into pressing social problems. Will the baby have to pay for the boom? In most Western countries the baby boom, followed by the baby bust, has increased social inequality.

Mannheim, in his essay on generations, elaborated on knowledge about European art history. He objected to speculations that tried to discover a mathematical regularity in the emergence and decline of generations, stating sequences of thirty years. If we look at a generation of painters, founded by a small group of innovators, the leaders of this artistic elite will have lost their innovative and inspirational power after a period of about thirty years. This observation does not provide a clue with regard to the moment in time a new generation of painters will emerge. Remling (1975) has summarized the ideal type of generations developed by Mannheim as follows:

"Generational analysis at the decisive level of the social and cultural structure presupposes conceptual differentiation among three generational groupings. First, the *generational location* ascribes to individuals belonging to the same age group a common experiential location in the social and historical process. Guided by Marx's conception of class, Mannheim argues that both classes and generations receive their unity in the first place from the objective fact of 'social location'. An individual's location in a social class or biological generation does not necessarily lead to the kind of personal interaction characterizing 'concrete groups', but it circumscribes his chances in life with regard to wealth and power and modes of feeling, thought, and action. Second, the *generation as actuality* releases the latent potential inherent in generation location by orienting similarly located contemporaries toward each other in conflicting attempts at the interpretation and shaping of ideas of actions surrounding the unfolding of a common destiny. Third, the *generation unit* comprises individuals who share common attitudes and common principles of intellectual interpretation and action with regard to the socio-cultural process. Under present circumstances, youth, for example, representing the generation as actuality, is divisible into several generation units set apart from one another by, let us say, conservative, liberal, and radical responses to the socio-cultural process" (p. 43).

Mannheim emphasized that new generation units only realize the potentials inherent in a generation location if accelerated social and cultural change takes place. Drastic changes in basic attitudes distort the process of cultural transmission, create a generation gap, and motivates new generation units to form a novel 'generation style' which differs sharply from the life style of older members of society.

Following Marx's understanding of the phenomenon of the crossing of class lines, Mannheim recognizes that older people who are marginal to their own generation may act as forerunners of a new generation style. On a more general level Mannheim pointed out that individuals belonging to earlier or later age groups may be attracted to certain practices particular to an 'alien' generation unit. For instance, if these are favored by the trend of the times (Remling, 1975, p. 43).

When Mannheim in 1928/9 transposed the example of generations in art towards generations in society, he had at his disposal only one rather limited empirical case: the emergence of a youth movement based on an admiration of nature and the practice of taking walks in the woods and the fields of Germany. Mannheim certainly did not foresee the effects of innovations like movies, radio and other kinds of mass media on the dissemination of new ideas and life styles in a large number of Western countries. The first 'modern' generation are the young wage earners in Britain between the wars. Fowler has documented the characteristics of the first teenagers in his country (Fowler, 1995). Teenagers in other Western countries, like the US, Germany and the Netherlands, also adopted these characteristics.

As we will see, the limited historical scope of Mannheim's ideal type of generations is the main cause of the controversies about generations in sociology that emerged in the late 1950s.

Generations in European science

There are practically no research data yet on generational differences in European science. So far, the subject has not drawn scientific, organizational or political interest. As a consequence, we will have to restrict ourselves to an 'informed guess' in this paragraph. We expect however that in the near future research will take place and scientific knowledge will become available. We expect surveys like the limited case study on retired professors at Utrecht University summarized in the Prologue. We also expect analyses of statistical data already available on the cohorts of scientists and scholars that have reached the age of 65 in the recent past and that will reach this age in the next thirty to forty years.

We will now turn to the emergence of generations in European science. We will have to describe the instances of ‘discontinuous macro-change’ that had effects on the behavior of individual social actors in their cohorts and on activities of collective social actors related to these individual actors. We will have to describe, which differences between clusters of cohort have emerged. We will also have to describe, how these clusters of cohorts have existed side by side in the years our exploration deals with. The clusters we will present do not have names yet that are institutionalized in society. Consequently, we will have to identify the generations by giving them numbers: generation one, two and three.

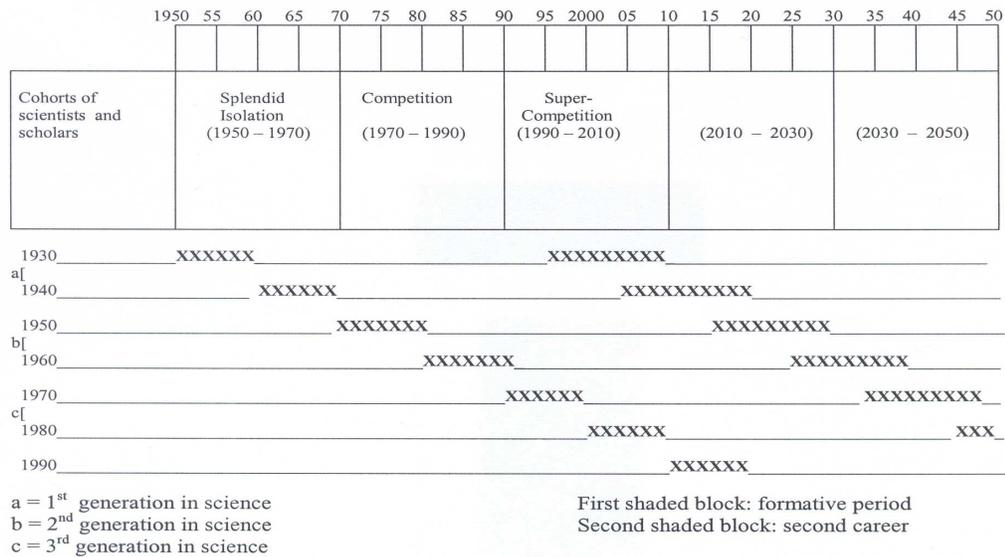


Figure 1. Generations in European Science

Generations in science require a type of research that is not new. For instance, there already exists research with regard to specific generations like ‘technology generations’ (Becker & Verhoeven, 2001; Do-campo Rama, 2001).

In figure 1, we summarized the main aspects of the pattern of generations in science. The formative period has only been sketched with regard to the introduction to academic life. The reader is invited to supplement the figure according to his or her own preferences, for instance by drawing lines along the shaded (xxxx) areas.

The macro-context of splendid isolation

Until the mid-seventies of the twentieth century, many countries in Europe had a system of science that originated from a reform of universities in Germany. In 1810 the ‘Free University’ in Berlin was established, based on ideas that can be summarized as *Einsamkeit und Freiheit* (Schelsky, 1957). The founders of this university wanted to avoid the pressure on universities by the state and the church that had reigned in the past. In the future, universities ought to be able to do their work in ‘splendid isolation’. No obligations towards outside authorities. Completely free to search for truth in the way they sought best. In this system, professors were appointed for life and they were completely free to teach and do research the way they preferred.

This ideal of ‘splendid isolation’ has never been put into practice completely and its weaknesses became obvious in the course of the years. Nevertheless, in many countries in Europe up to the early 1970’s, professors were still appointed without a specification of their duties other than ‘teaching and research’ in a specific scientific discipline. Researchers that have experienced a substantial part of their formative period as a scientist in those years were still socialized according to the principles of the ‘Free University’ in Berlin, founded in 1810.

The university system existing under the macro-context of splendid isolation was confronted with informal competition between universities, research groups and individual professors. In England, the ‘red-brick’ universities enjoyed a reputation that was more favorable than the reputation of other universities in the country. In France the ‘Grandes Ecoles’ were considered to be superior to other parts of the system of science in that country. In countries like the Netherlands, the ideas of 1810 were still alive in the fifties, sixties and early seventies of the 20th century.

Scientists and scholars socialized in the period of splendid isolation still compare what they experienced later in their career with the ideals and practices of their formative period (see Schroots, this volume). The autobiographies presented in later chapters in this volume illustrate this clash. Nevertheless, many members of this generation of academics have continued and still continue their work after reaching the formal age of retirement. The members of this generation of academics have played a specific role in the years following the mid seventies. Because they were not confronted from the beginning of their career with external evaluations, demands for severe specialization and related re-

strictions, many of them were still ‘generalists’, enjoying a broad overview of their discipline. Many of them combined being a generalist with being an expert in one or two restricted areas. When the academics combining the role of generalist with one or more roles of specialist formally retired, the discipline they left at their university suffered a grave loss.

The macro-context of competition

In the late 1960’s and early 1970’s, the student revolt undermined the traditions of academics and universities in western Europe. Political and governmental authorities could enforce systems of external evaluation on universities. In many cases, external evaluations, followed by ranking, turned out to bring retrenchments under the disguise of fostering quality.

Between the late 1960s and the late 1980s, in many countries in western Europe universities were reformed by adopting components of the system of higher education and universities in the United States. This ‘Americanization’ had a number of advantages. Higher education in the US had demonstrated to be able to provide mass higher education at relatively low costs and a measurable quality. It had also demonstrated to be able to produce scientific knowledge of a high quality and in this case also at relatively low costs. The Americanization had a number of disadvantages too, however. Academic freedom was reduced. For instance external evaluators demanded that research programmes had to be coherent. As a consequence, new ideas that did not fit into a conventional research program, had to be developed in secret.

Young scientists and scholars who experienced their formative years in science during this period were socialized in a way that differed from the formative period of generation 1 (the concept of ‘formative period’ is defined later in this chapter). The members of generation 2 could only survive and make a career if they adapted sufficiently to the new norms and expectations. In the social sciences, in the past publishing books was the traditional way to contribute to knowledge and to acquire a reputation. Since the early 1970s, external evaluations forced scholars to publish articles in international scientific journals. Many social scientists were forced to do both: write books, but also write as many articles as the struggle for survival in the competitive and externally evaluated university required. The American system housed a number of provisions for reducing the negative aspects of the system,

like periodical sabbatical leaves. In many European countries, the stress-reducing components like sabbatical leaves were not adopted, or adopted in a too restricted way.

The macro-context of super-competition

The scientists and scholars that experienced a major part of their formative period as academics in the 1990's or in the first years of the new century had to cope with systems of external evaluation, accreditation and ranking of universities that were much more refined and restrictive than in the earlier period. The use of publication and patent statistics in studies of science and technology systems increased dramatically. The University of Shanghai published a list of the 500 best universities in the world, out of 10,000 universities worldwide. At Leyden University in the Netherlands, the system of external evaluation and ranking of universities was further innovated, resulting in a more sophisticated ranking system. Many universities reacted to these systems by introducing programmes to improve their position in the worldwide ranking. Also national evaluations triggered attempts to acquire better positions in the ranking. One of the consequences of these developments was an increase of pressure to meet the requirements related to acquiring external research funding, publishing research outcomes and teach according to external standards. In 2008 the *Nature* magazine presented the outcomes of an exploratory survey on the use of doping by scientists and scholars, showing that in the United States about 20% of scientists and scholars used doping in order to survive in the struggle for success. We have reason to suspect that in countries like the Netherlands the situation is comparable.

This period brought a number of new resources and innovations in methods that changed the system of science drastically and introduced new challenges. The ICT-revolution improved the analysis of large data sets. It also improved the communication in science, in particular by strengthening the virtual universities. Research teams could operate with members living in many countries. Video-conferencing facilitated distance learning in the field of academic education.

The pattern of specific generations in science: a second look

After discussing the generations 1, 2 and 3 in science, we will take now a look at their cooperation. We will concentrate in our discussion on the third period. The new interdisciplinary field of tech mining may pro-

vide an excellent example of the generational cooperation. The third period brings:

- Extremely large data-sets, in fact millions of data, plus numerous old research reports, waiting for scientists and scholars who will submit them to secondary analysis;
- Advanced research methodology to effectuate secondary analyses, in particular meta-analysis and value transfer;
- Requests for interdisciplinary cooperation, in particular between natural scientist and social scientists.

We are confronted with data warehouses hosting digital information in which thousands of potential hypotheses and hundreds of potential theories are hidden. The explorations of these datasets that are available already demonstrate, that successful secondary analyses in most cases come from teams in which researchers from each of the three generations have cooperated (Porter & Cunningham, 2005). Analytical models often come from researchers belonging to the first generation, combining information from publications stemming from many decades and disciplines. The actual analyses often come from members of the second and third generation. The senior researchers select their hypotheses out of a huge amount of old and new publications. The mid-career and junior researchers have much feeling for computer-analyses of large data-sets.

Interdisciplinary tech mining is relevant not only for the growth of basic knowledge. It is also relevant for innovations in technology and in the social setting of the application of the innovations. More than a million patents have been analyzed with regard to the basic structure of the innovations they document. The outcomes of this analysis have been used to develop basic patterns of technological innovations. The basic patterns are applied now to generate new innovations. They are also used in training young scientists and scholars with regard to the art-science of innovation.

This example illustrates how the pattern of generations in science contributes to the kind of innovations required by the Lisbon Strategy of the European Union. The example of tech mining also illustrates how discontinuous macro-change can have an effect on the behavior of individual social actors in their cohorts. The discontinuous macro-change also has an effect on the collective social actors involved: uni-

versities and research teams. However, the example also illustrates cooperation between researchers in Europe and the United States.

Generations in European society

Broad outline of generation research since Mannheim

Sociological publications only sporadically dealt with the generation issue for years after the publication of Mannheim's article. It was not until the publication of *The sceptical generation* by Schelsky in 1957 that this field of research was given a fresh impetus. Schelsky presented the results of a limited survey among young adults and a typology with two generations: the Pre-War and the Skeptical Generation. He was accused of having made statements about two generations in Germany based on a too narrow empirical foundation. However, the fault finders disregarded the fact that in his book Schelsky had expressly pointed out the limitations of his statements. Unfortunately, in this case the fact that the concept of generation as defined by Mannheim is somewhat vague came back to haunt him.

The concept of generation became more explosive in the sixties. In the United States the attackers of the social system used the slogan "This is the revolution of the new generation" (Reich, 1970). Thus the concept of generation received political persuasiveness. Nearly at the same time a structural renewal of social research took place. The number of interviews with people about their life course taking into consideration their year of birth increased sharply. The data archives have been started in these years as well, together with the tradition to submit the survey data in these archives to a secondary analysis.

The analysis of the survey data resulted in research problems that could only be solved over the years (Blossfeld & Hamerle, 1994; Blossfeld & Prein, 1998; Blossfeld, Hamerle & Mayer, 1986). However, these years also showed that this field of research had hidden a godsend. This godsend is the fact that not only members of society as a whole but also plants, animals and patients have a life course. In biology and in the medical sciences statistical methods for analyzing life course data have been developed and tested. Generation researchers in social science were able to apply these methods in their analyses. (Rothman, Greenland & Lash, 2008). For instance, event history analyses have been part of the standard tools of socio-scientific life course

research ever since (Blossfeld & Hamerle, 1994; Blossfeld, Hamerle & Mayer, 1986). The social sciences have also seen progress in the theoretical aspect which came to the aid of generation research (Blossfeld & Prein, 1998).

As for generation units, it turned out that youth clubs and other collective social actors mentioned by Mannheim as catalysts in the process of generation development play merely a moderate role. The role of the media proved to be more important, since they have experienced it to be beneficial to identify or to name new generations. However, only few suggestions to acknowledge new generations are successful. Closely connected to it is the social need to use the generation pattern as reference framework. The more serious is the discontinuous social change and its effect, the greater the readiness of society to give a name to generations. Research projects emerged in the generation research in order to describe which names are generally accepted (Diepstraten, Ester & Vinken, 1998).

Often political problems have generational limits. In this connection the solidarity between generations became the subject of research. Demographic discontinuity also resulted in political actions. The 'baby boom' and the 'baby bust' could be cited as an example. Mannheim deals with general generations that comprise an entire society and within them partial generations. Partial generations of men and women could be cited as an example. But also political generations form partial generations (Fogt, 1982). Furthermore also specific generations have to be described. Here we could point out the technology generations, already mentioned before. These generations are composed of contemporaries that differ in their ability to cope with technology (Docampo Rama, 2001; Van de Goor & Becker, 2000).

Since the seventies numerous anthologies about generations, cohorts, generation images and the like have been published (among other things Attias-Donfut, 1988; Becker, 1997; Bertram, 1992; Edmunds & Turner, 2002; Schüle, Ahbe & Gries, 2006). None of these overview publications succeeded in freeing generation research from the central vagueness of the concept of generation as defined by Mannheim. The many monographs still give us no convincing and generally accepted definitions either. In our opinion the solution is to be found in the differentiation of the concept. We define a cohort generation as 'members of a cohort pattern, whose behavior shows effects of discontinuous social change they have experienced in their formative period'. This for-

mative period is situated between the age of ten and the age of thirty. It is most intense between the age of 15 and the age of 25 (see Schroots, this volume). Other formative periods are the periods before and directly after birth, the infant age, the midlife crisis and the transition from professional life to retirement. A typological generation shall be defined as: ‘the stereotypical members of a generation, and their institutions’ (Becker, 1997; Becker & Sanders, 2006). These two concepts are necessary, since two different empirical and theoretical phenomena are involved here. In case of a cohort generation all features can be attributed to individual social actors in specific cohorts. Cohort generations exist independently from the stereotypes about their existence in the first place. Stereotypes can be attributed to a cohort generation. These stereotypes can be changed as time passes by, as shown by the change from the name ‘Protest Generations’ to the ‘Generation of the Early Baby Boom’.

When the word ‘generation’ is used in a text or discussion, we can deduce the meaning of the word in that place from the context of its use. The word generation is defined by the context to some extent. Are we talking about cohort generation, typological generation or a combination of both concepts? This context definition is also applicable when we talk about the compositions. We need no definition of ‘generation’ if we read the sentence: ‘Bill Clinton is a typical member of the Baby Boom Generation’. If we read: ‘As the Baby Boom Generation ages we face the most difficult financial problem of the twenty first century’, we know offhand what is meant by this. The word ‘generation’ can also mean ‘ancestry’, ‘a combination of thirty birth cohorts’, or ‘third generation computers’.

In figure 2 and 3, the main components of the pattern of generations in European society are sketched. The reader is invited to add additional information, for instance regarding discontinuous macro-change. The reader could also draw lines between the shaded (xxxx) areas.

Research on cohort generations

Major discontinuous macro-changes since 1920 in the West have been:

- Great Depression of the thirties (Becker, 2000)
- Second World War (Becker, 2000)
- Social and cultural shock of the late sixties and the early seventies (Becker, 2000)

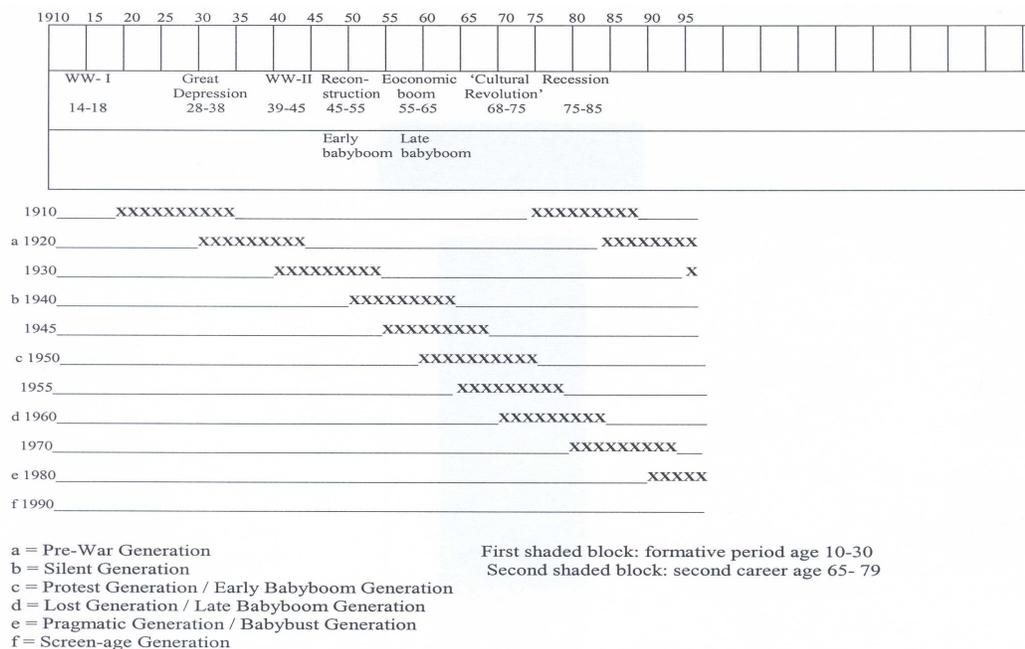


Figure 2. Generations in European society (1910-2000)

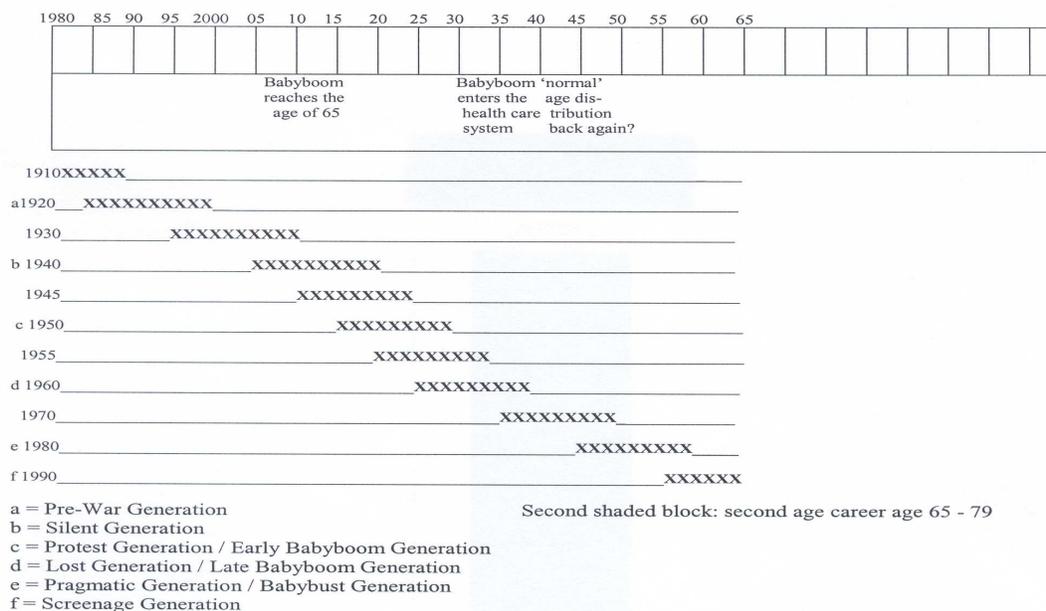


Figure 3. Generations in European society (1980-2065)

- Recession from the mid seventies to the mid eighties (Veenhoven, 1989)
- ICT-revolution, accelerating in the mid eighties (Bontekoning, 2007)
- End of the Communist regimes in Eastern Europe in 1989
- Economic boom of the nineties
- Economic recession in the early years of the new century.

Discontinuous macro-change, as we saw, has effects on the behavior of individuals in cohorts, if the individuals experience these effects in a substantial part of the period between the age of ten and the age of thirty in their life course. There are many differences between processes of discontinuous change. The type and the intensity of the effect show variations. The aftermath is also not uniform. Therefore each one of these processes needs a specific research program, without the need to give up the common features of the discontinuous change (a.o. Attias-Donfut, 1995; Baker, Dalton & Hildebrandt, 1981; Schüle, Ahbe & Gries, 2006).

In case of cohort generations it is clear when each cohort came into being and which individuals belong to them. In the first place demographic variables are involved. Birth cohorts and life courses can be perfectly researched. In the second place health variables play a role. People born in the Netherlands in the last months of the War have a significantly higher risk of epilepsy than the members of other cohorts (Ravelli, 1999). In the third place there are mainly 'sociological' variables, particularly as regards values, norms, expectations and attitudes. In case of partial and specific cohort generations the membership of individuals can also be researched in a reliable manner (Becker, 2000; Bontekoning, 2007). Research on cohort (and typological) generations takes place in a number of research programs. These research programs are related to an integrated theory. The integrated model will be discussed later. In this paragraph, the two major research programs will be summarized.

A research program initiated by Inglehart that primarily considers the effects of the Cultural Revolution on materialistic and post-materialistic values is of great importance (Inglehart, 1977, 1997; Felling, Peters & Schreuder, 1983; Inglehart & Abramson, 1994). These effects were observed in 1972 for the first time and could still be seen in more than forty countries several decades later (Inglehart & Abram-

son, 1994). The Inglehart model has been researched in many areas of society, for instance in case of stratification processes. In 2004, Norris and Inglehart reported on a research project *inter alia* exploring the effects of an increase of risk on religious belief. The project by Norris and Inglehart represents a major innovation in generations research. It is based on a schematic model explaining religiosity. The next step is the elaboration of a series of key hypotheses and the empirical testing on data dealing with eighty countries. For instance, the religious values hypothesis holds that the conditions that people experience in their formative years have profound impact upon their cultural values. According to Norris and Inglehart (p. 219), growing up in societies in which survival is uncertain is conducive to a strong emphasis on religion; conversely, experiencing high levels of existential security throughout one's formative years reduces the subjective importance of religion in people's lives. The latter publication marks the state-of-the-art in the research on sociology and political sciences concerning cohort generations. I call 'state-of-the-art' in a scientific discipline 'using the best methods available'.

Another research program should also be mentioned here. In this program the effects originating from wars, demographic irregularities, the economic situation and cultural macro change were examined. Dependent variables are for example the number of births (Lutz, 1991) family background (Bertram, 1992; Koch, 1994; Nickel & Schmidt, 1994), level of education (Meulemann, 1994); careers (Sanders & Becker, 1999), the acquisition of values (Becker, 1997); aging (Baltes & Mayer, 1999) and life histories (Becker, 1997; Becker, 1998; Blossfeld & Nuthmann, 1994; Docampo Rama, 2001). As a state-of-the-art landmark in this program I present Verhoeven, Jansen and Dessens (2005).

Typological generations as a research program

A typology is a 'totality of typical features'. A stereotype is a 'statement that recurs constantly in the same way as a formula and cliché'. Which typological generations are involved? As we saw, Schelsky published in 1957 a typology consisting of the Pre-War Generation and the Sceptical Generation. This typology sounded so convincing that it got institutionalized in Western society of the sixties and beyond.

In the mid sixties another typology was institutionalized. There was a social movement half-jokingly referred to as the 'Cultural Revolu-

tion' at that time in the United States. Reich (1970) distinguished the Pre-War Generation, the Silent Generation and the Protest Generation. The name 'Sceptical Generation' launched by Schelsky was changed into 'Silent Generation'. The stereotype 'silent' was attached to the second generation because it was important to make clear that this generation could and should protest, however, did not do this and cowardly shirked and did not chose to rebel.

The economic crisis that broke out about 1975 led to a breakdown of the employment market until approximately 1985. Youth who completed their training or degree often could not find a job and remained unemployed for many years. In the English-speaking countries the name 'Lost Generation' came into use for the new generation. Here we had a problem that the word 'lost' has two meanings. On the one hand 'without hope', and particularly without chances in the employment market. On the other hand 'without moral and ideological confidence'. As the unemployment among youth decreased about 1985 and the income of the members of the Lost Generation increased, superficial observers claimed that the name of the generation was incorrect. However, they ignored the fact that this generation still remained a 'searching' generation and longed for a new moral and ideological confidence. In the mid-eighties for the cohort generations known at that time a model with five typological generations has been developed (Becker, 2000). These were: the Pre-War Generation, born approximately between 1910 and 1930, the Silent Generation (1930 – 1945), the Protest Generation (1945 – 1955), the Lost Generation (1955 – 1970) and the Pragmatic Generation (1970 – 1985). We should mind that the birth years form a part of the typology. Research in the Netherlands in 1998 revealed that a representative sample of the society members knew this typology and considered themselves members of a typological generation (Diepstraten, Ester & Vinken, 1998). Research on collective memories a.o. in Britain provided data about the background for this typology (Schuhmann & Scott, 1989, Scott & Zac, 1993). The three latter publications mark the state-of-the-art in this research program.

In the mid-nineties it became apparent for the Western countries that the 'Baby Boom' between approximately 1946 and 1970 would have serious long-term consequences. In order to be able to discuss these discontinuous social changes and their effect on the costs of pensions and the health care, on the employment market and the national income, the name Protest Generation was gradually replaced by the name

'Baby Boom Generation'. Since the baby boom occurred until about 1970, we also often speak of the 'Early' and the 'Late' Baby Boom Generation, instead of Protest Generation and respectively Lost Generation. Youth born after the baby boom and experiencing its formative period during the economic boom that followed on the crisis, just concentrated on its career. They became known as the 'Pragmatic Generation'. Youth born after about 1985 and being confronted with the ICT-Revolution during their formative years has been called the 'Screenage Generation' (Bontekoning, 2007). Will the latter stereotype catch on? In 2008, the pattern of typological generations could be summarized as follows:

- Pre-War Generation;
- Silent Generation;
- Early Babyboom Generation, or Protest Generation;
- Late Babyboom Generation, or Lost Generation;
- Pragmatic Generation, or Babybust Generation;
- Screenage Generation.

During the eighties and the nineties many scientists and journalists thought that it could be an advantage to add a new typological generation to the existing typology. In this context the following suggestions were made: 'Génération Sacrifié', 'A Generation of Seekers', 'Generation X', 'The Postponed Generation', just to name a few. The majority of these neologisms had but a short life. The advertising industry also discovered the charm of the generation typology and for example Pepsi Cola named its product: 'The drink of a new generation'. Generation units emerged among other things in form of annual music events.

Approach on an integrated generation theory

For an explanation of generation building a theory is required that integrates three sub-theories. The first sub-theory, focusing on the emergence of cohort-generations, consists of three hypotheses. Firstly 'the hypothesis of the initial socialization', which refers to the fact that socialization in serious new situations has long-term consequences if confirmed later. Many immigrants still remember after many years exactly what they have experienced in their first years in the new land. A second hypothesis is derived from this one: 'the hypothesis of the differential cohort socialization', which says that the socialization during the formative period has long-term consequences if confirmed later. The third one is 'the hypothesis of relative scarcity'. If relative scarcity

reigns during the formative period it affects the life course in cohorts, which has long-term consequences (Becker, 1992; 2000). We should note that we are talking about ‘relative’ scarcity, contrary to the hypothesis of scarcity formulated by Inglehart (1977). While socialization in the life course deals with social culture in society, allocation deals with social mobility and social structure.

The second sub-theory deals with the emergence of stereotypes characterizing generations. The first hypothesis is called ‘the vital impact hypothesis’. If a set of stereotypes bears a close relationship to one or more major events or substantial trend-deflections in society, this set has a chance to be institutionalized as the symbol of a new typological generation. The second hypothesis is ‘the media impact hypothesis’. The more support a set of stereotypes gets from the media, the larger its chance of launching a typological generation. A typological generation is a set of stereotypes and the whole of individuals showing their stereotypes. When situations in society change substantial, the pattern of typological generations also changes.

The third sub-theory focuses on the formative period in the life course. For biological reasons, the boundaries of the formative period are the age of ten and the age of thirty (Schroots, 2003; 2008). A well-known example of this formative period is the high efficiency of the generational grammar, largely disappearing after the age of twenty-five. Consequently, later in the life course it is relatively difficult to learn a new language. Minor formative periods in the life course are early childhood, the midlife period and retirement from the labour market. We will now summarize the approach to an explanatory theory regarding generations, using the format of a decision tree:

- 1.1. If discontinuous social change occurs (under certain circumstances), it results in development of one or more cohort generations.
- 1.2. If cohort generations are developed the complexity is developed as well.
- 1.3. If complexity is developed (under certain circumstances) generation units becoming active.
- 1.4. If generation units become active they suggest one or more typologies.
- 1.5. If one or more typologies are developed (under certain circumstances) they are institutionalized in the society.

- 1.6. If typological generations are developed, the cultural elements are developed as well (values, norms, attitudes, expectations).
 - 1.7. If such cultural elements are developed, the socialization occurs if the effects of these elements occur during the formative period of the individuals.
 - 1.8. If reconfirmation occurs the cultural elements are confirmed, otherwise the cultural elements are obliterated.
- 2.1. As soon as cohort generations have developed they have effects on allocation processes.
 - 2.2. If allocation processes occur (under certain circumstances) they result in an increase in social inequality.
 - 2.3. If social inequality for generational reasons occurs (under certain circumstances) policy of generational awareness is triggered.
- 3.1. If partial discontinuous change occurs (under certain circumstances) partial cohort generations are developed.
 - 3.2. If specific discontinuous change occurs specific cohort generations are developed.

Hypotheses about the development of cohort generations have to be derived from the discontinuous change. That is, not from the typological generations. We also have to bear in mind, that an individual can belong to a certain cohort generations without showing the characteristics of the relevant typological generation. Apart from generations from the whole of society there are also partial generations, e.g. within the Protest Generation there was wide difference between the men and the women. Specific generations are developed as well, e.g. the technology generations (Van de Goor & Becker, 2000).

Policy options related to generations in science and society

Science

If retired scientists and scholars opt for ‘business as usual’, after retirement they will either turn to activities outside universities and research institutes, or they will organize their continuation in science on an individual basis. As a consequence, a lot of expertise and human resources will get lost. Nowadays already, many retiring scientists and

scholars prefer an innovative alternative. Between the age of 50 and 65, they prepare for their work after retirement. They accumulate funds for research projects to be launched as soon as they are free to concentrate on their personal ambitions. Some even opt for early retirement in order to concentrate on what they consider to be important. Others concentrate on building a social network that will yield fulltime or part-time positions after formal retirement. They will choose systematically between short time or long time new engagements. Experience teaches that preparation during ten to fifteen years is required in most cases.

For most universities, in this case 'business as usual' implies abstaining from a systematic approach. Contrary to the United States and Canada, European universities have no tradition yet of using the hidden potentials of retired scientists and scholars. However, in the Prologue, an example from Utrecht University in the Netherlands has been presented. Research related to this example has been summarized on the website of the university (www.uu.nl/emeritibeleid)

On a national level, mandatory retirement is under attack. The first option is abolishing mandatory retirement of employees altogether. This option would have a number of negative effects. It would rob employees that would prefer to retire at 65 of a socially accepted way to leave employment. It would also lead to senior employees interpreting the prolongation of their contract as 'forced labor' and showing little motivation during the additional years in employment. Another negative effect would be that employers who are critical about the performance of senior employees would have to resort to all kinds of tricks to get rid of them. The second option is instantly or gradually increasing the retirement age from 65 to for instance 69. In this case, the negative effects will be the same as with regard to a complete abolishment of mandatory retirement. The same arguments apply to liquidating mandatory retirement for scientists and scholars. Universities in Sweden have institutionalized an interesting solution. They start negotiations with academics who will retire in the near future and which they would like to offer a continuation of their employment. If all parties involved agree, a new contract is signed for two years. The contract could be renewed after that period, again for two years, and so on and so forth.

Society

In 2005 Halman, Luijkx and Van Zundert published the *Atlas of European Values*. This book is primarily based on the research program of

the *European Values System* and on the *World Values Survey*. It presents data on feeling European, national pride, importance of work, importance of politics, social networks, tolerance, solidarity, permissiveness, to give a number of examples. In the Prologue chapter, we discussed the vision of a new Renaissance in Europe and the idea that such a renaissance would have to be based on a revival in the area of arts, sciences and humanities. A revival in this area would require a release of hidden resources in the member states of the European Union. In this paragraph, we will try our hand at a short mental experiment on the new renaissance. For this mental experiment the *Atlas of European Values* provides a baseline analysis.

We start by presenting an assumption. This assumption reads that in many countries in Europe a social change takes place that could be compared to *The Rise of the Creative Class* that has been sketched by Richard Florida (2001) for the United States. This assumption is quite realistic. For instance because the National Science Foundation in the Netherlands has launched a research program to explore the hypotheses of Richard Florida for the urban areas in this country. Florida states:

"The number of people doing creative work has increased vastly over the past century and especially over the past two decades. This book charts the growth in people who are paid principally to do creative work for living. These are the scientists, engineers, artists, musicians, designers and knowledge-based professionals, whom collectively I call the "Creative Class". In 1900, fewer than 10 percent of American workers were doing creative work – most worked on farms or in factories." (...) "... by the turn of the new century, the Creative Class included nearly a third of the workforce. This is not just true for the United States. The ranks of the Creative Class have reached 25 to 30 percent of the workforces across European countries, according to research I have conducted ..."

According to Florida, the rise of the creative class can be observed primarily in the baby boom generation and in later generations. Because the baby boom generation enjoys a relatively high level of education compared to earlier generations, this hypothesis is plausible.

The rise of the creative class is an ongoing process. This rise is not the outcome of a specific process of planned change. Could we imagine processes of planned change that actually could contribute to the kind of cultural growth Richard Florida is talking about? I would like to discuss such a process, just as an example. In the United States, there are

many disadvantaged children. Children belonging to minority groups, black children, or children living far from schools. In the United States, a system called 'No Child left behind' is becoming quite a success. A registration system lists each child. The progress (or lack of it) of each child through the educational system is monitored. If the conventional school system is not able to support the education of a child, virtual schools provide distance learning. (Berge & Clark, 2000) It is evident, that improvement of the education of schoolchildren will increase the opportunities for cultural growth.

There are parallels to the system called 'No Child left Behind' on the other side of the Atlantic. In the Netherlands, there are many disadvantaged children in the primary and secondary educational system. Isolated from the mainframe of Dutch culture by belonging to minorities, suffering from language deficiencies etc. If the conventional school system would be supplemented by a system of virtual schooling, using for instance video conferencing, the number of children left behind now could be reduced substantially. In the Netherlands, the primary and secondary educational system also suffers from a shortage of teachers. The country hosts a hidden resource, however. Many retired teachers would be willing to return to their profession on a part-time basis. Distance learning provided by virtual schools could bridge demand and supply in the area of secondary education. Also, in part of primary education, distance learning could supplement conventional teaching.

We will have to restrict the discussion about realistic opportunities for planned change in the area of activating hidden resources in generations to just one example. In the prior paragraph, we presented one example of a hidden resource in scientific generations: interdisciplinary R&D on tech mining. We would like to conclude, that the vision of a European Renaissance turns out to be quite realistic. Our examples of contributions to a cultural revival primarily come not only from Europe but also from the United States, however. We would like to suggest, that ultimately we will witness an 'Atlantic' Renaissance.

Summary and conclusions

We will round off by summarizing a number of conclusions. Concerning *Basics in Generations* we advise the reader each time he or she has

to deal with generations to pay attention to four questions. What are the discontinuous macro-changes involved? Which cohorts are afflicted by these discontinuous macro-changes in a substantial part of their formative period? (see figure 2 and 3). What have been the effects of the discontinuous macro-changes on the behavior of the cohort members? If cohort-generations have emerged, did they lead to the institutionalization of typologies in society? Making a distinction between cohort-generations and typological generations is vital with regard to understanding generations in society. Because plants, animals and patients have life-courses, research on life-courses and generations in society can profit from state-of-the-art research methodology developed in epidemiology. Generations exist in society in general, but also as partial and as specific generations. An example of the latter are generations in science.

Looking at *Generations in European Science* requires to pay attention to three periods of macro-change in the system of European science. We named these periods: 'splendid isolation', 'competition' and 'super-competition'. The three periods have led to the emergence of three generations in the system of science. We named them: generation one, two and three. Each of these generations hosts hidden resources; many of them related to differences in characteristics acquired during the formative period in the life course of its members. In the first decade of the 21st century, the three generations live side by side. Members of these generations often cooperate. For instance, in a research project a member of generation 1 could contribute the theory formation and members of generations 2 and 3 could focus on quantitative analyses based on ICT.

The subject of *Generations in European Society* is dominated by effects of a number of discontinuous macro-changes that occurred in the 20th century. As examples we mention WW-II, the 'Cultural Revolution' of the late 60s and early 70s, the baby boom (1946-1970) and the economic recession early in the new century. These discontinuous macro-changes have had effects on life courses in cohorts and on the clustering of cohorts into a pattern of cohort generations. In some cases, also typological generations have emerged. The names of typological generations often change overtime. The pattern of cohort-generations is searched for hidden resources in individual and collective social actors. These hidden resources are analysed for their potential contribution to a

European Renaissance. This Renaissance will be triggered by innovations in the area of culture.

The dynamics of *Generations in relation to Retirement* confront individual and collective social actors in the system of science with options for policymaking and challenge them to analyze potential consequences of policy alternatives. Scientists and scholars preparing for retirement, or continuing their work in science after retirement, have to decide which discipline, university or other collective actor in the system of science they would be willing to serve. An international market for the contributions by senior scientists and scholars is emerging, supported by communication and distance-work on the Internet. Universities are confronted with increasing pressure originating from national and international ranking. A growing number of universities contracts senior scientists and scholars to contribute to their research programmes and to improve their position in the system of ranking.

In the first decade of the 21st century, many universities intensify their campaigns to remain or become a member of the group of 50 top-universities in the world. This group constitutes the most distinguished elite. If a university is not able – yet – to belong to the top-50, it will try to belong to the top-200 universities. The remaining universities of the 10,000 institutions of higher education in the world belong to the undistinguished majority.

Finally, in society at large, collective social actors have an interest in discovering hidden resources in the system of science and in applying these resources to accomplish their mission. These collective social actors are confronted with options for policymaking and they too must pay attention to potential consequences of the policy activities. The European Union is engaged in a major effort to meet the requirements of the Lisbon Strategy launched in the year 2000. Substantial contributions can be expected from a release of the potentials of senior scholars and scientists.

Acknowledgement

Comments on an earlier version of this chapter by Lies van Rijssen are gratefully acknowledged. On www.UCAS.nl a list of frequently asked questions can be consulted, dealing with terminology and outcomes of empirical research.

References

- Amato, P.R & Booth, A. (1997). *A generation at risk: Growing up in an era of family upheaval*. Cambridge: Harvard University Press.
- Attias-Donfut, C. (1988). *Sociologie des générations: l'Empreinte du temps*. Paris: Presses Universitaires de France.
- Baker, K.L., Dalton, R.J. & Hildebrandt, K. (1981) *Germany transformed. Political culture and the new politics*. London: Harvard University Press.
- Baltes, P.B. & Mayer, K.U. (1999) *The Berlin Aging Study: Aging from 70 to 100*. Cambridge: Cambridge University Press.
- Becker, H.A. (1988) Generationen in West- und Ostdeutschland nach der Vereinigung. In H. Meulemann (Ed.), *Werte und nationale Identität im vereinigten Deutschland, Erklärungsansätze der Umfrageforschung* (pp.285-290). Opladen: Leske & Budrich.
- Becker, H.A. (1992), *De toekomst van de verloren generatie* [The future of the lost generation]. Amsterdam: Meulenhoff.
- Becker, R. (Ed.). (1997). *Generationen und sozialer Wandel: Generationsdynamik, Generationenbeziehungen und Differenzierung von Generationen*. Opladen: Leske & Budrich.
- Becker, H.A. (2000). Sociological research on discontinuous change. In G.C. Kinloch & R.P. Mohan (Eds), *Ideology and the social sciences*. Westport: Greenwood Press (Reprinted in *International Journal of Contemporary Sociology*).
- Becker, H.A. (2000). Discontinuous change and generational contracts. In S. Arber. & C. Attias-Donfut (Eds), *The myth of generational conflict: The family and state in ageing societies* (pp.114-132). London: Routledge.

- Becker, H.A. & Sanders, K. (2006). Innovations in meta-analysis and social impact assessment relevant for tech mining. *Technological Forecasting and Social Change*, 73, 966-980.
- Becker, H.A. & Verhoeven, N. (2001). *Utrechtse emeriti, een sociologische verkenning* [Utrecht emeriti study]. Utrecht: Utrecht University.
- Bendix, R. (1962). *Max Weber, an intellectual portrait*. New York: Anchor Books.
- Benschop, A. (1987). *Max Weber, over klassen, standen en partijen* [Max Weber: About classes, status groups and political parties]. Kampen: Kok.
- Berge, Z.L. & Clark, T. (Eds)(2005) *Virtual schools: Planning for success*. New York: Teachers College Press.
- Bertram, H. (Ed.)(1992). *Die Familie in den neuen Bundesländern: Stabilität und Wandel in der gesellschaftlichen Umbruchsituation*, Opladen: Leske + Budrich.
- Blossfeld, H.P. & Hamerle, A. (1994). Advantages of event history analysis for life course research. In H.A. Becker (Ed.). *Life histories and generations* (pp. 519-546). Utrecht: ISOR.
- Blossfeld, H.P. & Nuthmann, R. (1994). Transition from youth to adulthood as a cohort process in the Federal Republic of Germany. In H.A. Becker (Ed.), *Life histories and generations* (pp. 183-217). Utrecht: ISOR.
- Blossfeld, H.P. & Prein, G. (Eds)(1998). *Rational choice theory and large-scale data analysis*. Colorado: Westview Press.
- Blossfeld, H.P., Hamerle, A. & Mayer K.U. (1986). *Ereignissanalyse: Statistische Theorie und Anwendungen in den Wirtschafts- und Sozialwissenschaften*. Frankfurt: Campus Verlag.

- Boldt, U. & Stutz, R. (2006). Nutzen und Grenzen des historischen Generationskonzepts für die Erforschung von Umbruchserfahrungen im späten Jugendalter. In A. Schüle, Th. Ahbe & R. Gries (Eds.), *Die DDR aus generationengeschichtlicher Perspektive* (pp. 65-92). Leipzig: Leipziger Universitätsverlag.
- Bontekoning, A.C. (2007). *Generaties in organisaties* [Generations in organisations]. Tilburg: Syntax (with a summary in English)
- Danieli, Y. (Ed.)(1998). *International handbook of multigenerational legacies of trauma*. New York: Plenum Press.
- Diepstraten, I., Ester, P. & Vinken, H. (1998). *Mijn generatie: Zelfbeelden, jeugdervaringen en lotgevallen van generaties in de twintigste eeuw*. Tilburg: Syntax Publishers.
- Docampo Rama, M. (2001). *Technology generations, handling complex user interfaces*. Maastricht: Shaker Publishing.
- Edmunds, J. & Turner, B.S. (2002). *Generations, culture and society*. Buckingham: Open University Press.
- Felling, A., Peters, J. & Schreuder, O. (1983) *Burgerlijk en onburgerlijk Nederland* [Bourgeois and non-bourgeois Holland]. Deventer: Van Loghum Slaterus.
- Florida, R. (2002). *The rise of the creative class*. New York: Basic Books.
- Fogt, H. (1982). *Politische Generationen: Empirische Bedeutung und theoretisches Modell*. Opladen: Westdeutscher Verlag.
- Fowler, D. (1995). *The first teenagers: The lifestyle of young wage-earners in Interwar Britain*. London: The Woburn Press.
- Goor, A.G. van de & Becker, H.A. (2000). *Technological generations in the Netherlands*. Maastricht: Shaker.

- Halman, L., Luijkx, R. & Zundert, M. van (Eds)(2005). *Atlas of human values*. Tilburg: Tilburg University Press.
- Inglehart, R. (1977). *The silent revolution: Changing values and political styles among western publics*. Princeton: Princeton University Press.
- Inglehart, R. (1997). *Modernization and postmodernization: Cultural, economic and political change in 43 societies*. Princeton: Princeton University Press.
- Inglehart, R. & Abramson, P.R. (1994). Affluence and intergenerational change: Period effects and birth cohort effects. In: Becker, H.A. & Hermkens, P. (Eds), *Solidarity of generations: Demographic, economic and social change, and its consequences* (pp. 71-114). Amsterdam: Thesis.
- Koch, A. (1994). An economic analysis of marital dissolution in West Germany. In: Becker, H.A. & Hermkens, P. (Eds.), *Solidarity of generations: Demographic, economic and social change* (pp. 583-602). Amsterdam: Thesis.
- Lutz, W. (Ed.)(1991). *Future demographic trends in Europe and North America. What can we assume today?* London: Academic Press.
- Mannheim, K. (1928/1929). Das Problem der Generationen. In *Kölner Vierteljahreshefte für Soziologie*, 7, 157-185 / 309-330.
- Meulemann, H. (1994). The social and personal costs of prolonged study. In: Becker H.A. & Hermkens, P. (Eds.), *Solidarity of generations: Demographic, economic and social change* (pp. 425-436). Amsterdam: Thesis.
- Nickel, B. & Schmidt, P. (1994). Child or career? In H.A. Becker & P. Hermkens (Eds), *Solidarity of generations: Demographic, economic and social change* (pp. 643-656). Amsterdam: Thesis.
- Norris, O. & Inglehart, R. (2004). *Sacred and secular: Religion and politics worldwide*. Cambridge: Cambridge University Press.

- Pinder, W. (1926). *Das Problem der Generationen in der Kunstgeschichte Europas*. Berlin: Frankfurter Verlags-Anstalt.
- Ravelli, A.C.J. (1999). *Prenatal exposure to the Dutch famine and glucose tolerance and obesity at age 50* (Ph.D. thesis). Amsterdam: University of Amsterdam.
- Reich, C.C. (1970). *The greening of America*. New York: Bantam.
- Remling, G.W. (1975). *The sociology of Karl Mannheim*. London: Routledge & Kegan Paul.
- Rothman, J., Greenland, S. & Lash, T.L. (2008). *Modern epidemiology*. Philadelphia: Lippincot Williams & Wilkins (3rd ed.).
- Sanders, K. & Becker, H.A. (1994). The transition from education to work and social independence: A comparison between the United States, The Netherlands, West Germany and the United Kingdom. *European Sociological Review*, 10, 135-154.
- Schelsky, H. (1957). *Die Skeptische Generation* [The sceptical generation]. Frankfurt: Ullstein.
- Schroots, J.J.F. (2003). Ageism in science: Fair-play between generations. *Science and Engineering Ethics*, 9, 445-451.
- Schroots, J.J.F. (2008). *The Janus model of life-course dynamics*. Amsterdam: Stichting ERGO | European Health Institute on Health and Aging.
- Schüle, A., Ahbe, Th. & Gries, R. (Eds)(2006). *Die DDR aus generationengeschichtlicher Perspektive*. Leipzig: Leipziger Universitätsverlag.
- Schuhmann, H. & Scott, J. (1989). Generations and collective memories. *Americal Sociological Review*, 54, 359-381.

- Scott, J. & Zac, L. (1993). Collective memories in Britain and the United States. *Public Opinion Quarterly*, 57, 315-31.
- Veenhoven, R. (Ed.) (1989). *Did the crisis really hurt? Effects of the 1980-1982 economic recession on satisfaction, mental health and mortality*. Rotterdam: Rotterdam University Press.
- Verhoeven, W.J., Jansen W. & Dessens, J. (2005). Income attainment during transformation processes. A meta-analysis of the market transition theory. *European Sociological Review*, 21, 201-226.

Active Aging: Mandatory Retirement as a Barrier

Rocio Fernández-Ballesteros & Juan Díez-Nicolás

We are living in an aging world and Europe is the oldest continent of all. Population trends in the 27 European Union countries are currently very similar, reflecting the world's lowest rates of growth, lowest birth rates and highest life expectancies.

According to UN demographic projections, the total EU-27 population will decrease by 3 million between 2005 and 2025. However,, the loss of population will not be similar in all age groups of the EU population. In fact, although there will be a reduction in the numbers of children, adolescents, young adults and adults under 55, there will, simultaneously, be an increase in the numbers of older workers, over-65s and of the very old (over 85).

Parallel to this aging revolution, the traditional intergenerational division of labor has changed dramatically, so that whereas in the past people usually started working (at least in white collar jobs) at about 20 years of age and had mandatory retirement at 65, they now begin when they are 30 and frequently retire at 55 in line with early retirement policies. Therefore, working lives have been reduced from an average of 45 years to an average of 25 years. And since life expectancy has increased in the same period from around 63 to 80 years, it means that Europeans are living longer and working less in both absolute and relative numbers of years.

This demographic situation requires active aging policies. Active aging has emerged as a new paradigm supported by the following assumptions: the plasticity and reserve capacity of human functioning, the modifiability of one's bio-psychological capacity for improvement, the possibility of compensation for dysfunctions and, therefore, the need to implement programs to promote active aging in order to extend active and satisfactory life throughout the life span.

This article deals with a demographic overview, focusing on the barriers to active aging presented by labor regulation. This overview begins with a review of the European protection system, in particular Mandatory Retirement (MR) and its effects on the individual and socie-

tal levels, and continues to offer recommendations before a few concluding remarks.

Current demographic trends in Europe

Recent population trends in Europe (and indeed most short-term forecasts) suggest a general population decline in this area, due to a persistently low birth rate (below replacement level) and an increasing aging of the population. Population trends in the 27 European Union countries are very similar at present, reflecting the world's lowest growth rates, lowest birth rates and highest life expectancies. The combination of these three processes is producing the most aged populations in the world. If these trends continue, the population of the European Union will not only decline, but will become even more aged, with the labor force shrinking further. Some of the measures proposed to avoid such a situation include increasing fertility and/or immigration, on the assumption that this will increase population growth, make the population younger and increase the workforce. However, higher fertility and immigration are not the only possible answers to this situation, and some benefits may even be derived from non-growing and aging populations, provided that societies adopt the changes that adapting to the new demographic situation requires (Díez-Nicolás, 2004).

Life expectancy has increased slowly but steadily in all European countries over the past two decades, and since 1985 the total birth rate has remained below the replacement level in most countries. Some European countries (14 out of 25) slightly increased their birth rate in very recent years, though only by one or two decimal points in most cases, and in 2007 all twenty-seven countries remained below the replacement level. In the majority of cases, the small increase is a result of female immigrants' higher fertility rates. In 1980 most EU countries had a total population growth rate of less than 1 per cent/year, but five countries had rates slightly above 1%, and only Hungary experienced a negative growth rate. On examining the components of total population growth, we find that in 1980 most countries had a positive natural growth (though Austria and Germany already had negative natural growth), as well as positive net migration. And in all but six countries, the natural growth component had greater weight than the immigration component in determining the total growth rate. By 2007 the situation

had changed significantly, as shown in Table 1. Eight countries showed negative total growth rates, and the rest had rates of less than 1% (Cyprus, Ireland, Luxembourg and Spain being the exceptions). However, in fifteen countries, the net migration component has a greater effect on total growth than natural growth, in eight countries natural growth is greater, and in four countries the two components carry the same weight.

UN projected rates of the total growth of the 27 member countries of the EU between 2007 and 2025 are all below 1% (Romania being the only exception). In 13 of these countries, the total projected growth is expected to be negative, and in three other countries zero growth is expected.

At this point it is important to stress that there is no basis for expecting a significant increase in fertility that would help reverse, reduce, or even halt the aging process of the population composition in European Union countries. However, immigration, in spite of its important absolute and relative weight in many European populations, has not had significant effects on the aging process, which continues at an even greater rate. The proportion of the population aged over 65 in all 27 countries is at present between 14 and 19 per cent, and will be close to 25% by 2025, according to UN projections.

Eurostat projections (EC, 2006) summarize the population growth prospects for three shorter periods within the longer period of 2005 to 2050. According to these projections, the total population in the EU will decrease by more than 8.6 million between 2005 and 2050, and the loss will be much greater in the period 2030-2050, given that in the two previous periods (2005-2010 and 2010-2030) some positive growth is expected (though UN projections estimate a loss of 3 million inhabitants in the period 2007-2025, as shown above). But the loss of population will not be similar for all EU population age groups. In fact, there will be a reduction of 19% in the number of children aged 0 to 14 during the total 45-year period, a reduction of 24% in the number of young people aged 15 to 24, a reduction of 25% in young adults aged 25 to 39, a reduction of 19% in adults aged 40 to 54, but an increase of 9% in the number of older workers (aged 55 to 64), an increase of 44% in the number of those aged 65 to 79 and an increase of 172% in the number of 'frail elderly' (80 years and over).

Table 1. European Union population (2007), main demographic indicators for 2007, and projected population for 2025*.

	Population mid 2007 (Millions)	Projected population (Millions)	Projected annual rate of increase (%) ^a	Rate of natural increase %	Net migration rate per 1.000	Total fertility rate	Life expectancy at birth (both sexes)	Percent of population of age	
	2007	2025	2002-2025					< 15	65+
EU-27 ^a	495.2	492.3	-0,03						
Austria	8.3	8.8	0,33	0	4	1.4	80	16	17
Belgium	10.6	10.8	0,10	0.1	3	1.7	79	17	17
Bulgaria	7.7	6.6	-0,79	-0.5	0	1.4	73	13	17
Cyprus	1.0	1.1	0,56	0.5	29	1.5	78	19	11
Czech Rep.	10.3	10.2	-0,05	0	3	1.3	76	15	14
Estonia	1.3	1.2	-0,43	-0.2	-0	1.6	73	15	17
Denmark	5.5	5.6	0,10	0.2	2	1.9	78	19	15
Finland	5.3	5.6	0,31	0.2	2	1.8	79	17	16
France	61.7	66.1	0,40	0.4	2	2.0	81	18	16
Germany	82.3	79.6	-0,18	-0.2	0	1.3	79	14	19
Greece	11.2	11.3	0,05	0	4	1.3	79	14	19
Hungary	10.1	9.6	-0,28	-0.3	2	1.3	73	15	16
Ireland	4.4	4.9	0,63	0.9	16	1.9	78	20	11
Italy	59.3	58.7	-0,06	0	4	1.4	81	14	20
Latvia	2.3	2.2	-0,24	-0.5	-1	1.4	72	14	17
Lithuania	3.4	3.1	-0,49	-0.4	-1	1.3	71	16	16
Luxembourg	0.5	0.5	0,00	0.4	6	1.7	78	19	14
Malta	0.4	0.4	0,00	0.2	2	1.4	80	17	13
Netherlands	16.4	16.9	0,17	0.3	-2	1.7	80	18	14
Poland	38.1	36.7	-0,20	0	-1	1.3	75	16	13
Portugal	10.7	10.4	-0,16	0	5	1.4	78	16	17
Romania	21.6	17.1	-1,16	-0.2	0	1.3	71	16	15
Slovakia	5.4	5.2	-0,21	0	1	1.3	74	16	12
Slovenia	2.0	2.0	0,00	0	4	1.3	78	14	16
Spain	45.3	42.0	-0,40	0.3	7	1.4	80	14	17
Sweden	9.1	9.9	0,49	0.2	6	1.9	81	17	17
U K	61.0	65.8	0,44	0.3	4	1.8	79	18	16

* Source: Population Reference Bureau, *World Population 2007* [2].

^a Calculated by the authors.

In conclusion, the total population of the EU is expected to decrease by 2050 and, most likely, even by 2025. Fertility is expected to grow positively but by only one or two decimal points, and men's life expectancy will probably increase by about seven years, while life expectancy for women will increase by five years. However, the repercussion of these trends for the age structure is that the 'old-old' will increase more than proportionately, that is, much more than other age groups. Significant increases in the birth rate are not envisaged, and increases in the immigrant population do not seem to have a large effect on the age structure, so that neither of these factors will succeed in modifying the long-term trend toward the ever-increasing aging of the European populations. On the contrary, in spite of immigration, population aging in the EU is expected to continue at an even greater rate – though getting people to live longer, it must be said, should not be considered a problem but rather a success.

Given the situation described above, 'over-65' is clearly a very broad and diverse category, and should perhaps be divided into two sub-groups: 65-79 and 80 years and over. A large proportion of this broad group has an enormous potential to contribute to an aging world.

Active aging

As already described, the second half of the 20th century was characterized by increasing life expectancy and a strong decline in birth rate, the combination of which has led to an increase in absolute and relative numbers of people over 65 throughout the world. Such changes are undoubtedly due to the geometric progression of human and social (scientific, technical, political, etc.) developments.

However, since the 'old-old' is the age group with the highest rate of increase, and is strongly associated with illness and disability, from a bio-medical perspective, the aging phenomenon is considered a threat at an individual, familial and societal level (Schroots, Fernández-Ballesteros & Rudinger, 1999). Moreover, based on this bio-medical view of aging, social stereotypes encourage a negative view of aging as 'senescence' (unavoidable decline), thus over-generalizing the elderly as ill, frail, cognitively impaired, rigid and inflexible, poor workers, etc. (Fernández-Ballesteros, 2006). Such stereotypes are decisive for producing ageism and discriminatory behavior at individual, group and

societal levels. Finally, as several authors have pointed out, stereotypes and self-stereotypes act as self-fulfilling prophecies, and underlie elders' negative behaviors (such as memory performance or walking speed), the expectations and behaviors of family members and care professionals, and indeed many of the discriminatory regulations of social life, such as mandatory retirement.

However, although the prevalence of illness (physical and mental) and the increased costs of social and medical care throughout the life span justify some degree of the threat related to aging, scientific discoveries also support a positive view of aging.

Bases of active aging

Over the last three decades, research has yielded new data, considerably changing the perspectives on the subject. Fernández Ballesteros (2008) summarizes the three most important bases of active aging: compression of morbidity, interindividual variability and the plasticity of human beings.

At the population level, a *first* observation is that, throughout the 20th century, human beings did not only live increasingly longer, but their health had also steadily improved. At the beginning of the 1980s, Fries and Crapo (1981) argued against the medical model for the study of aging. They claimed that with our new knowledge about human aging, morbidity, mortality and survival, we could arrive at the following syllogism: the human life span is fixed, the age at first infirmity will increase, therefore the duration of infirmity will decrease. This is based on the idea that an increase in life expectancy would involve a prolongation of vitality and good health, rather than a prolongation of morbidity and disability.

This syllogism emerged from the analysis of human survival curves, decade by decade, from 1900 to 1980. From this analysis, Fries and Crapo arrive at three conclusions: (i) these curves demonstrate that the maximum age of survival is fixed (close to 100 years), (ii) the proportion of survival is not only increasing in the first years of life but at almost all ages up to the predicted limit of human life, adopting a 'rectangular' shape, and (iii) this 'rectangularization' expresses the postponement of infirmity and the compression of morbidity.

These conclusions, arrived at by Fries and Crapo in 1981, are supported by recent demographic data from several sources (for a review, see Robine, 2001). Meslé and Vallin (2003), for example, examined the

rectangularization of survival curves for French women during the last 250 years; both cross-sectional (data from 1802, 1906 and 1996, and projections for 2102) and cohort (data from 1806, 1906 and 1996 cohorts) data (assuming 105 years as maximum life length) showed that while the curves for the year 1806 and the 1806 cohort are quite similar, one hundred years later the cohort born in 1906 is much more rectangular than the curve for the year 1906, with this effect continuing in subsequent years.

In sum, the rectangularization of the survival curve represents – like changes in aging patterns – a demographic revolution attributable to human development and social improvements in living conditions (hygiene, health services, education, etc.). However, living conditions are diverse both because socio-economic and cultural environments are diverse and because individuals behave differently in different environmental and cultural contexts. Such environmental diversity produces extensive inter-individual variability in the ways people age.

Therefore, the *second* assumption considered by most authors in the field concerns the well-documented variability of the aging phenomenon itself, which can be classified as: usual, pathological or optimal (*e.g.*: Baltes & Baltes, 1990; Fries, 1989; Lerner, 1984; Plomin & Thompson, 1986; Rowe & Kahn, 1987). These three broad categories appear to maintain their descriptive and heuristic power even in very old people (see, for example: Baltes and Smith, 2003¹ in over-70s; Motta et al., 2005² in centenarians).

In fact, any pattern of decline across ages has high variability, and variability increases over the life span (Smith & Baltes, 1999). Therefore, there is great heterogeneity in the way aging is expressed at the level of individuals: from active, healthy and successful aging to normal aging or aging with disability. In other words, older people differ more than younger people.

By way of example, Figure 1 shows variability (standard deviation) in three physical (tapping speed), health (number of health problems reported) and social (social interaction frequency) conditions involved

¹ They regarded the oldest old at the limits of their functionality. The very old individuals in the BASE study can be classified according to these three categories.

² In their study of centenarians (N=602), they classified 20% as in good health, independent and maintaining good cognitive functioning, though maintaining no social or productive activity; 33.4% as intermediate-functioning, and 46.6% as having poor health and functional status.

in the EXCELSA study – assessing aging, health and competence – which was carried out in 7 European countries (N=672) with people from ages 30 to 85 (Fernández-Ballesteros, Zamarrón, Rudinger, Schroots et al., 2004). With age, the standard deviation is found to increase regarding health, physical and psychosocial conditions.

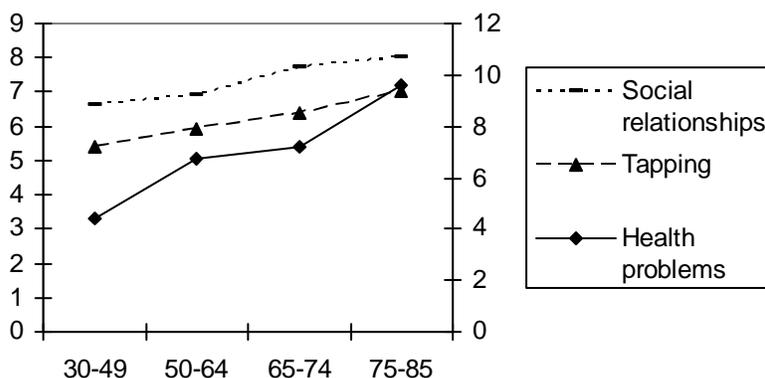


Figure 1. Variability (SD) in three bio-psycho-social conditions from the EXCELSA study (30 to 85 years; N=672) (Fernández-Ballesteros et al. 2004).

In sum, our second assumption is that there are large individual differences in adaptive mechanisms across the life span, thus reflecting the diversity in aging trajectories (*e.g.*, Baltes & Baltes, 1990; Carstensen, 1993; Greve & Staudinger, 2006).

Our *third* and final assumption is based on findings from experimental, longitudinal and cohort research carried out from psychological and neurobiological perspectives, indicating the extensive plasticity and reserve capacity of human functioning. Thus, research in gerontology supports the existence of a basic multilevel principle of plasticity at the biological level, including the central nervous system (CNS), which, at the phenotypical level, is expressed by cognitive, emotional and behavioral plasticity measured by changes in individuals after training. In fact, plasticity is also the basis for the results, indicating that most conditions, which decline over the life span, can be modified through environmental interventions.

Figure 2 shows learning potential (as a measure of cognitive plasticity), assessed via a verbal learning task with 6 trials. The participants were healthy elders (N=100; Mean age = 73.13), persons with mild cognitive impairment (N=50; Mean age = 74.89), and patients with Alzheimer’s disease (N=50; Mean age = 75.07). The task used is from a Battery for Assessing Learning Potential in Dementia (BEPAD, Fernández-Ballesteros, Zamarrón, Tárraga, Moya & Iñiguez, 2003).

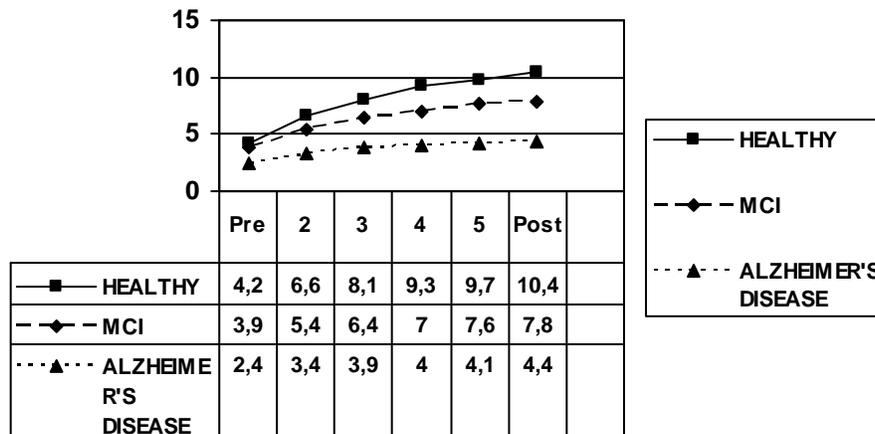


Figure 2. Learning potential (cognitive plasticity) in a verbal task with 6 learning trials (AVLT-PA) in healthy elders (N=100), Mild Cognitive Impairment individuals (N=50) and Alzheimer’s disease patients (N=50) (Fernández-Ballesteros et al., 2003).

Results show a broad plasticity in healthy subjects, but also that even mild cognitively impaired individuals and patients with Alzheimer’s disease are able to learn. Furthermore, plasticity reflects changes in cohorts throughout history; therefore, over the course of the 20th century, new cohorts showed better cognitive functioning than previous cohorts, as shown in Figure 3. As Schaie (2005) pointed out from the Seattle longitudinal cohort study results, there is a substantial and linear increase in cohort performance in Inductive Reasoning and Perceptual Speed (approximately 1 SD). Similar, but less pronounced, patterns are found for Spatial Orientation and Verbal Memory. Finally, a modest negative gradient (approximately 0.1 SD) is found for Numerical Facility and Verbal Comprehension.

In sum, the plasticity of human functioning – the modifiability of one’s bio-psychological capacity to improve, reserve capacity and/or to compensate for dysfunctions – is a cornerstone of active aging.

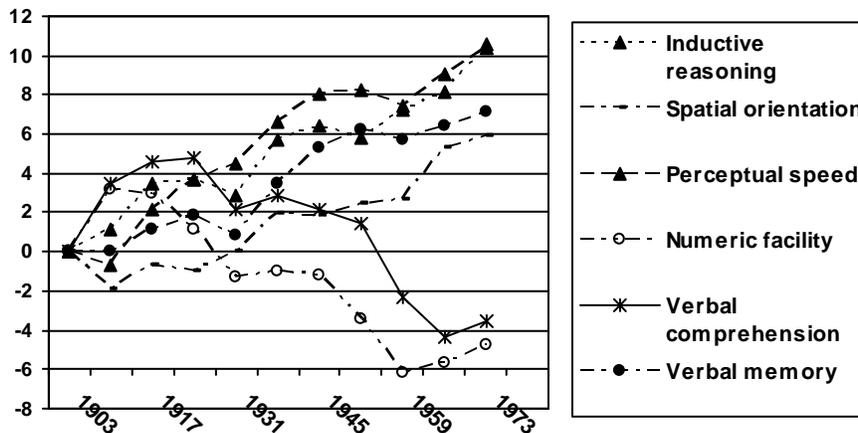


Figure 3. Cohort differences born from 1903 through 1973 for the latent construct factor in T-scores (Primary Mental Factors)(from Schaie, 2005).

Active aging concept

In recent decades, positive aging has been a relevant research issue, adopting several names: healthy, successful, optimal, competent, active and/or productive aging. This new set of concepts is based on two general psychosocial theories of aging: activity theory (Havighurst, 1963) and continuity theory (Atchley, 1989). Both theories assume that older people either continue activities into old age or compensate for the loss of traditional roles, and both have empirical support.

Fernández-Ballesteros (2008) examined the evolution of the use of most of these terms in scientific literature databases (bio-medical and psychological) from 1970 to 2007. Figure 4 shows the comparison between the PubMed and PsycINFO databases. In short, 'healthy' aging is the term most commonly used in the bio-medical literature, while 'successful' aging is the usual keyword in psychology literature; 'active', 'productive' and 'optimal' aging are significantly less widely cited, although their use has been increasing in bio-medical literature since the 1990s and in psychological databases since the first decade of the 21st

century. These results reflect the history of the concept, which we shall consider presently.

Embracing this set of concepts, there are dozens of definitions of the positive form of aging, which have been classified into two broad categories: outcome and process definitions. Perhaps the oldest term in this field is 'healthy' aging, extensively used in bio-medical literature. Obviously, healthy aging has 'good health' as its outcome, defined by research with bio-medical indicators such as survival, morbidity, disability, and longevity. But this reductionist perspective has received strong criticism from authors who maintain that positive aging is multidimensional and cannot be reduced to just one component of the aging process.

From a multidimensional consideration, the most widely used definition is that by Rowe and Kahn (1997; 1998), for whom successful aging involves low probability of illness and disability, high physical and cognitive functioning and high social engagement. Thus, 'healthy' aging was, in a sense, transformed into 'successful' aging, so that indicators used in research are not only bio-medical, but also physical, cognitive and social.

Among others defining the process, Baltes and Baltes (1990) defined successful aging as the process of Selective Optimization and Compensation (SOC model), which takes into consideration how individuals reach old age in good physical, mental and social shape. These outcomes and process definitions also have broad empirical support from cross-sectional, longitudinal, cohort and experimental data.

Nevertheless, as Figure 4 shows, the use of 'active' aging began more recently, particularly due to the strong influence of international organizations in the wake, for example, of the Second International Plan of Action on Aging (MIPAA; UN, 2002). The MIPAA focuses on three priority directions: older people and development, advancing health and well-being into old age and ensuring enabling and supportive environments. Furthermore, the MIPAA "is a source for policy-making, suggesting ways for governments, non-governmental organizations and other actors to reorient the way in which their societies perceive, interact with and care for their older citizens" (UN, 2002).

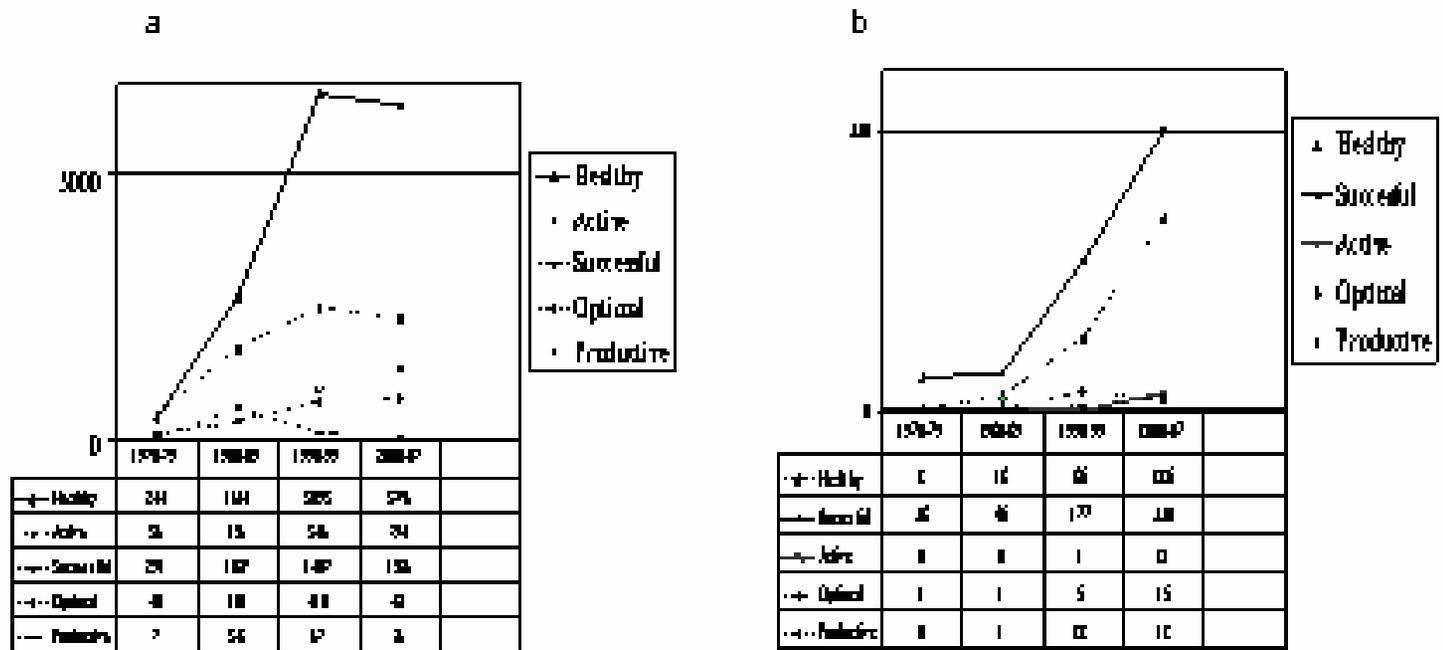


Figure 4. Active ag(e)ing and related concepts research in PubMed (a) and PsycINFO (b) scientific data bases (1970-2007) (Fernández-Ballesteros, 2008).

Based on the MIPAA, the United Nations Economic Commission for Europe and North America also developed a Regional Implementation Strategy (RIS)(UNECE, 2003) through ten commitments, several of them related to the promotion of active aging, ensuring the full integration and participation of older people in society (including the labour market).

Furthermore, in 2002 the World Health Organization (WHO) published the booklet *Active Aging; A Policy Framework* (after the publication in 2001 of *Health and Aging; A Discussion Paper*). Consequently, the WHO changed from the most commonly used term (healthy aging) to the more comprehensive and necessarily multidimensional 'active aging', which was defined as "...the process of optimizing opportunities for health, participation and security in order to enhance well-being and quality of life as people age...". The determinants of active aging at the population level are health and social services, social, economic and environmental conditions, and at the individual level, behavioral life styles and biological and psychological characteristics.

In line with the WHO proposals and the priority directions of the MIPAA and RIS, it follows that policies for promoting active aging should be implemented throughout the world, at both individual and societal levels, particularly in those continents with very high numbers of older citizens, such as Europe.

The WHO (2001, 2002) makes the following proposals for promoting active aging: (1) Reduce risk factors associated with major diseases and increase factors that protect health throughout the life course, thus promoting *healthy behavioral life styles*, (2) promote *protective factors of cognitive functioning*, (3) promote *positive affect, control and coping*, and (4) promote *psychosocial functioning and participation*.

Selecting from these four areas that which involves psychosocial functioning and social participation would embrace the following recommendations: to encourage empowerment in old age; to promote positive images about the aged, age and aging; to enable people to build collective and self-efficacy beliefs and to promote social participation. Thus, psychosocial functioning and social participation would be considered the crux of active aging.

In sum, the discussion on emerging productivity in the 21st century is strongly related to active aging, but also to potential social barriers raised by labour market regulations.

Living longer, working less

As was shown above, demographic data and research suggest that the population aging process is taking place globally due to an accelerated increase in life expectancy and a world reduction in fertility, though both processes are more visible in the more developed countries. More specifically, aging in more developed countries has been much more intense and has taken place in a shorter period of time than forecasted only a couple of decades ago by international organizations in general and the UN in particular. Consequently, although there are differences in the level and ranking place between more and less developed countries, global trends in total population growth are increasingly approaching zero. Consequently, the resulting demographic structure is losing its pyramidal shape to acquire a more rectangular one in which the proportion of people in one age group is very similar to the proportion in other age groups, since most people are reaching increasingly advanced ages.

On evaluating these trends, it is clear that population aging should not be considered a problem, but rather a great achievement by humanity, since it implies that most of the individuals in a given cohort will live until very advanced ages, which are approaching 100 years. And this aging process is taking place in all countries, though it did, of course, first occur in the more developed countries and, specifically, in the member countries of the European Union.

Parallel to this aging revolution, the traditional division of labour between age groups has changed dramatically. Some key patterns are displayed graphically in Figure 5. At the beginning of the twentieth century, those aged 15 years and under were considered young, while those over 65 were considered old. At that time, people generally started working at the age of 18/22 (depending on whether they were blue or white-collar workers) and finished working more or less when they died, since few survived long after the retirement age of 65 (Díez Nicolás, 2006). Today, people require a very long academic and/or professional training, so that they start working (at least in white-collar

jobs) around the age of 25, whilst reaching mandatory retirement at the same age as people did 50 years ago, that is, at 65. However, taking early retirement programs into account and since the mean retirement age is about 55, people have 20-25 years ahead before dying, since life expectancy is approaching 80 years.

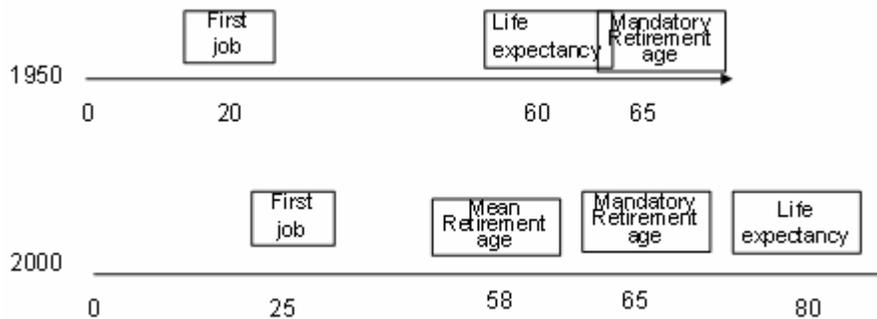


Figure 5. Changing work patterns across the life span in 1950 and 2000 (modified from Díez Nicolás, 2005, and Fernández-Ballesteros, 2008, p. 69).

However, this is not all. As Avramov and Maskova (2003) have pointed out, from the beginning of the twentieth century until about 1970, men's age at retirement was around 65 years in most European countries (data for women are much more heterogeneous due to their very low employment rate), however, since 1970, the average age at retirement has been steadily decreasing.

Figure 6 shows that the proportion of people aged 60 or more who are still working is extremely low in Northern, Southern and Western European countries, in respect of both men and (with even lower figures) women. Clearly, this situation is an expression of the aging process in the labour market.

As Marin (2007) emphasized during his lecture at the International Conference on Aging: ever later labor-market entry and much earlier workforce exit compresses working life into the early-middle adulthood – the 'prime age' of 25-54.

Moreover, and as has been shown above, demographic data suggest that in European countries we can expect significant reductions in the population proportion aged 15-24, 25-39, 40-54 and 55-64 during the coming decades, especially between 2030 and 2050, while the population aged 65-79 is simultaneously expected to increase by almost 50%, and the population aged 80 and above by more than 150%. Thus, the active population will decrease dramatically while the dependent population will increase even more dramatically.

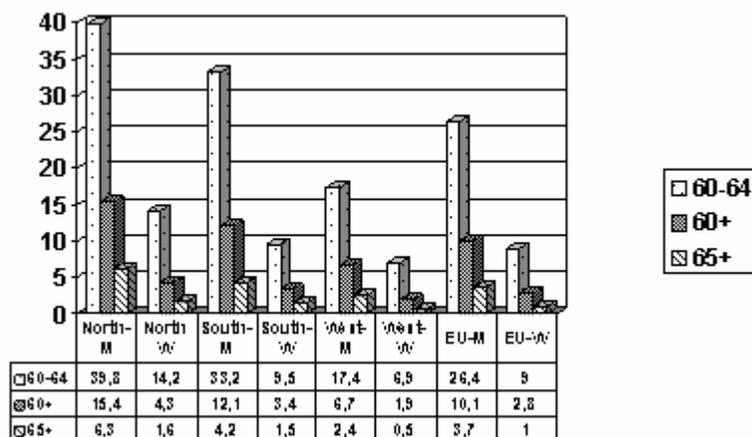


Figure 6. Percentage of working men and women by EU regions and by age group (from Avramov & Mascova, 2003).

As a consequence, traditional age working patterns can no longer be used. However, as stressed by Avramov and Maskova (2003), the mismatch between demographic structure and processes as well as policies in the field of employment (such as maintaining mandatory retirement age) reflects turning a blind eye to the structure of the population and to the individual variation in aging. Thus, adapting employment regulations to the new social reality of the positive demographic and individual changes (high life expectancy, good performance in old age) seems essential. If individuals remained in the active population for around two-thirds of their total life span of 65 years in societies with pre-industrial demographic structures, given the current postponement of labour-market entry until age 25 or even later and long-term unemployment or early retirement (mandatory or voluntary) at age 55, combined with an increase in life expectancy until age 80, individuals may

be part of the active population for an average of just one-third of their total life. No society can support such a situation, therefore the social structures must adapt to the new demographic reality of an increasingly older population (around 20% over 75 years of age in the very near future in European societies) as well as a population of young people who delay their age of entry into the labour market and, consequently, their emancipation from the nuclear family until age 30 or even later.

In order to adapt labour regulations to the demographic structure, the adoption of two different policies seems necessary: (1) postponing retirement age, and (2) eliminating mandatory retirement (except for reasons of physical or mental disability), facilitating flexible retirement processes and allowing people to decide when they want to retire permanently. These measures would not only be economically positive for society, but more importantly, they would imply an extension of individual rights. On the other hand, failure to accept this principle would once again imply unacceptable age discrimination with impacts contrary to the commonly accepted idea that nobody should be discriminated against in respect of sex, age, race, religion, ideology or social condition.

In a few decades, postponement of retirement age will be a necessity in European countries due to a lack of social security funds. This has been recognized by the European Union through recommendations from the Lisbon, Stockholm and Barcelona conferences (as well as in the International Plan of Action on Aging and the European Strategy) on this matter, although there have been no repercussions regarding European employment regulations. Moreover, although electorates in European countries have contested such recommendations, governments would be wise to begin the adaptation process by stimulating voluntary permanence in the labour force through the abolition of mandatory retirement, only making it a consequence of physical or mental incapacity.

The attempt to justify mandatory retirement on the grounds of offering young cohorts a greater supply of jobs is based on a fallacy (there is no proof of the connection). Mandatory retirement not only fails to favor intergenerational solidarity, but also stimulates confrontation and conflict between generations. In line with the principle that the social structure should adapt to the demographic structure, societies should create work for young people, young adults and older people, but they

should also not take jobs away from one age group to give them to another.

Removing people from active working life only for reasons of age when they are in good physical and mental condition, preventing them from continuing their work and doing so when, with the present life expectancy, they will remain in this condition for some twenty or thirty years, does not seem to correspond to the new values of emancipation and respect for individual rights associated with modern democracies.

Finally, employment regulation policies in Europe run counter to other policies also related to population aging and recommended by international and regional organizations (UN, 2002; UNECE, 2003) as part of their active aging policies.

Social barriers to active aging, an example: Mandatory retirement

As Avramov and Maskova (2003) point out, on examining the activity patterns of older people as revealed by national and international aging studies throughout Europe, a variety of societal factors, such as cultural values, economic conditions and social policies in various domains, act as social barriers to active aging with mandatory retirement (MR) being one of the most powerful.

As far as social welfare systems in Europe are concerned, in pre-modern times people worked until they were disabled or died. It was at the end of the 19th century, with Bismarck's system for protecting the aged and disabled, that old-age pensions were first introduced and available from age 70. At that time, life expectancy at birth was approximately 45 years, and very few people surpassed the retirement age of 70. In the course of the 20th century, the retirement age was reduced to 65 in most European countries, nevertheless, as already mentioned, early retirement programs became increasingly common, so that since the 1970s the average age at retirement has been continuously decreasing in men, while very few older women were still working (see Figure 6).

Reasons for supporting MR and early retirement are often based on the argument that the labour market should be open to younger cohorts, using the excuse of solidarity, greater efficiency and social utility. Once more, it must be stressed that it is discriminatory to adopt such decisions based only on age criteria. Moreover, as Marin (2007) points out,

only 1 in 7 jobs left by retired elders are occupied by a young worker. In contrast, there is clear potential for intergenerational solidarity in the field of vital organ donation from elderly people to young people and vice versa, provided this is done on a non-profit and voluntary basis, and not as a result of mandatory regulation. Finally, it should not be overlooked that population aging is in itself a source of new jobs in such areas as education, health care, personal attention for the sick, the elderly and the handicapped, leisure, fitness or tourism.

This situation in relation to the age of MR should be seen in the current context, notably with regard to two aspects: (1) life expectancy has dramatically increased to almost 80 years in most Western European countries, (2) research on aging has revealed positive physical and cognitive changes across cohorts (as referred to in a previous section); thus, today, a 65/70-year-old person could be situated (mentally and physically) approximately 1 SD above his/her counterpart when mandatory retirement was established (Baltes & Willis, 1982; Schaie, 2005). In sum, MR not only reflects the age discrimination and ageism of the welfare system, but is also contrary to common sense, as underlined in a previous section.

Moreover, from the political and economic perspectives, MR could be considered basically perverse in two particular senses: (1) Although the protection model in the welfare society is characterized by a voluntary agreement, and retirement could be considered as fully consensual among the parties concerned (opening the door for early retirement), mandatory retirement implies a forced behavior. Furthermore, MR obligations continue despite opposition from the general public; (2) The root of MR was the relationship between age and disability, so that the goal of this regulation was to maintain work efficiency. However, MR is independent of the worker's ability because it is exclusively based on age, even in those jobs with continual monitoring of performance (as with academics and scientists). Therefore, MR can be understood as going against not only individual rights, but also, indeed, organizational and managerial principles (see Gomez & Gunderson, 2007; Kesselman, 2004; www.abilitynotage.ca).

We have thus seen some of the supporting arguments for voluntary retirement from demographic, socio-political, economic and managerial points of view, and even acknowledged the alleged potential benefits of MR (it is, *e.g.*, necessary to open the market to young workers). Having drawn some conclusions on the perverse nature of MR, our purpose is

now to examine the extent to which MR is a barrier to active aging, so that it can be removed and an increase in retirement age and retirement made voluntary.

Retirement is considered a positive life event, but its effect on health depends on both the social and individual subject's situation and on his/her coping abilities, so that its influence is very difficult to generalize. Whilst reviewing the literature in the field, Dave, Rashad and Spasojevic (2006) studied seven longitudinal waves of the Health and Retirement Study. Their results showed a minor retirement effect on health indicators (5-16% increasing mobility difficulties; 5-6% increasing illness conditions; 6-9% decline in mental health) over an average post-retirement of six years. However, the authors drew an important conclusion: the evidence indicated that retirement has more adverse effects on health in cases of involuntary retirement (similar results are provided by Bossé, Aldwin, Levenson & Ekert, 1987; Solinge & Henkens, 2007).

A second source of empirical evidence is based on the negative effects of retirement in different work circumstances. One of the covariants of aging is cognitive decline. Schaie and colleagues (De Fries & Schaie, 2001; Dutta, Yue, Schaie, Willis, O'Hanlon & Yu, 1986) found that although those elders who retired from routine jobs did not suffer adverse cognitive effects, those retiring from complex jobs showed significant cognitive decline.

A third source of potentially negative effects of MR is related to the importance of control and self-efficacy for active aging. As already mentioned, sense of control and perceived self-efficacy are two conditions for active aging, predicting survival and longevity in health (for a review, see Fernández-Ballesteros, 2008). Since MR is an uncontrolled event, it brings about reduced control but also reduced self-efficacy in the individual. Voluntary retirement would appear to be a strategy that favours active aging, increasing the sense of control at the individual level.

From these empirical results, an important conclusion is that not only can mandatory retirement have negative effects on physical and mental health in general, but, those elders who have had to retire against their will and those previously working in cognitively demanding jobs (such as academics or scientists) experience a more intensely negative effect on their health and more cognitive decline. Physical

health, mental health and cognitive functioning are all key issues for active aging.

Finally, the crux of active aging is social functioning and participation. Across Europe, policies aimed at increasing participation among the elderly are being introduced at European, national, regional and local levels. Most of these policies set out to involve retired elders in unpaid but productive activities, and this attempt at inclusion is welcome, though it must be stressed that such policies reflect a degree of cynicism and condescension, since, having been withdrawn from their active life in a remunerated working context, elders are maintained 'active' – though unpaid – and provided with 'a source of well-being' derived from 'making a contribution to society'. Finally, a negative repercussion of the whole perverse situation is that retirement also helps to reinforce negative stereotypes about the elderly, since they are regarded as retired because they are unable to work and are incompetent.

Consequently, MR is one of the most substantial barriers to active aging: (1) It has a negative effect on health and can increase cognitive decline, especially in those people who had worked in intellectually demanding jobs; (2) MR reduces the individual's sense of control and social empowerment; (3) MR eliminates a source of social participation (and a source of cognitive stimulation), and (4) MR reinforces negative stereotypes and negative self-images about aging.

A final argument against MR comes from its global rejection by the public. As Kasneci (2007) reports, several worldwide surveys of public opinion on MR were carried out in 2004 and 2005. Of the tens of thousands of respondents, 72% in 2005 and 80% in 2004 were opposed to MR³. Kasneci concludes: "Research has also revealed a strong and universal support for the idea that people's desire and ability to work should determine when they will retire" (p.6). These are indeed the two conditions for abolishing MR that reflect the arguments set out in this chapter.

³ In Spain, a recent poll on retirement (ASEP, December 2007, ASEP/JDS Data Bank, www.jdsurvey.net) has demonstrated very clearly that Spaniards firmly reject an extension of the age of mandatory retirement, they reject early retirement if this is decided by the entrepreneur (private or public), they favour early retirement decided by the worker, and they favour remaining in the labour force after the mandatory age of retirement, provided it is decided by the worker.

Summary and conclusions

An aging world requires a set of policies to increase health, security and participation throughout the life span and in old age. However, such policies may challenge other policies in Europe. One of the most serious barriers to the consolidation and extension of active aging throughout European countries is the mandatory retirement currently enshrined in Europe's labour market legislation.

Recommendations from several European summits have failed to improve the situation. For example, the 'Lisbon Strategy', which was announced in 2000, called for actions in several areas to improve active aging and increase working life, including eliminating mandatory retirement. However, as Marin (2007) emphasizes, there has been no change in the situation.

In spite of this, the EC Commissioner for Employment, Social Affairs and Equal Opportunities, Vladimir Spidla (2007), continues to voice support: "Demographic aging is both a challenge and an opportunity to the modernization of the European social models... The European approach to reform is the so-called 'active aging policy' that aims at encouraging older workers to stay substantially longer in the labor market" (p.1). Various reasons can be adduced for the abolition of mandatory retirement:

- Human rights: MR is direct discrimination based on age;
- Demographic: People live longer and in a better physical and intellectual condition. Labour regulation should adapt to this reality;
- Economic: There is no economic threat from the elimination of MR; on the contrary, demographic projections lend support for such a measure;
- Social: MR supports a negative image of the elderly and its abolition is supported by public opinion worldwide;
- Psychological: MR is a threat to the individual at cognitive and motivational levels.

References

Atchley R.C. (1989). A continuity theory of normal aging. *The Gerontologist*, 29, 183-190.

- Avramov, D. & Maskova, M. (2003). *Active aging in Europe*. Strasbourg: Council of Europe.
- Baltes, M.M. & Baltes, P.B. (Eds.)(1986). *The psychology of control and aging*. Hillsdale, NJ: Erlbaum.
- Baltes, P.B. & Baltes, M.M. (1990). Psychological perspectives on successful aging. The model of selective optimization with compensation. In P.B. Baltes & M.M. Baltes (Eds), *Successful aging: Perspectives from the behavioral sciences* (pp. 1-34). New York: Cambridge University Press.
- Baltes P.B. & Smith, P. (2003). New frontiers in the future of aging: From successful aging of the young old to the dilemmas of the fourth age. *Journal of Gerontology: Psychological Sciences*, 49, 123-135.
- Baltes, P.B. & Willis, S.L. (1982). Plasticity and enhancement of intellectual functioning in old age. Penn State's Adult Development and Enrichment Project (ADEPT). In F.M. Craik & S.E. Trehud (Eds.), *Aging and cognitive processes* (pp. 352-389). New York: Plenum Press.
- Bossé, R. , Aldwin, C.M., Levenson, M.R. & Ekert, D. (1987). Mental health differences among retirees and workers. *Psychology and Aging*, 2, 383- 389.
- Carstensen, L.L. (1993). Motivation for social contact and life span: A theory of socioemotional selectivity. In J. Jacobs (Ed.), *Nebraska symposium on motivation: Developmental perspectives on motivation*. Lincoln: University Nebraska Press.
- Dave, D., Rashad, I. & Spasojevic, J. (2006). The effects of retirement on physical and mental health outcomes. *Bulletin on Aging and Health*, 12, 123.
- De Fries, C.M., & Schaie, K.W. (2001). Perceived work environment and cognitive style. *Experimental Aging Research*, 27, 67-81.

- Díez-Nicolás, J. (2004). Implications of population decline for the European Union (2000-2050). In A. Marquina (Ed.), *Environmental challenges in the Mediterranean 2000-2050* (pp. 247-263). Dordrecht: Kluwer Academic Publishers.
- Díez-Nicolás, J. (2006). The different forms of activity all throughout life and intergenerational relations. In *IMSERSO, The contribution of older persons to the social and economic development* (pp. 29-44). Madrid: IMSERSO.
- Dutta, R., Yue, G.A., Schaie, K.W., Willis, S.L., O'Hanlon, A.M. & Yu, L.C. (1989). *Age difference patterns in primary mental abilities in China and the U.S.A.* Minneapolis: Annual Meeting of the Gerontological Society of America.
- EC (2006). *The demographic future of Europe—from challenge to opportunity*. Brussels: European Commission.
- Eurostat (2006). *European employment and social policy*. Brussels: European Commission.
- Fernández-Ballesteros, R. (2006). Geropsychology: An applied field for the 21st century. *European Psychologist, 11*, 312-324.
- Fernández-Ballesteros, R. (2008). *Active aging. The contribution of psychology*. Göttingen: Hogrefe & Huber.
- Fernández-Ballesteros, R., Zamarrón, M.D., Rudinger, G., Schroots, J.J.F., Drusini, A., Heikinnen, E., Paul, C., Charzeska, L., & Rosenmayr, L. (2004). Assessing competence. The European Survey on Ageing Protocol. *Gerontology, 50*, 330-347.
- Fernández-Ballesteros, R., Zamarrón, M.D., Tárraga, L., Moya, R. & Iñiguez, J. (2003). Learning potential in healthy, mild cognitive impairment subjects and in Alzheimer patients. *European Psychologist, 8*, 148-160.
- Fries, J.F. (1989). *Aging well*. Reading (Mass.): Addison-Wesley Pub.

- Fries, J.F. & Crapo, L.M. (1981). *Vitality and aging. Implications of the rectangular curve*. San Francisco: W.H. Freeman and Company.
- Gomez, R. & Gundersen, M. (2007). *Mandatory retirement: Myths, myths, and more myths*. London, UK: London School of Economics.
- Greve, W. & Staudinger, U.M. (2006). Resilience in later adulthood and old age. In D. Cicchetti & D.J. Cohen (Eds.), *Developmental psychopathology, Vol.3. Risk, disorders and adaptation* (pp. 796-840). Hoboken, NJ: Wiley & Sons.
- Havighurst, R.J. (1963). Activity theory of aging. In R.H. Williams, C. Tibbits & W. Donahue (Eds.), *Process of aging. Vol.1.* (pp. 299-320). New York: Atherton Press.
- Kasneci, D. (2007). Active ageing: The EU policy response to the challenge of population ageing. *European Papers on the New Welfare*, 8, 1-7.
- Kesselman, J.R. (2004). Mandatory retirement and older workers. *Commentary 2000*, 1-28 (Toronto: C.D. Howe Institute).
- Lerner, R.M. (1984). *On the nature of human plasticity*. New York: Cambridge University Press.
- Liang, J., Shaw, B.A., & Krause, N.M., (2003). Changes in functional status among older adults in Japan: Successful and usual aging. *Psychology and Aging*, 18, 684–695.
- Marin, B. (2007). *Living longer. working longer. Inter-Governmental Conference on Aging*. Leon: UNECE.
- Mermin, G.B.T., Johnson, R.W. & Murphy, D.P. (2007). Why do boomers plan work longer? *J. of Gerontology. Social Sciences*, 5, S286-S294.

- Meslé, F. & Vallin, J. (2003). Increase in life expectancy and concentration of ages at death. In J.M. Robine, C. Jaegger, C.D. Mathers, E.M. Crimmins & R.M. Suzman (Eds.), *Determining health expectancies* (pp.13-34). West Sussex: Wiley.
- Plomin, R. & Thompson, L. (1986). Life-span developmental behavior genetics. In P.B. Baltes, D.L. Featherman & R.M. Lerner (Eds.), *Life-span development and behavior* (Vol. 8, pp.1-31). Hillsdale, NJ: Lawrence Erlbaum.
- Robine, J.M. (2001). Redefining the stages of the epidemiological transition by a study of the dispersion of life spans: The case of France. *Population, An English Selection*, 23, 173-194.
- Rowe, J.W. & Kahn, R.L. (1987). Human aging: Usual and successful. *Science*, 237, 143-149.
- Rowe, J.W. & Kahn, R.L. (1997). Successful aging. *The Gerontologist*, 37, 433-440.
- Rowe, J.W. & Khan, R.L. (1998). *Successful aging*. New York: The Random House.
- Schaie, K.W. (2005). *Developmental influences on adult intelligence: The Seattle Longitudinal Study*. New York: Oxford University Press.
- Schroots, J.J.F., Fernández-Ballesteros, R. & Rudinger, G. (1999). *Aging in Europe*. Amsterdam: IOS Press.
- Solinge, H. van & Henkens, K. (2007). Involuntary retirement: The role of restrictive circumstances and social embeddedness. *J. Gerontology. Psychological and Social Sciences*, 62, S295-303.
- Spidla, V. (2007). Active aging and the European strategy, *AARP International The Journal*, Winter; 1-2.
- UN (2002). *Madrid International Plan of Action on Aging (MIPPA)*. New York: United Nations Publications.

UNECE (2003). *Aging populations. Opportunities and challenges for Europe and North America*. Geneva: United Nations Economic Commission for Europe.

WHO (2001). *Health and aging. A discussion paper*. Geneva: World Health Organization.

WHO (2002). *Active aging. A policy framework*. Geneva: World Health Organization.

Changes in Academia: Retirement, Productivity, and New Roles

Janette C. Brown, James E. Birren, and Robert R. Scales

Demographic and social context of academic retirement

People are living much longer and have longer active lives than was true a century ago when ideas and regulations about retirement were becoming established. What has emerged is an archaic block to the release and use of the experience, wisdom, and potential productivity of adults by established chronological age levels for retirement. In the 1900s, life expectancy in developed countries was about 47 years. Today it is approaching 80 years. Centenarians are becoming commonplace but societies are still guided by dated retirement rules of the past that have rigid qualities as though they were written on clay tablets in biblical days.

Life expectancy has increased dramatically since the 1880s when Otto von Bismarck introduced social policies that arbitrarily established the age for retirement at expecting that relatively few would actually live long enough to draw pensions. Because our scientific knowledge did not inform us otherwise, the newly created United States Social Security Act in 1935 similarly adopted the idea that 65 was an appropriate age for retirement. However, in the early years of the 20th century when the age for retirement was adopted, no one expected that the rise in life expectancy would become an international phenomenon. Of 37 countries whose life expectancies were compared for the years 1980 to 2002, all but one increased (U.S. Health Statistics, 2007).

Life expectancy is increasing internationally, not only at birth but also in the later years as well. The country with the largest increase is Japan in 1980. Life expectancy in Japan at age 65 was 14.6 years for men and increased to 18.0 years in 2002. For women it rose from 17.7 to 23.0 from 1980 to 2002 (p. 175). Manton (2007, p. 63) reported that in the U.S., life expectancy at age 65 increased from 11.9 in 1935 to 17.7 years in 1999. At the same time, life expectancy at age 85 increased from 3.0 years to 6.4 years. Furthermore, active life expectancy at age 65 also increased from 3.1 years to 5.8 years between 1935 and 1999 and active life expectancy at age 85 increased from 0.7 years to

3.0 years. People are living longer and living more active lives than in eras when ages 60 or 65 were judged to mark old age and appropriate age for retirement. Old age is a very dynamic process of change and it is evident that newer generations are enhancing their societies with longer lives and more active years than ever before in history.

Cultural expectations

Long established cultures have customs and rituals marking age levels from birth to growing up and growing old. Contemporary societies have children who mature physically earlier than did their parents and they have older persons who have lived longer than their parents and grandparents. In the past, it was commonly thought that stages of life were relatively fixed; however health improvements in 20th century projects human life into a more dynamic context. In their analysis of age relationships to morbidity, disability, and mortality, Land and Yang (2006) concluded that the growth of the force of mortality with increasing age can be substantially reduced. They also pointed out that "... research in social demography, epidemiology, and medical sociology has greatly improved knowledge of how social, economic, lifestyle/behavioral factors affect differentials in morbidity, disability, and mortality by sex, race/ethnicity, and SES" (p. 55).

Pensions and retirement

One factor interacting with retirement age and life expectancy is pension size. As lives become longer, the question of pension size becomes an important issue of whether individuals can continue to maintain the quality of their lives throughout the years of retirement. Living 20 years beyond retirement on a fixed pension that does not take into account changing needs can affect the quality of life. Thus, our increasing life expectancy interacts with societal pension systems, whether they are employer or government based. Both employer and state based pension systems have been evolving. Schulz and Borowski (2006) pointed out that new national models are evolving with combinations of defined benefit plans and defined contribution plans as governments try to respond not only to the changes in active life but also to the social economics of the information age. The pension costs of old age dependency have to be balanced with productivity of individuals and of the societies in which they live. At lower levels of job wages, individuals

are commonly unable to save enough money for retirement and accompanying health costs.

Highly educated people tend to live longer, earn more money, and save more for their retirement than do less well-educated persons. In addition, the former make more decisions that more effectively relate to age-related disease prevention. Educated persons are more likely to seek early medical care for health complaints, and they enter a hospital sooner, with shorter hospital stays than less educated persons. Hospital stays are longer for the less educated and stays are more crises-related. Health behaviors, such as vigorous exercise, smoking, and high use of alcohol, have been shown to vary with educational level. A summary of health statistics for U.S adults in a 2004 survey found that the percentage of current smokers over the age of 18 who had less than a high school diploma was 26.2 percent compared with 10.4 percent with a bachelor's degree or higher (U.S. Health Statistics, 2006, p. 137). Similar relationships were found with respect to diseases. For example, all types of circulatory diseases were more common among the less educated. Persons over the age of 18 with less than a high school diploma had an 18.6 percent report of circulatory diseases compared with 9.0 percent for persons with a bachelor's degree or higher (U.S. Health Statistics, 2006, p. 113).

Thus there is evidence that educated persons have better health and health behaviors and live longer than the less educated. Academics have higher levels of education than blue-collar workers do. In the face of the research evidence, should all workers be retired at the same age or should other criteria be introduced? In view of the evidence of the complexity and dynamics of aging in developed countries, it would appear that more flexibility has to be introduced into the regulations and expectations about the length of academic work life.

Evidence about the diversity or individual differences in health status and productivity become more valuable and productive for society (Birren, 2008). The use of the experience, wisdom, and potential productivity of older faculty members will become a more significant matter for societies to consider as the younger populations diminish and older educated persons increasingly live longer, healthier lives.

Emerging changes in pensions

Economic security is a large factor affecting retirement age. Retiring persons want to continue to maintain their standard of living and look to their pension benefits for support. Pension size is under the influence of many factors that vary among countries. Trends in pension systems across countries have been described by Schulz and Borowski (2006). Pension systems are complex due to many factors. These include a country's national political support for maintaining a reasonable standard of living among retired persons, national economic prosperity, employer interest in maintaining a work force, and individual choices of saving and spending.

The concept of pensions began in the late 19th century when there was a marked shift from agriculture to industry. Schulz and Borowski pointed out that, "...along with industrialization came innovative social welfare programs for older adults, starting Germany's 1889 social insurance program. The early public old age benefits were designed as benefits for the poor" (p. 361). Later employers started pension plans and individuals started private accounts. Recently, pension systems have been changing as various data have been gathered about the economics of aging populations. As societies seek to develop systems that have the best mix of strategies to encourage productivity and sustain the quality of lives of retired persons, the trend has been away from the earlier stipulated benefit plans to defined contribution plans. Recent scandals about the deposit of retirement funds in company stock has led to unease about retirement funds management by employers and the security of employees investing in company stock as the base of their future pensions.

One of the important questions about pensions is their size in relation to income during working years. After retirement, some costs decline, *e.g.*, travel to work. Schulz and Borowski (p. 372) commented, "It is generally agreed that a reasonable retirement income goal is retirement income that replaces 60% to 65% of gross preretirement earnings." Higher expectations may accompany higher costs of local living and retiree interests in travel and other spending. In fact, many recent retirement articles encourage saving enough for a retirement income 85-100% of preretirement earnings.

If the expectations of pension size are tied to the number of working years one might set a standard of a two percent per year pension pay

back related one's final wage level. Thus, a fifty-year work life would lead to a pension of 100 percent or equal to the terminal salary income of the employee. If one began to work under such a system at age twenty, he or she could retire at age 70 with a pension equal to their last year of work. Alternatively, a worker retiring after 40 years of employment would have a pension of 80 percent; work for 60 years would result in a 120 percent pension income. This leads to the issue of longer work life and consonant pension benefits. Some workers with heavy intellectual, physical, and emotional demands on them may want to retire early and make a change; others may be too involved in their careers to leave them.

Many faculty members are deeply invested or attached to their career activities and may want to continue to work part or full time following the customary age of retirement, e.g., age 65. A flexible pension system would encourage not only individual productivity but productivity for the employing institution. There is evidence that many workers choose to work longer either full or part time when the pension system allows such flexibility. The usefulness of flexible systems of pensions and retirement age is particularly relevant to the fact that fewer employees have only one employer over their work life. Hence, portability of individual investment in pension plans can contribute to productivity of societies and individuals. Also, "Modernization and rapid technological change has also made it necessary for adults to periodically update their skills and knowledge if they are to compete in contemporary markets, especially as 'lifetime' models of work erode and stable work becomes uncertain..." (Settersten, p. 5).

The adoption of flexible retirement regulations and pension systems seems especially pertinent to academia where faculty members may mature at different ages depending upon their specialty, a lab scientist compared with a philosopher. Individual differences in talent and health are also relevant to a flexible retirement system with the implicit goal of maximizing the productivity of institutions and their staff members. Making pension systems flexible should however, avoid loading disproportionate costs on institutions and governments for payments to individuals who continue to work as may be the case with definite benefit pension systems. The goal of pension flexibility should be to enhance individual and institutional productivity because people live longer and have more active lives.

Releasing career experience and wisdom

As they advance in age, older persons and retiring academics receive recognition and honors for their contributions. There is no reason to discourage such rituals but in addition to recognizing past contributions to families, institutions, and society, new ways are needed to encourage and release the talents and potentials of elderly faculty. Highly educated academics are living longer than their less educated age peers and may have much to contribute from their experience of living both through the changes of different social eras as well as advances in technology. Of course, there are diversities among the elderly as at any age level. Not all individuals are equally equipped to meet all the obligations of a fixed age, such as starting school, graduating, finding a job, functioning productively in a career, and working after a customary age of retirement. Individual differences in acceptable levels of competence are recognized throughout the life span, but often not at retirement when age can be the sole criterion for assessing competence.

Airline pilot retirement is one area in which age competence is being measured. Recently, the European Union increased the age of retirement of airline pilots from 60 to 65 years. Now, some planes may fly over countries with pilots older than the academics who must retire at age 60. Physical and mental competence is a relevant factor as to when individuals retire. In the United States, 60 was adopted as the age for retirement of airline pilots in 1958 when there were 17 in-flight deaths in the cockpits of American lines. There was then little evidence for judging the health and performance of pilots. Now health examinations can reveal important risk factors. Also, there are now in-flight performance records and flight simulators to provide evidence about an individual's competence. Some commercial airline pilots may not be sufficiently competent to fly at age 55, let alone at age 60. Similarly, some academic faculty members may have limiting physical or mental health problems long before the customary age of retirement while others in their 80s and 90s can produce new works.

One of the basic issues is the acceptance that age itself does not cause anything. Age is a simple and often a convenient index for the outcomes of many unrelated causes; outcomes that can be positive as well as negative. Parallel changes may occur, such as the accumulation of experience that increases with age or in the accumulation of experience and a decrease in impulsivity. As societies increasingly recognize

evidence-based rules and regulations, we can expect age to diminish as a primary criterion for retirement.

The evaluation of people in terms of health and disability risks should become more commonplace, replacing age as a criterion for continuing work or retirement. Some professors may have early cognitive declines and disability risks that should be important to recognize not just for the benefit of institutions they serve but also for the individuals themselves.

In late life, good health and well-being of academic personnel is not only the result of higher education per se, but other factors contribute. These include safer environments as well as access to colleagues with useful information when decisions have to be made. Decision-making styles of well-educated persons influence not only their careers but also in anticipating health and other needs.

Educated persons living longer and having more active lives raises issues about the diversity of older populations as well as ways of releasing and using the productivity and talents of the elderly. Education has not been giving much attention to life-long learning, individual differences in the older population, and the latent talents in older populations. A sub-group of the elderly releases their potential creativity in the later years in sometimes surprising ways. Wesley L. Duewel became an outstanding novelist after age 70 and Ethel Percy Andrus founded the American Association of Retired Persons after she retired as a principal of a high school. Apparently, the change of jobs or the release from career obligations at retirement can stimulate the expression of latent talents and lead to new activities that are productive for society and for the individuals who engage in them. Some individuals continue to be productive in their careers long after others have retired from them. In addition, there are late life bloomers who are released by retirement to become more valuable and productive for society (Birren, 2008). The use of the experience, wisdom, and productivity of older faculty members is very likely to become a more significant matter for societies to consider as younger populations decrease and older educated people increasingly live longer and healthier lives.

Releasing and using the wisdom of the elderly

Creativity and wisdom are two topics that are commanding more attention in relation to age. In the past, these subjects did not receive much research focus. Recently, empirical research has begun to add wisdom to evidence based concepts. Wisdom has always been discussed as a philosophical and religious subject. In the era of Greek culture, the causes of behavior were attributed to influences outside of individuals; a goddess of wisdom was presumed to influence the expression of wise behavior (Robinson, 1990). Now, wisdom is emerging as a worthwhile subject for empirical research as several publications have shown (Brugman, 2000; Clayton & Birren 1980; Sternberg 1990). In relation to age, wisdom emerges as a positive if not the most complex aspect of behavior.

Presumably, individuals have to live long enough to gain experience from many aspects of life and use that experience in decision making. Unlike youth with the urge for impulsive action, older persons can reflect about choices of behavior and possible outcomes. The meaning of what to do rather than responding to the pressure to act is presumed to accompany the development of wisdom. As a result of his study of 1,400 community subjects over age 50, Atchley (2005, p. 12) concluded that “roles that offer opportunities to manifest wisdom include grandparenting, mentoring, participating in informal peer support groups, maintaining close relationships with friends or family, and providing compassionate listening and counseling to upcoming generations.” This fits with the view of Birren and Fisher (1990, pp. 317-332), “... that wisdom develops as a balance of cognition, volition, and affect and results in wise products in relation to planning, decisions, and advice.” This need not lead to the view that all people get wiser with age but, rather, that its probability can increase with age. Data about criminality with age indicate that the rate of impulsive crime becomes lower with advancing age even though some older people commit serious crimes. Just as age in itself cannot be deemed a cause of negative events, age should not be regarded as a cause of wisdom. Age can increase the probability of emergent wisdom but does not, in itself, cause it.

Academic environments would seem to encourage elements of wisdom that give rise to the question about the release and utilization of the accumulated wisdom of older faculty members. If highly intelligent persons have wisdom, then such persons might reasonably be expected

to exhibit more executive control over their behavior. However, this view should not exclude the idea that older persons cannot also be creative in the sense of developing new concepts and solutions to problems.

Age and creativity

Along with wisdom, creativity is being studied in relation to advancing age. Creativity was defined by Sternberg and Luban (2001, p. 510) as, "...the ability to produce work that is (a) novel, (b) high in quality, and (c) task appropriate". Both artistic and research activities generally show a rise in productivity to about middle age and then a slow decline (Simonton, 1990). However there is a drift away from the writing of poetry early in life. Sternberg and Luban (2001) pointed out that poets tend to write their most frequently cited works at younger ages than did prose writers. Here again we have the perspective that younger persons are more driven by emotional pressures than cognitive. A complimentary view is that social intelligence increases with advancing age. A lifetime of living results in the accumulation of many experiences, with many people, and under many different circumstances. Presumably, a rise in social intelligence is associated with better self-management and relating to other persons. Gene Cohen (2005) concluded, "Studies show that older adults use a combination of coping and negotiating strategies that lead to greater impulse control and the tendency to more effectively appraise conflict-charged situations, which results in more effective, satisfying choices of action. This is one reason that age is an asset in many people-oriented occupations such as manager, judge, politician and diplomat," (p. 121). To this, should be added academic occupations in which teaching, research, and institutional experience can contribute to a rise in social intelligence. If wisdom and social intelligence can rise with age, what are the prospective ways of releasing and using such age benefits for society, institutions, and individuals?

It was suggested earlier that flexible pension plans would encourage more productive uses of older persons for themselves, for their institutions, and for society. For some, continued full or part time work would be productive and for others who might retire early, a new or altered activity might be productive. To this might be added the possibility of creating new roles for the retired or about to be retired. For example, senior counsels are not customarily used to tap the experiences of the past. Government administrations tend not to invite panels of retired administrators and politicians to review contemporary decisions about

economics, war, environmental protection, and other global and local problems. One factor may be that the use of senior counsels may provoke tension on the part of the new and younger administrators who want to establish their independence in thought and action without being influenced by the views and experiences of their older peers.

This would be particularly evident in the mixture of conservative and liberal positions in senior counsels. However, if the present administrators were not required to act upon the advice of senior counsels but, rather, to listen to them, there could be productive exchanges that emerge from comparing the past and the present. Universities might find it productive to create emeriti centers of senior counsels that hold annual or semi-annual meetings to discuss contemporary issues and emerging problems.

For academics, another approach is to develop retirement transition conferences in which possible choices of activities are discussed. A month long retreat was proposed by Birren and Kerschner (Atlantic Philanthropy proposal). In such a program, not only can personal circumstances be reviewed, but also presentations about alternative investments of the experience, time and effort or retirees can be reviewed to increase alternative uses of time in retirement. In this era of increasing life expectancy and more active lives, new opportunities need to be developed and encouraged for productive older years and high quality of lives. It is easy to move into views that maximize the deficits of older persons or laud their abilities. Both stereotyped views have to be replaced with evidence about diversity in older populations, and about individual differences in life circumstances and talents. Both developing and developed countries have increasing older populations, and universities and faculty members should contribute to the release and utilization of the gifts and talents of the elderly.

It is clear that many academic institutions are not acknowledging evidence that illustrates the ability, health, longevity, and productivity that seniors can provide. We invite scholars and administrators to rethink and explore better ways to engage and utilize those above age 65. There are many positive indications that senior faculty and administrators can provide great value to academia. Universities should take note of this and tap into the tremendous potential that waits.

Retirement surveys: Data from USC / LA

Retirement from the University of Southern California (USC) in Los Angeles (LA) has always been flexible, even prior to 1983 when the mandatory age of retirement was 65. Although professors were obligated to give up their tenure and retirement benefits, back then, they could continue to teach and engage in research as part of the faculty under several types of arrangements. Since 1983, age is no longer the determinate for retirement at USC; many more factors are involved with the decision, usually left to the individual faculty member's discretion. USC continues to experiment with ways to maintain some flexibility in retirement, such as offering phasing out of faculty responsibilities into retirement and giving freedom of Schools and Departments to negotiate with faculty members as to how they might retire.

Over the last three years, two surveys have been conducted of USC retired faculty and staff, to inquire about their situations and circumstances since retirement. The following results provide information on retired faculty only. The first survey was sent to 620 surviving USC faculty retirees who retired from 1940 to 2005. Thirty-five percent responded. The most recent survey in 2007 was sent to 940 faculty retirees between the ages of 59 to 107, and twenty-seven percent responded. The following data summarizes responses from retired USC faculty pooled from the 2005 and 2007 survey results.

For the most part, USC retired faculty are enjoying retirement with only three percent experiencing difficulties in retirement. This three percent report difficulty regarding health, adequate financial resources, and mobility.

'Retirement' is an inadequate word to describe the mindset and mental and physical activity of retired USC faculty. More than seventy percent of the retirees continue to socialize with their active colleagues at the University and eleven percent serve on committees at the University. Sixteen percent continue to have office or lab space and receive support such as phone, secretarial, computer, and copying services. Seventy-six percent are continuing their interests in the disciplines central to their employment; however, ninety percent expressed interest in exploring new things and pursuing interests they neglected while employed. Ninety-four percent of the retirees expressed a desire to be involved in some type of learning.

Retirees report that their highest priorities during retirement includes spending more time with family, and, for oneself: reading, traveling, recreation, etc. (eighty-two percent). Keeping fit and socializing with friends (ninety percent) is also important. Thirty-seven percent are interested in finding somewhere they can make a contribution. Seventy-eight percent wish to continue University involvement, such as attending lectures, cultural and sporting events. Only twelve percent are interested in participating in politics, teaching, lecturing, doing research, performing in some way, playing cards or board games.

Regarding computer competency, eighty percent of the retirees use the computer for web searching and email. This leaves twenty percent of USC retirees who need traditional methods of communication such as post, phone and hardcopy newsletters, etc.

The 2005 USC Retiree Survey aimed to find willing volunteers for Emeriti Center activities and projects and to discover retiree interests that influence Center programming. Only eight percent expressed interest in volunteering at USC. Sixty-seven percent are already engaged in local community volunteer work and thirty percent are working at something that yields income. USC retirees work and volunteer in a wide variety of activities that range from a few hours a week to full time. These activities include church and civic work, serving on boards of national and local organizations, tour guides at museums, counseling, care-giving, coaching, teaching, consulting, writing, singing, and assisting non-profit organizations.

Table 1. Activities important to USC retired faculty

94%	Involved in some aspect of learning
90%	Explore new and old interests
76%	Continue to work in their academic discipline
70%	Socialize with active university colleagues
16%	Have office space and/or office support
11%	Serve on university committees

From all indications USC faculty retirees do not fit the stereotypical image of a sedentary non involved person who watches the world go by. Instead, USC retired faculty look beyond their University employment and find meaningful activities both in and outside of their disciplines (Table 1). They lead purposeful lives that give meaning and sat-

isfaction in retirement. There is certainly an element of rest in retirement, but there is also the changing of life into something different, doing meaningful and interesting things and releasing all that was a burden during employment. It is a time of freedom to choose, once again, what you want to do with your life. Bismarck's nineteenth century view of 65 as the age of retirement may have been practical in an era prior to current longer longevity but scientific findings along with the USC Retired Faculty survey increasingly demonstrate the physical and mental well-being and productivity of those well beyond the age of 65.

AROHE survey observations

The Association of Retirement Organizations in Higher Education (AROHE) is a non-profit organization created in 2002 to support retired faculty and staff in higher education (www.arohe.org). AROHE is currently conducting an online survey regarding how colleges and universities support their retired faculty and staff. The survey is not complete; however more than ninety responses have been collected from various colleges and universities in the United States and Canada. The responses from the AROHE survey currently in progress indicate that seventy-five percent of the respondents are from single institutions and twenty-four percent represent multiple organizations such as retiree groups organized for a number of colleges and universities; sixty percent represent public universities and forty percent represent private universities.

Many universities offer a number of institutionally granted privileges for retired faculty. According to the respondents, fifty-eight percent can carry out funded research and twenty-four percent can serve on an Academic or Faculty Senate, the governing body of the faculty. Table 2 illustrates the most common privileges granted to retired faculty.

Along with these privileges, twenty-five percent have full-time paid personnel assigned solely to retiree matters and another forty percent have part time paid personnel to assist retirees. The kinds of financial support vary from institution to institution, however forty percent of survey respondents indicated the Provost or Chancellor's office provides a source of funding support and fifty-nine percent receive funding

from member dues. An additional twenty-four percent indicate fund raising is a major funding source.

Table 2. Institutionally granted retirement privileges

94%	Use of library facilities
83%	Use of e-mail services
77%	Free or reduced parking
66%	Retiree recognition dinners, luncheons, or receptions
61%	Free or reduced events access
58%	Use of institutional computer services
49%	Serve on university committees
36%	Health stipends or subsidies
33%	Formal opportunities for institutional involvement
30%	Individual office space for academic work

The majority of survey respondents, seventy-eight percent, belong to a retiree association or club. Only eighteen percent represent university-sponsored retiree offices or centers. An overwhelming ninety-eight percent response rate indicates the primary purpose for retiree organizations is for retiree fulfillment. Table 3 indicates that retiree organizations also exist to support retirees as well as to enable them to continue in their academic endeavors.

Table 3. Purpose for retiree organizations

99%	Retiree fulfillment (intellectual and social)
56%	Advocacy for retirees
34%	University service or teaching
33%	Retirement preparation in education
28%	Community service work or teaching

The approximate number of retirees who actively participate in campus retiree organizations ranges mostly between 100 to 200 people (thirty-five percent). About eighteen percent have retiree populations between 51 and 100. Fifteen percent serve between 26 to 50 people, and twelve percent serve between 200 to 300 retirees. Table 4 indicates the types of programs and activities that take place on university campuses for retired faculty and staff. These programs have evolved due to the inter-

est of retirees in remaining connected to the university and to each other. The pursuits remain social as well as intellectual and service oriented.

Table 4. Retiree organizations programs & activities

87%	Maintain a mailing list of retirees
83%	Host breakfasts, luncheons, or other social occasions
74%	Maintain an e-mail list service for your members
74%	Organize social events
55%	Maintain or preserve university and/or retiree organizational history
55%	Provide requested assistance to the administration
54%	Maintain contacts with retiree groups at other institutions
42%	Promote cultural or artistic endeavors
33%	Host clubs or educational activities (e.g. bridge, book club, investm.)
33%	Present courses/instruction of benefit to retirees
33%	Provide guidance to newly retired employees
30%	Offer retirement education workshops for pre-retirees
29%	Develop memorials for recently deceased members
28%	Advise/mentor/honor specific students
28%	Provide scholarships for students
22%	Volunteer programs, service learning, or community outreach
16%	Assist in the preparation of departmental histories
16%	Raise funds for institution's use
15%	Write a/o publish vignettes of distinguished professors a/o administr.
8%	Meet with prospective students, parents or other campus visitors

AROHE, the first national and international association of retirement organizations, is committed to advocate for, educate, and serve retirement faculty and staff in higher education. AROHE brings together the talent, knowledge, and experience of retired faculty and staff to improve their quality of life and that of the community and institutions through creating new models of retirement. We believe with confidence that there is an important role for AROHE and that our programs of support for faculty and staff retirees will benefit from international communication. We believe, moreover, that our roles in support of our respective universities will strengthen as a result of this organization.

Summary conclusion

The age of fixed retirement appears to be an archaic idea developed in a period when life expectancy was regarded as highly fixed. Now that people are living longer and have more active lives, a fixed age for retirement seems unproductive for society and for individuals. There is diversity in human skills and health at all ages. Functional limitations can occur in early adulthood, middle age, or old age. In addition, skills and latent talents can exist at any age. Unexpressed talents abused upon experience and the development of wisdom is wasted by rules of fixed retirement age.

Since there are large individual differences at any age, there is a need to evaluate the working capacity and talents of the individuals. Societies can use the productivity of persons of all ages so that flexibility should be introduced in the rules and regulations governing the retirement rather than having a fixed age. Because of health problems or other limitations, an individual might be appropriately retired at age fifty. In contrast, another individual might have the capacities to be highly productive at age 75 or older.

The archaic notion of a fixed rule for retirement is particularly pertinent to academic personnel since well-educated people have been shown to have longer life expectancies than the general population. Flexible retirement rules would permit institutions to take advantage of the experience and productivity of older faculty who wish to pursue their career work. This requires modifying pension systems to have continuing benefit accumulations for years of service.

Flexibility might begin at levels now adopted for fixed retirement, *e.g.*, at age 60 or 65. At such ages, individuals might choose to retire or continue to work if their productivity met the institutions' standards of productivity.

Of course, economic influences are involved in the setting of fixed retirement ages and the level of pension benefits. However, the economic value of the older worker's productivity should also be considered. Monetizing the work and potential productivity of workers in relation to age is not simple. In addition, the economic value of fixed retirement ages for institutions and society has to be considered. These issues should be further studied as societies move ahead in the information age and as individuals live longer and lead more active and productive lives.

References

- Atchley, M. S. & Lillany, R. J. (2001). Age-related cognitive change and brain-behavior relationships. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (5th ed.)(pp. 161-185). San Diego, CA: Academic Press.
- Birren, J. E. (2008). *Gifts and talents of the elderly: Under used and under expressed* (in process).
- Birren, J. E. & Fisher, L. M. (1990). Elements of wisdom: Overview and integration. In R. J. Sternberg (Ed.), *Wisdom: Its nature, origins, and development* (pp. 317-332). New York: Cambridge University Press.
- Birren, J. E. & Kerschner, H. (Atlantic Philanthropy proposal).
- Bratter, B. & Dennis, H. (2008). *Project renewal: The first retirement model for career women*. New York: Scribner.
- Brugman, G. (2000). *Wisdom: Source of narrative coherence & eudemonia*. Delft, The Netherlands: Eburon.
- Clayton, V. P. & Birren, J. E. (1980). The development of wisdom across the life-span: A reexamination of an ancient topic. In P. B. Baltes & O. G. Brim (Eds.), *Life-span development and behavior*. New York: Academic Press.
- Cohen, G. D. (2005). *The mature mind*. New York: Basic Books.
- Land, K. C. & Yang, Y. (2006). Morbidity, disability, and mortality. In R. H. Binstock & L. K. George (Eds.), *Handbook of aging and the social sciences* (6th ed.)(pp.42-58). San Diego: Elsevier.
- Manton, K. G. (2007). Life expectancy. In J. E. Birren (Ed.), *Encyclopedia of gerontology* (pp. 61-67). San Diego: Elsevier.

- Robinson, D. N. (1990). Wisdom throughout the ages. In R. J. Sternberg (Ed.), *Wisdom: Its nature, origins, and development* (pp. 13-24). New York: Cambridge University Press.
- Schulz, J. H. & Borowski, A. (2006). Economic security in retirement: Reshaping the public-private pension mix. In R. H. Binstock & L. K. George (Eds.), *Handbook of aging and the social sciences* (6th ed., pp. 360-379). San Diego, CA: Elsevier.
- Settersten, Jr., R. A. (2006). Aging and the life course. In R. H. Binstock & L. K. George (Eds.), *Handbook of aging and the social sciences* (6th ed., pp. 3-19). San Diego, CA: Elsevier.
- Simonton, D. K. (1990). Creativity and wisdom in aging. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging*. (3rd. ed., pp. 320-329). San Diego, CA: Academic Press.
- Sternberg, R. J. (Ed.)(1990). *Wisdom: Its nature, origins, and development*. New York: Cambridge University Press.
- Sternberg, R. J. & Luban, T. I. (2001). Wisdom and creativity. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (5th ed., pp. 500-522). San Diego, CA: Academic Press.
- U.S. Health Statistics (2006). *Summary health statistics for the U.S. Adults: National Health Interview Survey, 2004*. Hyattsville, MD: U.S. Department of Health and Human Services, National Center for Health Statistics.
- U.S. Health Statistics (2007). *Health United States, 2006. Special excerpt: Trend tables on 65 and older population*. Hyattsville, MD: U.S. Department of Health and Human Services, National Center for Health Statistics.
- Wesley, M. (1983). *Jumping the queue*. London: Black Swan.

Part II

Role Models

Autobiographic Survey of Career

Hermann W. von der Dunk



I was born in Bonn on 9 October 1928. My father was a teacher of art and graphics. He descended from a, traditionally Protestant (*evangelisch*) family of craftsmen in the Ruhr area. My mother came from a family of fully assimilated Jews (her father, Walther Löb, had been professor of chemistry at the University of Berlin). She attended an academy for design. Consequently, I grew up in an undenominational, rather art-oriented home.

When Hitler came to power in 1933, my father lost his job at a professional training school due to his Jewish wife. In 1937, my parents emigrated to the Netherlands, where my father could work at Kees Boeke's progressive school, 'De Werkplaats', in Bilthoven. It was a rather exceptional institution based on anti-authoritarian, cosmopolitical and pacifist principles. I was educated there from the age of 9 until I was 17, after which I had to switch to an ordinary Lyceum to complete my final examination to fulfill the requirements for tertiary study. During the German occupation, my parents were spared – in spite of the persecution of the Jews and threats – due to their so-called 'mixed marriage'. Consequently, Nazi-Germany, emigration to the Netherlands and war were an inseparable part of my childhood. War did, however, to a greater or lesser degree affect my entire generation. Nevertheless, my youth was generally a good and happy one thanks to my parents and to a humane and cordial community where I felt at home from the beginning.

Even though I was interested in history as a boy, my main interest, talents and preoccupations lay in the field of art, specifically: drawing, music, and writing plays and poems. I never expected to become a scholar and historian. Since I wavered between a career in music and the theatre, for practical reasons I temporarily started studying history at Utrecht University in 1949 - the first indistinct post-war period. However, when the opportunity arose to receive training as an opera director (a symbiosis of music and theatre), I opted for that future.

However, when the opera company where I was employed as the direction assistant was suddenly liquidated due to specific circumstances, I continued and finished my study in 1957. By that time, I had become the assistant of the famous Pieter Geyl. After the intermezzo at the opera company, I was strongly drawn to history. I then seriously considered the possibility of becoming a historian. My specialty field was modern history. This was partly due to genuine interest and partly due to Geyl, who was then the most outstanding historian in Utrecht. Geyl's broad approach as an engaged intellectual corresponded far more with my own inclinations and nature than scrupulous research in the archives and dedication to one field of specialty throughout my life did. The personality of the teacher also often influences choices like these.

As far as one is able to identify one's own deeper motives, my historical interest originally had nothing to do with my personal experiences, which does, however, seem likely in the light of my later publications and preoccupation with the 20th century. It was, nevertheless, not my intention to specialize in contemporary history. My thesis concerned early 19th century German-Belgium relations. In 1966, I defended that work before the history faculty. Meanwhile, due to Geyl's retirement, his successor, J.C. Boogman, became my promoter.

My German origins meant I had a general affinity for German culture and interest in its history, which may have influenced my choice of thesis subject. In addition to this, I obtained a grant to research the project at the *Institut für Europäische Geschichte* [Institute for European history] in Mainz, where I stayed from 1957-1961 and also became a member of their staff. Being bilingual, I wrote my thesis in German so that it could be published in the Institute's publication series. There I also became better acquainted with the scientific tradition, the enormous but fascinating problems of recent German history, and with the young, post-war German historians. At that stage, my personal background perhaps became an additional reason for my attraction to phenomena like nationalism, National Socialism, and ideologies in that turbulent century. All of that contributed to my being looked upon as a contemporary historian, especially with regard to Germany. I was asked to do reviews and write articles on that subject, which were also published in newspapers after I returned to the Netherlands.

I returned due to personal reasons (I had in the meantime married and become a father) and because settling in Germany at that moment did not seem to promise a stable future. By this time, in the light of my

education, main relationships and experiences in my formative years, I was Dutch for all means and purposes. Back in the Netherlands, I was first a teacher from 1961-63, after which Boogman invited me to become a member of his staff at the Department of Modern History. Formally, general modern history became my domain. When the chair of contemporary history at Utrecht University became vacant I was nominated for it in 1967. I have always been glad that I had not initially specialized in contemporary history, neither as student nor as docent, but rather in modern times, which is a required condition for putting my own century into perspective. Although in most of my publications and lectures contemporary history became, and thereafter formally *had* to become, my preferential domain, I realized the importance of never losing sight of older periods. Therefore, I was also increasingly fascinated by general historiographical and theoretical problems.

In this respect, I am much indebted to Geyl and his post-war articles. I felt little affinity for his former main work and his well known 'great Dutch' theory that the Netherlands and Flanders were a stock (*stam*) due to a common language. I also did not share his passion for and involvement in the Flemish movement, or his lifelong struggle against French influence. Although I accepted the judiciousness, and historical importance of his arguments against the dominating Dutch national concept, and agreed with them. I also found his polemics in this respect most refreshing and fruitful for the traditional narrow-gage Dutch outlook. I, however, found other questions and subjects much more important. My own background may have had a partial influence on my personal dissociation with Geyl's main works, however generational differences certainly played a role as well. After the war, nationalism and Geyl's concept seemed like outdated romanticism. Although he tried to unmask historical myths, I found his stock theory to be a myth as well. However, the importance to me lay in his insight into how developments could have easily taken quite another course (in this case, not necessarily a separation between the Low Countries, the North and South). Furthermore, that if historians spent all their energy and rhetoric on explaining why things happened as they did, and tended to legitimize that course, their work missed an essential dimension. It was Geyl's famous debate with Toynbee and his principal attack on all attempts to discover some laws in history and some sort of system, which provoked and tempted me to enter the domain of historiography and philosophy of history.

In that regard, it was Geyl's *Napoleon*, which is an intellectual history – a review of French historians and intellectuals and their contrasting images of the emperor – and his most inspiring work that, together with his essays, which were also published during those years, became an eye-opener when I was a student. Nevertheless, my mind had generally been shaped by classical literature and poetry – Goethe, Thomas Mann, Voltaire's *Candide*, the prose of Heine (unsurpassed in its brilliance, wit and intellectual power) – and by philosophers – Jaspers, Kant, chapters of Nietzsche and Schopenhauer – as well or even more than by historians. I also found Ranke's belief that "every period is immediately (related) to God" very insightful. I discovered the importance of Max Weber much later.

Traditional political state history dominated the ordinary history program at that time, while at Utrecht University there was a touch of intellectual history, which especially attracted me. Social and economic history stood rather in its shadow as a field of specialization. In Mainz, I found mainly the same orientation. The conservative, state-centered German historiography had not really come under fire yet. My German contemporaries had been educated, like I had been, by a generation of pre-war masters. I only became more acquainted with new developments, the French *Annales* group, Namierism and a structural approach in Utrecht in the sixties.

Many (but certainly not all) of my articles and reviews before and after my nomination dealt with the German question, Weimar, the triumph of Hitler and the way German historians tried to come to terms with their dark past. These were also considered fascinating subjects in the Netherlands and I was asked to write about them. Germany enjoyed a certain negative curiosity in the media and I consequently found myself on receptive ground. Publicity is very dependent on the popularity of your subject, of which I was aware from the beginning. I was, however, resolved never to walk into the enticing trap of confusing publicity with quality. Owing to my years in Mainz, I had enlarged my knowledge of German historians. I was impressed by the work of Meinecke (e.g., *Die Entstehung des Historismus*) due to its subtlety as a model of the history of ideas. Nevertheless, I was also aware of its German outlook and certain limitations thanks to my Dutch-Utrecht schooling, its familiarity with the Anglo-Saxon tradition and more down-to-earth way of thinking. In Arthur Lovejoy's *Great Chain of Being* and in Paul Hazard's *Cultural History of the 17th and 18th Cen-*

turies, I found a convincing alternative approach. I felt distanced from the ponderousness and highbrow professionalism, the taboo on irony and wit, which was then typical of German scholars. I could sympathize with the work of Golo Mann, who didn't suffer from this inaccessibility due to his splendid prose and perhaps his stay in the U.S. I also regretted the growing in-crowd in the Netherlands and the distance between the broad public and the guild, which was increasingly preaching only to the converted. Consequently, I didn't shun contact with the press and radio and presented a television series on the Cold War in the early seventies, which was not customary among professionals in The Netherlands at the time. Later that changed, of course.

During 1969 – by then I had been the head of the Department of Contemporary History for two years – the storm of the student movement, democratization and a thorough reorganization of the university began. Radical leftist ideologies and their slogans spread among the students in no time. A type of simple Marxism became popular, at least among a leading minority. Naturally, the social and historical disciplines became a perfect target for these radical students. To me, this meant more than just a drastic innovation or unexpected change in position and organization. I immediately realized that the ideological attack on what was called the establishment confronted historians with fundamental questions and touched the core of our discipline. General historical phenomena, like tradition, revolution, the sudden change of collective norms and the preconditions of our thinking and approach, were at stake. We had to argue with radicals who demanded that we as their teachers legitimize ourselves. Furthermore, we had to defend the method used to teach as well as the contents and our ideological point of departure. Questions that hadn't really bothered us before, I now had had to ask myself, or became far more important. It was a strange situation. On the one hand, within the discipline, there was a strong demand for a positivistic method engrafted onto the model of the 'real' sciences and for a structural approach based on objective facts, social-economic statistics, figures, etc. as far as possible. These demands were partly a reaction to the ideological climate of the Cold War. On the other hand, the radicals demanded a history dedicated to fundamental social change – a weapon against the existing order. At the same time, however, the radicals became the allies of the neo-positivistic school in as far as history had to firstly be a social-economic discipline, but with a revolu-

tionary intention. In any case, traditional political and state history became suspect.

I couldn't associate with either of the two demands. In my inaugural lecture in 1968 (just before the students movement in the Netherlands started), I had defined my position as rather anti-positivistic. I expressed it in the title *Een onwetenschappelijke wetenschap* [An unscientific science]. I stressed the fundamental difference between objective science and the humanities (a difference later articulated and well-known as *The Two Cultures* by C.P. Snow), especially, history. I called it an illusion that these disciplines could be separated from subjective preconditions and paradigm and mental climate changes – the reason why every period writes its own history. As previously mentioned, this was one of the main insights of my study. I even stated that a history that abstains from every type of value orientation and is presented without any underlying value system could not fulfill its essential function as an explanatory orientation, inspiration, and a guide for life and behavior. The result would be an unrecognizable past and human history would lose its significance. This conclusion caused a persistent misunderstanding. I was accused of *demanding* moral judgement and subjectivism, whereas I had only observed and demonstrated that historians never avoid nor *can* avoid some type of subjective value orientation and had tried to explain why. What was labelled a call for subjectivism was in fact an objective analysis of historical practice. As far as my argument could be regarded as a demand, it was only the demand not to strip history of its significance and a plea for it not to become the victim of a positivistic illusion. However, my lecture and stance were certainly most unwelcome and '*unzeitgemäss*' (not in keeping with the times), especially at a moment when neo-positivism was on the rise, becoming a bulwark against leftist radicalism.

The funny paradox was that Marxist historians profited from the strange alliance between neo-positivism and radicalism and found much response in the radical wing of the student movement, especially in Utrecht. Continuation of my lecture became, in a way, my debate in the *Historische Zeitschrift* in 1970/72 on Max Weber's famous value question. My heresy concerning the enhanced positivist stance was dismissed as old rubbish. At the same time, my rejection of Marxism and student radicalism at the University was, of course, no secret. Among the radicals, I became known as a suspect conservative when I

made my position clear in, for example, the well-known NRC newspaper.

It was with an eye on the rejection of tradition and the extolling of innovation by the leftist vogue that I published a study on European Conservatism (1976). My attention had also shifted to comparative aspects and to the Dutch society, which also motivated this study. The fruit of the debates on neo-positivism, history and science became a more substantial work on historical theory *De organisatie van het verleden* [The organization of the past, 1982], the result of a sabbatical spent at the highly renowned NIAS institute in Wassenaar. Through the continued reorganizations at the University I, like most of my colleagues, had spent much time on management and deliberations and by turn had had to head the Institute in Utrecht. Besides that, we were confronted with an unexpected increase in the student population in the seventies, which brought many practical problems in its wake. In the eighties, these difficulties were compounded by drastic cuts in government subsidies, the demand to partly fuse with other universities and prepare for a redistribution of disciplines – all of which lead to a predictable commotion and struggle for survival. As a result, time for own work had become scarce. Therefore at NIAS I could epitomize and intensify the important questions with which I had been confronted since my student years. However, theoretical history experts condescendingly dismissed my book *De organisatie van het verleden* as an outsider's attempt. I still find the book one of my best works, although it cannot be classified as either a pure historiographical or a pure theoretical work in the conventional sense. Any reference to it seems not the done thing.

In addition, I fulfilled various shorter and longer functions, as a normal responsibility of my position (e.g. an editorial board member of the *Tijdschrift voor Geschiedenis* and of the *Rijkscommissie voor Vaderlandse Geschiedenis*, an advisory board member of the Institute in Mainz, of the international commission of the history of historiography, etc.). I was a member of the Royal Dutch Society of Sciences and other societies. During the much reorganization, my chair was changed to Modern Cultural History in 1987. Having survived a new wave of cuts, I used the opportunity to retire on turning 62 in 1990. I felt that the bureaucratization and increasing obligatory collectivization of research hampered my freedom too much. Besides, at that time I rather felt like an outsider within the guild and in Utrecht due to my unfash-

ionable work and stance. Nevertheless, I received various German awards (Große Bunderverdienstkreuz, Vondel Prize and the Goethemedaille) for my publications on Germany. When I retired, I was knighted in the Netherlands.

At that time, the neo-positivist wave and fixation on social-economic history had passed its apogee. Postmodernism and narrativism – the history of mentalities – were now the newest rage. In my valedictory lecture, I announced the revival of the literary component in historiography. Since I had enjoyed lecturing and teaching – in spite of swimming against the professional tide somehow – I welcomed an invitation from the University of Nijmegen to take up the circulating Keizer Karel (Emperor Charles) Chair for Cultural History in 1994 and 1995; a nice job without administrative duties.

Shortly before my retirement I was asked to write a cultural history of Europe in the 20th century, but first I published a book on the historical reception of the Shoah (1990). In relation to the triumph of Nazism, I had long been captivated by the questions of how and under what conditions men can change into criminals, which I could never reduce to a specific German problem, nor to something of our century, or to dictatorship only. My personal experience of rapidly changing collective values was as important in this respect as the specialists on Nazism and the Shoah. Owing to my retirement, I was also able to publish several collections of essays during the next decades and could then finish *The disappearing heaven. On the culture of Europe in the 20th century* in 2000 (which was translated into German in 2004). It was a sort of recapitulation of many of the topics on which I had previously lectured and written. Nevertheless, I used the opportunity to delve into other favorite domains as well: the arts, literature, religion and philosophy. Meanwhile, within historiography the individual perspective, which had been taboo during the years of my professorship, began to conquer the market more than ever before, thanks to popular writers and the commercialization and popularization of history.

This explosive revival of the personal outlook was a motive for a study on the phenomenon of memory in history, which was published in 2007. To me it meant an inspiring exploration of new dimensions of the human mind and history.

Biosketch H.W. von der Dunk

Hermann Walther von der Dunk was born on 9 October 1928 in Bonn (Germany). When his father, after Hitler had come to power, lost his job as a teacher of Art and Graphics because his Jewish wife, his parents emigrated in 1937 to The Netherlands. There he got his further education. After finishing his secondary school in 1949 he studied history at the University of Utrecht, specializing in modern history. He got a scholarship at the *Institut für Europäische Geschichte* in Mainz, where he also became member of the staff (1957-1961). After his return to The Netherlands he was for a few years (1961-1963) teacher at a secondary school. Then he became docent at Utrecht University and since 1967 he holds the chair of Contemporary History at the same university. In 1987 this was changed into Modern Cultural History. In 1990 he retired to spend more time on own research and publications, but in 1994/1995 he occupied a special chair on Cultural History at the Catholic University of Nijmegen (now Radboud Universiteit). He published books, essay-bundles and articles in international and national scholarly journals, as well as in popular journals on Dutch, German and general history, and on cultural and political issues.

Selected Publications

Dunk, H.W. von der (1966). *Der deutsche Vormärz in Belgien 1830-48*. [The German march on Belgium 1830-48]. Wiesbaden: Franz Steiner Verlag.

Dunk, H.W. von der (1974). *Kleio heeft 1000 ogen* [Cleio has 1000 eyes]. Assen: Van Gorcum.

Dunk, H.W. von der (1976). *Conservatisme. Opkomst en ontwikkeling van ene politieke stroming* [Conservatism. Rise and development of a political movement]. Bussum: Van Holkema & Warendorf.

Dunk, H.W. von der (1982). *De organisatie van het verleden. Over grenzen en mogelijkheden van historische kennis* [The organisation of the past. Limits and possibilities of historical knowledge]. Bussum: Van Holkema & Warendorf.

- Dunk, H.W. von der (1990). *Cultuur en geschiedenis. Negen opstellen* [Culture and history. Nine articles]. The Hague: SDU.
- Dunk, H.W. von der (1990). *Voorbij de verboden drempel. De Shoah in ons geschiedbeeld* [Beyond the forbidden threshold. The Shoah in our concept of history]. Amsterdam: Ooievaar.
- Dunk, H.W. von der (1994). *Twee buren, twee culturen. Essays over Nederland en Duitsland* [Two neighbours, two cultures. Essays on The Netherlands and Germany]. Amsterdam: Prometheus.
- Dunk, H.W. von der (2000). *De verdwijnende hemel. Over de cultuur van Europa in de twintigste eeuw* [The disappearing heaven. On the culture of Europe in the 20th Century]. Amsterdam: J.M. Meulenhoff.
- Dunk, H.W. von der (2007). *In het huis van de herinnering. Een cultuurhistorische verkenning* [In the house of memory. A cultural-historical exploration]. Amsterdam: Bert Bakker.
- Dunk, H.W. von der (2007). *Op schuivende planken. Nederlandse perikelen in het licht van zijn verleden* [On a moving stage. Dutch difficulties in the light of its past]. Amsterdam: Bert Bakker.

A Life far more Light than Dark

Piet F.M. Fontaine



I must begin by mentioning some formative elements in my life. On the day of my birth I was baptized in the Roman Catholic Church and am still a practising Catholic. Both my grandparents and parents were primary school teachers; I therefore seemed predestined for a life in education. I grew up in the historic inner city of Amsterdam, in a house built in the eighteenth century. I also learned to speak the local dialect, the so-called *Mokums*, to perfection. The grammar school I attended was run by Jesuit fathers. Here, I received a thorough grounding in Greek, Latin, French, English and German, and was also taught Italian.

When I had become a student of history, history approached me when my country was occupied by the Nazis in May 1940. In the spring of 1943, history came within very close range. The occupation authorities demanded from all students to sign a 'declaration of loyalty' with which they promised not to undertake anything against the occupiers. Those who refused were excluded from the university and had to report for work in Germany. Together with 83% of the student population, I refused to sign, nor did I report for work in Germany. This meant that I had to disappear from the face of the earth. I found a safe refuge with a peasant family in Brabant province. For me, as a city dweller, suddenly becoming part of a peasant family and sharing their life for a year, was an important formative element in my life.

Quite another experience, but equally formative, was when after the war the Institute for War Documentation posted me to Berlin, which was then still ruled by the four occupying powers. In the SS archives I did research for war criminal trials as well as for Dutch historiography. In September 1948, I became a teacher since I did not intend spending my whole life on World War II. It was teaching and explaining history to teenagers that turned me into a historian.

My entire professional life I have been an author. I can only briefly mention the scores of articles that I wrote for Dutch and foreign historical

and other periodicals. My first book was my dissertation in 1954: *De Raad van State 1588-1590*. Soon afterwards a Dutch publisher of textbooks for schools asked me to write a new history textbook for secondary schools. This became my five-volumed work *Van oermens tot wereldburger* (From primeval man to cosmopolitan), which appeared from 1956 to 1961. This was followed by two Bible commentaries: *Uit God geboren. Beschouwingen bij Genesis 1-11* (Born from God, Gen. 1-11), and *Abraham onze vader. Beschouwingen bij Genesis 12-24* (Abraham our father, Gen. 12-24), published by Malmberg in 's-Hertogenbosch, in 1962 and 1963 respectively.

Interspersed with my work on my *magnum opus*, I wrote three more books. The first was *Hoe ontstaat geschiedenis? Een historische antropologie* (The origin of history. A historical anthropology), published by Kok Agora, Kampen (NL) in 1985. This book attempts to answer the question why there is history and why events happen that are deemed worthy of recording.

The second was *De onbekende Hitler* (Hitler the unknown), which appeared in 1992; it became my best-known book. It was published by AMBO in Baarn (NL) and republished by Gopher Publishers, Utrecht, in 2001. It is still available. This is not the umpteenth biography on the *Führer*, but about some lesser-known aspects of his personality. All biographies, for instance, stress the difficult relationship Hitler had with his father, but in my opinion his timid mother had a far greater influence on him.

The third book was written in English: *Mythical Eyes. History, Counter-History and Myth*, published by Avon Books, London, in 1998. Of this book I heard so little that I might as well not have written it. The publisher went bankrupt shortly after the publication; I never received any royalties and never saw a review. This book is an attempt to rehabilitate myth in the opinion of historians, who usually do not have much regard for it.

My *magnum opus* is called *The Light and the Dark. A cultural history of dualism*, the first volume of which appeared in 1986. In the 1970s I began to think seriously of the moment that I would retire. True enough, at that moment it was still ten years in the future, but at the moment of my retirement I wanted to have something in hand, a task that I could continue. I did two things: I bought a light touring bicycle, which I still use, and I looked for a topic that would occupy me for a very long time.

When I was writing the above-mentioned history textbook, I did not have sufficient time to study elements of history in depth; every year a volume had to appear so that there would be no hiatus for the teachers who used it. However, I made one exception. Volume III deals with the early modern era, 1500-1800, of which the Reformation and its aftermath constitute a very important part. The years 1957/1958 were the heady days of Vaticanum II, while ecumenism was much more in vogue than it is now. Moreover, I had never believed that Luther's motive for coming forward were due to the abuses in the Church.

I soon discovered that I was right. Luther was not really interested in ecclesiastical management and its shortcomings (soon after 1517 he said this in as many words). What he really wanted was a new theology. The Reformer was educated at Erfurt University, where he studied philosophy and theology according to the *via moderna*, the ideology of Late Scholasticism of which Erfurt was one of the bulwarks. The High Scholasticism of the thirteenth century, that of the *via antiqua*, was all about 'realism', but the ideology of the *via moderna* was that of 'nominalism'. According to this ideology, a concept and the term that denotes it (the *nomen*) do not agree with each other – the very opposite of what scholastic realism held. Consequently, I became acquainted with the term 'dualism' as this opposition is dualistic. Luther, who was a deeply religious man, was not satisfied with the idea that we may say God and not know what this means, which put God at a great distance from him.

I did not follow this line further then, but went back in time. I felt that this nominalism with its dualism must have had a prehistory. In the next twenty years, fully occupied with my school and later with teaching my students, there were long intervals in which I could not pursue this line of study. However, gradually working back, I discovered that Catharism was thoroughly dualistic. Still following the time line backwards, I found the Gnosis, the great complex of religious ideologies of the first centuries AD; the Gnosis is as dualistic as dualism can be.

It is quickly told, but meanwhile it had become 1976. I then thought I had found my topic: a world history of the Gnosis. However, I soon discovered that there were already several works of this kind. Then I read an article by Professor Ugo Bianchi of the University of Rome, who wrote that a world history of dualism was needed, but, he added, he would not write it. My choice was made: I would write this world history once I had verified that no such work existed.

My first notes date from May 1976, which means that I have been working on this topic for thirty-two years now. Progress was slow, as I was still fully engaged with my job at Utrecht University. As far as possible, I worked in the evenings and at weekends. At the beginning of 1980, I had assembled enough material to begin to write: the first lines of § 1 of Chapter I of Volume I of what was to become *The Light and the Dark* were written on Wednesday, 16 January 1980, at 10.31 in the morning. My time was still limited, but just before I retired in June 1983, Volume I was completed.

Unknowingly, I had made a catastrophic error: I had been writing in Dutch! I had assumed that I would easily find a publisher for a good scholarly work. *Quod non!* During 1984 and 1985 I endlessly approached publishers, always getting the same answer: this is a very fine scholarly work, but our firm cannot publish it, because the Dutch market is too small. Meanwhile I plodded on, writing Volumes II and III, still in my beloved vernacular.

At the end of 1985, I feared that I would become an old man who wrote books that nobody was prepared to publish. But then I was unexpectedly helped out of my predicament. A former pupil of mine, a classical scholar, advised me to contact J.C. Gieben, an international publisher. In the autumn of 1985 I did so, but received no answer. I again contacted the publisher, but again received no reaction. Then, on 5 December 1985, Gieben phoned me: I should come and see him. We soon reached an agreement; he was quite ready to publish Volume I, but on two conditions: it had to be in English, and I had to provide a camera-ready text.

I thought that my English was good enough to do the translation myself (I could not afford a professional translator). However, I needed a corrector. A former colleague found one for me: Professor John Dove, a native English speaker who taught English literature at the University of Oulu in Finland, but whose home was in Amsterdam. I met this amiable man, with whom I became great friends, for the first time at the end of December 1985. We soon reached an agreement.

Volume I, tactfully corrected by John, appeared in August 1986. I also translated Volumes II (1987) and III (1988), but from Volume IV onward I wrote in English. The typescripts of all the volumes that followed were corrected by my dear wife Anneke, doubtlessly the only person in the world who has read the entire work. Although the work proceeded smoothly, there were some problems. At the beginning of 1997, John told

me that he had terminal cancer and could no longer work for me; he died on 7 August 1997. I soon found another native English-speaking corrector in the person of a young lady, Jo Swabe, an anthropologist living in Amsterdam and fluent in Dutch. We were on excellent terms soon.

After having published fifteen of my volumes, Gieben closed his shop in 2000 (he suffered a fatal accident in 2004). I soon found a new publisher, Gopher Publishers, then in Groningen, now in Utrecht, a publisher who sells 'on demand'. This firm published volumes XVI-XXI (the latter one in 2005).

Then a new problem arose. Gieben never paid any royalties and because I had to pay my correctors, every copy sold cost me money. Gopher paid royalties, but I had to pay an advance amount to have my texts published. The royalties were not sufficient to compensate for what I paid Gopher and my corrector; which meant that I was subventioning all the copies sold. In the end, I found this just too much.

After the publication of Volume XXI, I decided to go digital. Volumes XXII-XXV are now all to be found on my site (as well as the complete text of *Mythical Eyes*). I no longer use a corrector; I am told that my English is 99% correct, therefore I hope that my readers will put up with that one percent. Since I do not believe that they would want to read the eighty to hundred pages of a chapter from the screen, I divided each chapter into parts of five to fifteen pages, each with the notes and relevant literature. Together they form the complete text.

Volumes I-XV are no longer available, as Gieben took his computer's password with him into the grave. Volumes XVI-XXI can be ordered from Gopher. Volumes XXII-XXV can be found on my site: <http://home.wanadoo.nl/piet.fontaine> (click on: Volumes overview, and then on either XXII, XXIII, XXIV, or XXV).

Now, what is dualism, the series' overall topic? My shortest description is: the theory and practice of unbridgeable oppositions. A somewhat longer description, which I use throughout the series is: two poles with no intermediate terms; one of the poles is always considered inferior to the other, so that it is denigrated, rejected or even destroyed. If people ask me for an example, I always say: Hitler and the Jews.

I must caution the reader against three possible misunderstandings. If oppositions are bridgeable or solvable, there is no dualism. Secondly, to vary a dictum of Karl Marx: the history of the world is not the history of dualism. Almost all oppositions are solvable, but sufficiently unsolvable

ones remain to keep me occupied for decades. A third misconception is that such oppositions are only found in the religious sphere, for instance the body-soul opposition. Although it is frequently supposed that dualism has its origin in either Zoroastrianism or Manichaeism, it has no starting-point in time.

Dualism is something anthropological, something inherent to the *conditio humana*. As human beings, we have two ways of ordering the confusing mass of phenomena in the midst of which we are living. The first is to bring matters together under one heading: town, railways, liberalism, war, universe... the list is endless. Everyone uses these headings countless times every day. The second way is to contrast or oppose matters: young-old, cold-warm, winter-summer, day-night; these too are innumerable and are used by all of us.

Such oppositions are mostly innocent. Winter and summer are connected by intermediate stages, spring and autumn. Somebody who comes in from the cold of a polar night may find an unheated room relatively comfortable. War and peace do not belong together, but for forty years we lived in a situation that was neither peace nor war. Oppositions of this kind should rather be called polarities.

Nevertheless, the gap between the two poles could grow still deeper and broader until it is finally unbridgeable. In this case, we speak of 'dualism'. This may arise from someone's private psychology or from a collective psychology, conditioned by personal circumstances or by a common history. It can originate everywhere and always, in politics, in the social sphere, in personal life, in religion, in theology and philosophy. It should be stressed that dualistic oppositions are never fruitful or beneficial. Quite the contrary! They are always harmful, divisive and destructive.

There are mainly two kinds of dualistic oppositions: they are either absolute or relative. Relative dualism means that one pole is dependent on the other. For instance, in many civilisations, women are considered inferior; nevertheless, the men are dependent on them, if only to produce offspring. Most forms of dualism are relative or moderate. Absolute dualism is scarce. In such cases, the poles are coeval – the one is not dependent on the other. This occurs in Gnostic systems, in which there is no relationship of any kind between the upper world, that of the Pleroma, and the nether world, our world, the world of history. The most forceful dualistic opposition is that between good and evil, which may lead to the urgent wish to destroy evil, that is, to destroy people who are considered

evil. Other oppositions of this kind are those between body and soul, between the One and the Many, or between being and seeming. Nevertheless, even absolute dualistic oppositions come together somewhere: in the dualist's head. Nobody can live in two different and opposed worlds.

I call my work 'a cultural history of dualism'. This means that dualistic phenomena are placed in a context of history, philosophy, theology, a political or social ideology, or whatever else. Yet, however much 'circumstantial evidence' is presented, it remains a history of dualism and of nothing else. Although there are six volumes on the Middle Ages, it is not a history of the Middle Ages; however much I wrote about the Enlightenment, it is not a history of the Enlightenment.

There are fourteen volumes on Antiquity and six on the Middle Ages. So far, there are five volumes on the early modern period, to be followed by three or four more. Each volume is arranged thematically, chapter by chapter, but within themes a chronological line is followed.

The series has a counterpoint. This is to be found in Volume XXI, the volume on scholastic philosophy and theology, and more specifically in Chapter III, called *The non-dualistic platform of High Scholasticism*, and especially in its Part II, section F, that on Thomas of Aquinas. In the context of the series, this is in fact an anomaly, because it is about 'non-dualism'. Nevertheless, I need it. The period 1250-1275 is the only one in all intellectual history, when there was no dualism. There was a perfect balance of Creator and created, of God and man, of faith and reason, of theology and philosophy. Everything that follows must be measured and portrayed against this background.

I have not yet reached the year 1800. I hope it may be given to me to complete the last volumes on the early modern period. However, there is still much to do. The period after 1800 is, alas, full of dualistic oppositions, which will require many, many volumes to do them justice. The period begins with the French Revolution, followed by the Russian Revolution, then Hitler and then Mao... not to mention the ideologues of the nineteenth century.

I am now eighty-seven. My health is still good and I can cope with an ordinary working day. When I retired in 1983, I concluded a 'labour contract' with myself and have remained faithful to it to this day. This 'contract' entailed that I would work five-and-a-half days per week; I

would take one whole day off and an afternoon (mostly not during the weekend). After two months, I would take five days off, and in the summer, I would take a vacation of three to four weeks, usually spent travelling. This regime enables me to carry on steadily.

My working day begins at 6.30. I get up, make tea, view teletext and take a look at my e-mail. At 7.45 my wife rises and we have breakfast. Then I shower, shave and dress and towards nine o'clock I go to town, to one or other of the university's institutes where I find the books that I need for the subject on which I am working. I take a coffee break at eleven and work to one o'clock, go home, have my lunch and take a 15-minute nap. Then I open my computer and begin typing what I have written: in theory that which I wrote that very morning, but in practice what I wrote three to four weeks ago. At 4.30 I stop and take an hour for reading, scholarly stuff, not necessarily directly connected with dualism. At 5.30 I stop; I do not work in the evenings. After dinner I go for a 30-minute walk, read a novel, and listen to classical music. Bedtime is at eleven. I know people who find this strict timetable ludicrous. However, my advice for achieving much is: stick to a strict scheme of work, rise early, and don't watch TV.

How long will I be able to carry on? My *magnum opus* will necessarily remain torso. Nevertheless, I am extremely grateful for everything that I have accomplished so far.

Biosketch P.F.M. Fontaine

I was born in Amsterdam on 11 April 1921. From 1933 to 1939 I attended a grammar school. In September 1939, I was enrolled as a student of history at the University of Amsterdam. From 1943 to 1945 my studies were interrupted, as the Nazi authorities forbade me to enter the University. After liberation in May 1945, I returned to the University and graduated in June 1947. In December 1954 I became a *doctor historiae*. My first job was with the Netherlands Institute for War Documentation (1947/1948). In September 1948, I became a teacher of history at secondary school level.

In 1961 I was appointed to teach the didactics of history one hour per week at the University of Amsterdam. In August 1970, I went to the University of Utrecht, where I taught three days per week, which eventually became a full time position in January 1974. I took an early retirement in July 1983.

I am married and have five children. I am a member of the New York Academy of Sciences, an honorary member of the Dutch Association of History Teachers, and an honorary member of the International Society of History Didactics, of which I have been the vice-president.

Selected Publications

Fontaine, P.F.M. (1954). *De Raad van State. Zijn taak, organisatie en werkzaamheden 1588-1590* [The Council of State. Its task, organization and activities 1588-1590]. Doctoral dissertation University of Amsterdam. Groningen: Wolters (no longer available).

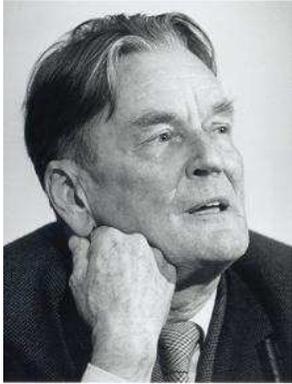
Fontaine, P.F.M. (1957-1961). *Van oermens tot wereldburger* [From primeval man to cosmopolitan. History textbook for secondary schools in five volumes]. Den Bosch: Malmberg (many reprints; no longer in use).

Fontaine, P.F.M. (1963). *Uit God geboren. Beschouwingen bij Genesis 1-11* [Born from God. Considerations to Genesis 1-11]. Den Bosch: Malmberg (no longer available).

- Fontaine, P.F.M. (1964). *Abraham, onze vader. Beschouwingen bij Genesis 12-24* [Abraham, our father. Considerations to Genesis 12-24]. Den Bosch: Malmberg (no longer available).
- Fontaine, P.F.M. (1985). *Hoe ontstaat geschiedenis? Een historische antropologie* [The origin of history. A historical anthropology]. Kampen: Kok Agora. (no longer available).
- Fontaine, P.F.M. (1992). *De onbekende Hitler* [Hitler the unknown]. Baarn: Ambo. Republished: (2000) Utrecht: Gopher Publishers (still available).
- Fontaine, P.F.M. (1998). *Mythical eyes. Myth, counter-history and myth*. London: Avon Books (available online).
- Fontaine, P.F.M. (1986-2000). *The Light and the Dark. A cultural history of dualism*. Vols. I-XV. Amsterdam: J.C. Gieben International Publisher (no longer available).
- Fontaine, P.F.M. (2001-2006). *The Light and the Dark. A cultural history of dualism*. Vols. XVI-XXI. Utrecht: Gopher Publishers (still available).
- Fontaine, P.F.M. *The Light and the Dark. A cultural history of dualism*. Vols. XXII-XXV (available online).

From Discovery to Justification: In Search of a Scientific Approach to Ethics and Theology

Harry M. Kuitert



Compelled by statutory regulation, I retired from my position as professor of ethics at the Faculty of Theology at the Vrije Universiteit (Free University) in Amsterdam in November 1989. It was entirely against my personal inclinations, but any possibility of bending the law in force at the time was completely ruled out. My tertiary education was in the systematic theology field, studies that I completed in 1962 with a dissertation entitled *De mensvormigheid Gods. Een dogmatisch-hermeneutische studie over de antropomorfismen in de Heilige Schrift* [God represented in a human being. A hermeneutical inquiry into the anthropomorphisms of the Bible]. My (PhD) supervisor was G.C. Berkouwer, and the dissertation was awarded *cum laude*. After working for a number of years as a 'senior civil servant A' under my supervisor, I was called upon to assume the office of professor of ethics. Absolutely not interested in this position and unwilling to leave my own field, I turned down the job offer. However, after much pressure was brought to bear, I caved in. That is how I came to be appointed professor of ethics in 1967.

To ease the transition, I was allowed to carry on with my old field a little longer by presenting a freshly-designed series of courses entitled: Introduction to dogmatism. In all the years during which I taught those courses, I devoted very many hours to discussing the most glaringly obvious and, therefore, least-frequently asked questions on the subject of faith and Christian tradition in the field with new theology students. Completely unfamiliar with this perspective, students were thrown into confusion, which contributed to making the courses very popular. It was a way for me to introduce the students to theology as an academic discipline. These lectures gave rise to a handful of books in a more theological vein; they were not – considering the assignment – the odd

ones out, and were based on the rule: All about Above comes from below, even if we claim that it is from Above.

I had acquired the need for this approach while preparing to teach ethics, as I had not learned the niceties of this discipline in my own studies. Ethics was more or less considered an extension of systematic theology, hence the name theological ethics, which was used at faculties of theology for many more years. The Vrije Universiteit's Faculty of Theology had not had a true professor of ethics for many years. It was a sideline task for the dogmatician, and after that for the New Testament professor. My immediate predecessor had been a church historian who considered ethics a form of church history.

Consequently, no serious work had been done in ethics for many years. I was faced with the question of whether I should consider my position as a bridge to the day that I could return to systematic theology and yet again make ethics a mere sideline of my main interest, or whether to embrace ethics as a discipline in its own right. I chose the latter, partially from ambition (to do something with it) and partially from shame (the subject had been shamefully neglected). I started my task with the goal of no longer considering ethics as an extension of any other theological discipline, but of expanding it into a discipline in its own right at the faculty.

This (well-considered) choice was deeply influenced by a brief visit to the United States (1967). This visit gave me the opportunity to become acquainted with ethics as an independent discipline, with the prevalent literature, the teaching approach, and especially, with views on the subject itself. These did not always differ from those at home: ethics means Christian ethics, and Christian ethics is an extension of systematic theology. At the same time, however, there was an approach that abandoned the theological angle, and used what was then presented as language analysis, or analytic philosophy. This approach, and especially the enormous impact it had on the way ethics was practised, greatly intrigued me. I took the seeds of this approach (some literature) along when I returned home.

Questions like: how is the word 'good' used in moral judgements and what makes a moral judgement a moral judgement could no longer be ignored. I was especially interested in the issue of the justification of moral judgements. Theology as I knew it did not feature that question, nor many other claims that are required to assess the truth value of an assertion.

The result was that I gradually – compared to the practices that were at that time common at theological faculties – introduced a different approach to the practice of ethics. I moreover based my ideas on literature other than the Germans, who had hitherto been the main focus of study, and switched to English-speaking authors, both from the United States and the United Kingdom, thus raising different moral themes. This approach was so different that, to my great surprise and joy, colleagues from other faculties asked to sit in on my staff meetings. After many years of work, this approach grew into what the Dutch newspaper *Trouw* called "Kuitert's school".

I was not worried about being responsible for this change, as it was the very essence of academia: working methodically and making claims that can be verified (checked), even in a field where moral judgments reign supreme. This had been my principle from the very moment that I had entered the academic world: academic research means making no claims that cannot be verified by all other participants in the subject. If it cannot be verified (which is not the same as 'confirmed'), the claims are not scientific, as they have become immune to criticism. This applies, for example, to appeals to revealed truth, such as those applied in respect of the Bible. In addition to analytic philosophy, I have learned much from the works of Karl Popper.

In addition to the academic requirement that arguments based on revealed truths have no authority, the assignment also played a part: it was ethics, not Christian ethics or theological ethics (whatever that may be). This not only gave me the freedom, but obliged me to establish ethics as a discipline that might be taught at any university, not just those that had originated as confessional institutes.

Over time, more students than ever before expressed a desire to graduate in ethics. This was not only due to the interest in moral issues – I started addressing medical ethical themes at an early stage: in 1970 my first course of lectures for students in their third year dealt with euthanasia – but also to the methods employed, such as the secular method, which did not rely on arguments that appealed to revealed truths. Insofar as the Bible played a role (which of course it did at a theological faculty), it was always used as a practical rather than authoritative instrument. Neither did we lack PhD students. A total of 20 students obtained their PhDs under my supervision, and of those, 10 found university jobs, six of whom as professors.

The secular approach also attracted social attention, it afforded me some trust from institutions that were not rooted in religion or ideology: I was considered *gesprächsfähig*. A growing number of committees invited me to take part in their deliberations, the most important of which was the National Health Council, the advisory body for the Minister of Health. I started my association with the Council as the chair of the Foetal Tissue Committee to consider the delicate question of whether and, if so, under what conditions, biomedical research could make use of tissue from aborted fetuses. Later I participated in other committees, in some cases as chair. My most important task for the Health Council was participating in the Permanent Advisory Group, a committee that assembled all current committees' reports and findings for final conclusions. I was later appointed vice-chairman of that group, which involved my becoming part of the Health Council's presidency. Thus a gratifying mix of social and academic duties was realized, which for years marked my professional life. Publications in my own field, and especially with regard to my specialty, medical ethical problems, emerged slowly at first, as I was not sufficiently confident to enter the public arena by means of publications. Yet, there too, I eventually managed to make up for lost time, and published a few books that are still consulted today.

The title of my valedictory lecture (November 1989) indicates what I wanted to pass on to my students and possible successors as the fruit of my studies: *Autonomie, een lastige laatkomer in de ethiek* [Autonomy, a troublesome latecomer to ethics], subtitled: *een kapiteltje mensbeeld en moraal* [a chapter on man and morality]. In this lecture, I recapitulated that man is neither the property of the church nor state, and therefore, contrary to classical ethics arguments, a different (and irreversible) approach to moral problems was required. Arguments could no longer derive authority from any respectable institution, but had to (be able to) stand on their own merit.

After my valedictory lecture, the faculty was closed to me. I do not know if this happens to every emeritus professor, but since that day the faculty has not sent me any requests to contribute to the establishment or advancement of ethics at all. Incidentally, neither has the University, but that is more to be expected. This silence from the faculty has always baffled me. Presumably the faculty considered my approach (no appeals to manifest truths or the Bible) a bit too secular after all, and aimed to return to argumentation, or at least the interpretation of ethics

and morality by means of typically Christian arguments of faith. I can only guess at the reasoning.

I was very sorry about this turn of events; I initially waited for such a request, because I felt that I certainly had some expertise in the discipline of ethics. Furthermore, I thought I could be of use through my extensive list of contacts in national institutions in the field of morality and ethics. Moreover, my network of foreign contacts due to, for example, my long-standing membership of the *Societas Ethica* (a European society for practitioners of ethics) might have been useful. However, no such request emanated.

Why do I regret this? Academics, whether in terms of education or research, require a certain structure in which different tasks all have their own place; in the absence of such a structure, the quality of work deteriorates. The loss of education and research alone are fatal to a discipline like ethics, quite apart from the fact that I enjoyed teaching immensely, and felt impoverished without my students. Without structure, involvement with the discipline soon deteriorates into patchwork, and the practitioner soon loses his ambition to be the best he can possibly be. What particularly saddened me was the rule that an emeritus professor could only supervise PhD students for up to four years after his retirement and no longer. I have had to pass on a number of students to others. Consequently, some of them never wrote their dissertations, although I believed them very capable of doing so.

Retirement did not, however, mean that I could not practice my field outside the university. I was able to continue pursuing many of the activities I had come across during the last few active years at the faculty. I even managed, for instance, to expand my work with the Health Council, using the knowledge I had acquired as a member of the state committee on Recombinant DNA, to take time to be a member and later the chair of the ethical committee of the Netherlands Cancer Institute / Antoni van Leeuwenhoek hospital, and I was appointed a member of the National Committee to Combat AIDS, and its subcommittee Legal and Ethical Affairs. In addition, I was the ethical member of the Acceptability of Life-Terminating Acts Committee of the Royal Dutch Association of Medicine (during its existence) and, as an ethicist, a member of the ethical committee of the Dutch Transplant Society, as well as a number of other small committees. However, at a certain point I did end my involvement in the recognition and possible solving of ethical problems. The focus on medical ethical problems that was

typical of my work required that I familiarize myself again and again with the latest biomedical developments, or keep my peace. Problems concerning genetics specifically lead to new moral dilemmas, but the biological side of those problems required ever greater understanding of microbiological processes, and I was eventually forced to give up. Without actual knowledge of how things work, you only talk nonsense, or at best shoot in the dark.

Consequently, I turned a page. When my free time after retirement was no longer used by the faculty at all, I gradually rediscovered my interest in my original field, systematic theology (which was, after all, what I had graduated in). From the Latin-German dictionary by Georges, I had discovered that 'emeritus' means, among other things: cast aside, played out; somehow I wanted to show that I was not, and that retirement on the basis of age alone shamefully wasted the potential of the emeritus professor. I therefore took a look at current theological developments.

What started as 'refutation' (casting me aside would not go unpunished) rapidly changed into honest curiosity: I had not been involved in my own original field for so long, I naturally wondered what the theologians were doing.

I was greatly disappointed with what I found. I had not missed a thing, with a few exceptions the trend was still what it had always been: analyses and summaries of what others had written in years long past, dissertations on Augustine, Calvin, Barth, Noordmans, etc. were common fare, mainly in the context of the ideologies of certain theological schools. Anything that escaped that particular approach mainly consisted of apologetics of the Christian faith.

This inspired me to apply the argumentation I had employed in the field of ethics to the field of systematic theology: how did they handle the justification of claims of faith, what did they consider a scientific approach, which critical criteria did they employ and how did they justify these? More importantly: were these criteria questioned? I found few to no answers at all to these questions. This led me to return to practicing theology, but not as a defense of the faith, but as a critical approach to Christian claims. What would remain of the truths of the faith when approached in a scientific manner, using criteria generally accepted by academics, such as checking and verifying claims? And if no check or verification were possible or permitted, what would then remain of theology as a serious academic study?

The theological faculties at the state universities employed what they called the 'duplex order': some subjects were open to scientific research, others were not. The teachers of the unscientific subjects were therefore nominated by the church. I found and still find this dichotomy impossible to work with: it makes a critical approach to what the Christian tradition considers truth, impossible; or at least a critical approach such as that which is considered basic to academic research.

In the theological studies that I have undertaken after my retirement, I have always assumed that every claim that pretends to pertain to factual knowledge as factual information about the state of affairs can and should be subjected to checking and verification. This was not a new path, but rather a return to a position in classical theology and retained until the 20th century. Only under the influence of Karl Barth, who regarded himself as the starting point of theology, was the notion abandoned that theology should be answerable to reason in terms of its assumptions. Classical theology used to employ metaphysics for checking and verification: whosoever wished, and knew the art of metaphysical thought, was allowed to join in discussions on the foundations of the Christian faith. Theology did not – contrary to what Barth propagated – start with the self.

I wanted to return to that situation. Theological claims can and should be checked for their tenability as factual information. I therefore carried on my research, checks and verification, which I believe ought to be done methodically. However, the subject of my investigation was now Christian truth as information about another world. Nobody is required to accept claims of faith in this way; people are free to determine the status of their claims as they please, but once propagated as a form of knowledge of facts, these claims must be subjected to the critical question whether this knowledge is actually knowledge.

I recorded my findings in books, using the essay as a stylistic device to be accessible to the interested reader. Sometimes this worked well: I received a public award for *Jezus. Nalatenschap van het Christendom* [Jesus: The legacy of Christianity]. Several of my books were translated into German and English. Looking back, I am sorry that I could only progress slowly, partly due to lack of support, partly due to the fact that one – even a critic – retains the need to defend the faith for a long time, so one does not write as pointedly as one should. Still, I finally completed what I had started in *Over religie* [On religion], and for which, via *Voor een tijd en plaats van God* [Temporary holding God's

place], I reached a tentative destination in *Hetzelfde anders zien. Het christelijk geloof als verbeelding* [Seeing it in another way: Christianity as imagination].

In summary: there have to be people before religion can arise, and religion before start speaking about gods and God of the Christian faith. The ideas of existing religions, including the Christian one, are not information, but stem from distant ancestors, and were produced by 'imagination'. Consequently, I practise theology in a way that does not consist of establishing/defending truths, but which considers itself the hermeneutics of existing religions: how did the previous generations view their world, what wisdom can the current generations distil from those views for the present? This would open new perspectives for the churches.

Ecclesiastical theologians did not – understandably – strongly support me in this paradigmatic shift, although I was indeed pleased to see the appearance of many studies devoted to my work. In *Ethiek tussen hemel en aarde* [Ethics between heaven and earth], my ethical positions were investigated. Later, similar studies appeared on my efforts regarding the Christian faith's claims of truth, as did commentaries and even contra-books. I certainly could not complain about a lack of reaction.

Biosketch H.M. Kuitert

Harminus Martinus Kuitert. Born on 11 November 1924, Drachten, Netherlands.

1930-1934 School met den Bijbel (school based on Protestant principles) Drachten.

1935-1937 De Visser Smits School in The Hague.

1937-1943 's Gravenhaags Christelijk Gymnasium in The Hague.

1943-1945 Went into hiding in Utrecht during German occupation.

1945-1950 Theological studies at the VU University (Free University) in Amsterdam.

1950-1955 Dutch Reformed minister at Scharendijke (Zeeland).

1955-1965 Dutch Reformed student minister in Amsterdam, assigned to the University of Amsterdam (UvA).

1962 Ph.D. in Theology (*cum laude*). under prof. dr. G.C. Berkouwer.

1964 Spring semester study at the University of Uppsala (financed by a prize from the Coeverden Adriani Foundation)

1965-1967 Senior lecturer assigned to prof.dr. G.C. Berkouwer.

1967-1989 Professor of Ethics and Introductory Dogmatics in the Theological faculty at the UvA.

1989 Emeritus

Some of the offices held:

- Member of the presidency and the permanent consultation group on Ethics and Health Legislation of the National Health Council.
- Chairman of the Commission on Foetal Tissue of the National Health Council, member of the Commission on Termination of Life of New-born Babies as well as on other committees of this Council.
- Member of the Commission on the Acceptability of Conducting Termination of Life of the Royal Dutch Medical Association.
- Member and, later, chairman of the Commission of Medical Ethics of the Cancer Institute / Antoni van Leeuwenhoek House in Amsterdam
- Member of the Dutch National Committee on AIDS and the Sub-commission Ethical and Legal issues
- Member of the Medical Ethics Commission of the Dutch Society of Transplantation Surgeons.
- Honorary member of the Dutch Society of Ethicists
- Knight in the order of the Dutch Lion

Selected Publications

- Kuitert, H.M. (1975). De wil van God doen [Doing the will of God]. In T. Baarda, J. Firet, G.Th. Rothuizen (Eds), *Ad interim. Opstellen aangeboden aan R. Schippers* (pp.180-195). Kampen.
- Kuitert, H.M. (1980). Ethik [Ethics]. In: *Evangelisches Soziallexikon* (pp. 367-378). Stuttgart/Berlin.
- Kuitert, H.M. (1981). *Een gewenste dood: euthanasie en zelfbeschikking als moreel en godsdienstig probleem* [Death on request. Euthanasia as moral and religious problem]. Baarn.
- Kuitert, H.M. (1983). *Suicide: wat is er tegen? Zelfdoding in moreel perspectief* [Suicide: What is there against it? Killing oneself in moral perspective]. Baarn.
- Kuitert, H.M. (1988). Secularisatie en moraal [Secularisation and morality]. In G. Dekker & K.U. Gäbler (Eds), *Secularisatie in theologisch perspectief* (pp.131-148). Kampen.
- Kuitert, H.M. (1989). *Mag alles wat kan? Ethiek en medisch handelen* [Permitted what can possibly be done? Ethics and modern medicine]. Baarn.
- Kuitert, H.M. (2000). *Over religie. Aan de liefhebbers onder haar beoefenaars* [On religion. To those who love to practice it]. Baarn.
- Kuitert, H.M. (2002). *Voor een tijd een plaats van God. Een karakteristiek van de mens* [Temporary holding Gods place. A characteristic of man]. Baarn.
- Kuitert, H.M. (2004). *Schiften. Wat er in de christelijke geloofswereld toe doet en wat niet* [Sorting. What matters of the Christian tradition and what not]. Kampen.
- Kuitert, H.M. (2005). *Hetzelfde anders zien. Het christelijk geloof als verbeelding* [Seeing it in another way: Christianity as imagination]. Kampen.

More than Fifty Years of Medieval Studies

Johanna Maria van Winter



I studied history at the University of Groningen from 1945-1953, spending an interim year (1949-1950) at Ghent University in Belgium, specializing in medieval history. After my Master's examination (doctoraal), I became an assistant of Prof. Enklaar who was the chair of Medieval History at Utrecht University. My task, which started in October 1953, was two-fold: to write a PhD thesis and take care of the Institute of Medieval History at Utrecht University, its large library and students.

The subject of my thesis had been chosen by my promoter, Prof. Enklaar, because it complemented his own research, although different conclusions were expected. The dissertation that I defended in June 1962 was the two-volume *Ministerialiteit en ridderschap in Gelre en Zutphen* [Ministeriality and chivalry in Guelders and Zutphen]. My approach and conclusions did indeed completely differ from his and from the theories about those phenomena that had been accepted up to that point. Prof. Enklaar, who had already been suffering from multiple sclerosis when I became his assistant, had died in the meantime and his associate professor Alberts became my promoter. On the whole, I did my own research without any supervision or help from my promoter, which was a normal tendency in our discipline at the time.

I started teaching small working groups around 1958, as we had very few students at the time. Since I supervised the library of the Institute, I counseled the students on their reading lists, advising them on the organization of their examinations. As there were no facilities in this field at the time, every student had to find his or her own path. Furthermore, the library was growing and modernizing under my guidance, since I had an average budget and a rather free hand to buy new books. My work at the library provided me with much knowledge of the newest developments in our discipline and is still of great help to me. In the course of decennia, our medieval library was merged with other libraries of the Faculty of Humanities and was administered by professional

librarians. Nevertheless, I always kept in close contact with them to stay well informed.

A few years after I had completed my Ph.D., I discovered a new field of interest within the history of the Middle Ages, namely the history of food and nourishment. In 1964 a reprint of a 19th-century edition of two 15th-century English cookery books appeared, which I bought for our library and for myself. Then I called on my students to assist me with the preparation and consumption of dishes from these cookery books, simply to experience dining in that fashion. They reacted enthusiastically and from that point on three volunteers and I cooked from these recipes and dined at my home every six weeks. Before long, I published these recipes as well as recipes in other medieval languages from new text editions in the new monthly publication, *Spiegel Historiae*. Each month a recipe, in its original wording and provided with a translation, an explication of its preparation and information on the eating habits or related topics of that time, was published. I always added an illustration from a medieval manuscript or object. After five years, the brewery Grolsch in Enschede offered to print a richly illuminated volume of these recipes, which appeared in 1971 under the title *Van Soeter Cokene, recepten uit de romeinse en middeleeuwse keuken* [On Delicious Cooking, Recipes from the Roman and Medieval Cuisine].

Thereafter I continued to do research in two directions: ministeriality, chivalry and nobility (not only in Guelders but generally in Western Europe) on the one hand and food on the other. Furthermore, the history of the town and region of Utrecht captured my interest, especially the courses of the Rhine and Vecht rivers during Roman and Medieval times, since they determined the evolution of this town and its environment.

I became a lector (associate professor) in 1972 and a professor of medieval history at Utrecht University, in 1980. I have always been involved in the organization and management of our Institute and Faculty, which didn't change after I became a professor. Our number of students increased steadily at the time, without the staff increasing at the same speed. Consequently, much more teaching, general planning and research planning had to be done. It became clear that subvention from the second stream of money was necessary and that large umbrella-projects were the best way to achieve that. The archivist of Utrecht, Dr Dekker, and I therefore started a project of writing the his-

tory of the province of Utrecht from prehistoric times up to the end of the 20th century, in which students and doctoral candidates, specializing in all periods of history, could participate. Both Dr Dekker and I had students and Ph.D. students, he as a professor of auxiliary sciences at the University of Amsterdam and I as a professor of medieval history at Utrecht University. Much preparation had to be done. Nevertheless, we succeeded in raising enough money for several dissertations. After my retirement in 1989, we completed the actual work of editing and partial authoring the three-volume *Geschiedenis van de Provincie Utrecht* [History of the province of Utrecht], *I tot 1528*, *II van 1528 tot 1780*, *III vanaf 1780*. My farewell lecture, *Utrecht centraal of marginaal?* [Utrecht, central or marginal?], in December 1988 had been a type of presentation of this work. I stated that Utrecht, which now seems to be the centre of the Netherlands, had always been marginalized throughout medieval history, as it first lay on the border of the Roman Empire and was thereafter an outskirts of the German Empire. Consequently, it had been open to influences from several sides, which had determined its history.

I retired in December 1988, not because I wanted to stop my research, but to actually have more time for it, and also to save the chair of Medieval History at Utrecht University. Prof. Enklaar's successor, Prof. Hugenholtz, suffered bad health and had delegated the direction of the department to me. He was a number of years older than I and had retired some years earlier, leaving the chair vacant. Economizing was the slogan at that time, and it was feared that the chair would be abolished, given the fact that I was there to do the work. I had no chair other than a personal professorship without the right of succession. The Faculty recognized the vacancy and appointed a young woman, Dr Mayke de Jong, who specialized in the Carolingian period, to the chair. There was no place for the both of us. I consequently retired early, since I had just reached the age of 61. I have always had the best of relations with Mayke de Jong, and we meet twice a year with our Ph.D. students and faculty at my home.

In general I mustn't grumble about my treatment as a retired professor of the Utrecht University, because I still receive the invitations for the ceremonial openings and *Dies Natalis* celebrations of this University and for inaugural and farewell lectures as well as for the defense of Ph.D. dissertations. Also my colleagues of my own faculty as well as others are still within the reach of my network, because of the emeriti

dinners that we have thrice a year, which are attended by me as much as possible. However, if I think of the many assistant and associate professors that have been my daily companions within and without my department, I regret that they don't get these invitations and therefore have become outsiders of the University community. Some of them are alumni and thus may have kept a link with their fellow-students, but so many others are not.

Another facility is the use of my old e-mail address from the general provider of the University, which I was allowed to keep at my retirement. Because I already used it before 1988 and in fact was one of the first users of a personal computer in our department - it was my own desktop that I had placed in my office there, because at that time the staff members didn't yet have personal computers - I still may ask the ICT staff for help in case of emergency and am considered by them as one of their 'golden users'. But what about the retired assistant staff members? Can they go on with their old e-mail address? I don't think so.

The participation in international conferences is another point of consideration. For longer research stays in archives abroad I was paid by ZWO (the second stream of money), but I never asked for reimbursement of my travel costs and fees of international meetings and symposia, but presented them as professional expenses on my tax-return. Nowadays, however, our fiscal law has been changed and this move is not possible any more. For me the payment of travel costs and fees by myself doesn't make difference, in so far as I always did it that way; now only without the tax-return. But anyway after my retirement I couldn't have asked them back by way of the tax, neither under the old fiscal law, because this was possible only during your professional life.

The years of my retirement have indeed been most fruitful. Not only did we complete three volumes of the *History of the Province of Utrecht*, but some months later, in January 1998, a book appeared that I had started researching in the archives of the Order of Malta in Valletta 35 years earlier: a text edition called *Sources concerning the Hospitallers of St John in the Netherlands, 14th–18th centuries*. It had been in January 1963 that I, as a young Ph.D. with a penchant for chivalry and nobility and with knowledge of medieval Latin, French, German and Dutch, had been sent to Malta with an assignment from the modern Dutch branch of that Order to investigate if any archival sources on the Netherlands might be hidden in the large archives of Valletta (Malta). I

was sent to the *General Landesarchiv* in Karlsruhe (Germany) with the same assignment in April of the same year. Indeed, much data turned up. Consequently, I sent a report to the Order requesting that I be allowed to do more research there and create a source edition on my findings. I subsequently returned to Valletta for a month of archival research in 1965. There was, however, not enough time to create a source edition. Nevertheless, I quite often used the material in my student working groups. Only after my retirement did I find the time and focus to complete this job to my satisfaction.

Furthermore, I continued my food research, presenting papers at many conferences and meetings. I systematically started refusing presentations for mere entertainment reasons, since one can easily waste infinite amounts of time on amateur groups when working with such a popular subject. I never tried to be popular or earn money with this theme, and I always restricted myself to the serious questions posed by colleagues and students from various disciplines.

Owing to my papers having appeared in conference reports and journals all over the world, they are difficult to find. Consequently, I decided to compile a book of my collected papers on medieval food. I used an English publisher who has an affinity for this subject, namely Prospect Books in Devon. By coincidence the book, *Spices and Comfits, Collected Papers on Medieval Food*, was about to be completed close to my 80th birthday on 27 November 2007. I therefore used my birthday celebration on 28 November to present one of the first copies to a colleague from the Free University Brussels, Prof. Jansen-Sieben, the retired professor of medieval Dutch linguistics, who had participated in much of my research in this field. The Faculty of the Humanities and the Department of History of Utrecht University had organized a symposium on the historical aspects of food, which was attended by almost 200 people. This really was the crowning glory of my career.

I am, however, not going to stop my research yet. I intend to give a lecture on the medieval monthly and seasonal *Regimina Sanitatis* at the Ethnological Food Research Conference in Oslo in September 2008, for which I have already done some, as yet unpublished, research. Furthermore, the medieval chivalry and nobility, as well as the household accounts of the 15th century ducal court of Guelders also demand my attention. Therefore I hope to remain in good mental and physical health for many years to come.

Biosketch J.M. van Winter

Born 27 November 1927 in Amsterdam (The Netherlands), studied History in Groningen (The Netherlands) and Ghent (Belgium) with specialization in the History of the Middle Ages; from 1953 onwards Assistant Professor and in 1972 lector (Associate Professor) in Medieval History of the Utrecht University, since 1980 Full Professor, and since 1989 Emerita Professor in Medieval History of that University; published mainly about Knighthood and Nobility in Western Europe, Local History of the Low Countries, and Food and Nutrition in Medieval Europe; teaching experience in all kinds of subjects in Medieval History of Europe and the Near East, including Food and Nutrition, with practical exercises in cooking from medieval and early modern recipe books from almost all Western European and Anglo-Norman countries.

Selected Publications

Winter, J.M. van (1962). *Ministerialiteit en ridderschap in Gelre en Zutphen*, 2 vols, Ph.D.dissertation Utrecht. Groningen: Wolters, Bijdragen van het Instituut voor Middeleeuwse geschiedenis te Utrecht 31, also Werken van 'Gelre' 32, Arnhem: S.Gouda Quint (vol. I, 388 pp., vol. TI, 16 large folding tables) [Ministeriality and chivalry in Guelders and Zutphen].

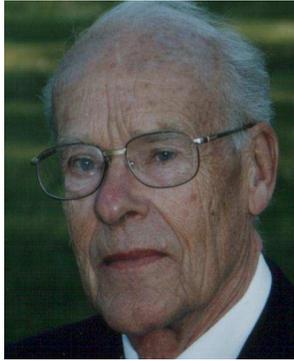
Winter, J.M.van (1965). *Ridderschap, ideaal en werkelijkheid*. Bussum: C.A.J. van Dishoeck, Fibulareeks 11 (110 pp.); 2nd edition (1976); 3rd edition (1981); 4th edition (1982); German translation (1969): *Rittertum, Ideal und Wirklichkeit*. München: Verlag C.H.Beck; 2.Auflage (1979), München: Deutscher Taschenbuch Verlag; Japanese translation (1982): *Kishi - sono riso togendshitsu*, Tokyo Shoseki [Chivalry, ideal and reality].

- Winter, J.M. van (1971). *Van Soeter Cokene, 52 recepten uit de Romeinse en middeleeuwse keuken*. Enschede: Grolsche Bierbrouwerij - Bussum: Unieboek (160 pp.); 2nd revised edition (1976), Haarlem: Fibula-Van Dishoeck -Bussum: Unieboek (167 pp.) [On delicious cooking, 52 Recipes from the Roman and Medieval Cuisine].
- Winter, J.M. van (1976). 'Cingulum Militiae', Schwertleite en 'miles'-terminologie als spiegel van veranderend menselijk gedrag. *Tijdschrift voor Rechtsgeschiedenis*, 44, 1-92. ['Cingulum Militiae', girding with the sword and knightly terminology as a mirror of changing human behavior].
- Winter, J.M. van (1981). Ansfried en Dirk, twee namen uit de Nederlandse geschiedenis van de 10e en 11e eeuw. *Naamkunde*, 13, 39-74. [Ansfried and Dirk, two names from Dutch history of the 10th and 11th centuries].
- Winter, J.M. van (1981 / 1982). De voornaamste adellijke geslachten in de Nederlanden, 10de en 11de eeuw. In D.P. Blok & A. Verhulst (Eds), *Algemene geschiedenis der Nederlanden I*, Haarlem: Fibula-Van Dishoeck - Bussum: Unieboek, 225-229, with notes and bibliography on 418 and 444. [The most outstanding noble families in the Netherlands, 10th and 11th centuries] & Adel, ministerialiteit en ridderschap, 11de - 14de eeuw. In H.P.H. Jansen & R.C. van Caenegem (Eds), *Algemene geschiedenis der Nederlanden II*, 123-147, with notes and bibliography on 508-510 and 541-542 [Nobility, ministeriality and chivalry, 11th -14th centuries].
- Winter, J.M. van (1996). Les seigneurs de Sainte-Catherine à Utrecht, les premiers Hospitaliers au Nord des Alpes. In Michel Balard (Ed.), *Autour de la Première Croisade*. Actes du Colloque de la Society for the Study of the Crusades and the Latin East (Clermont Ferrand, 22-25 juin 1995). Paris: Série Byzantina Sorbonensia, 14, 239-246 [The lords of St Catherine at Utrecht, the first Hospitaliers north of the Alps].

- Winter, J.M. van (1997). Several chapters in Vol. I of C. Dekker, Ph. Maarschalkerweerd & J.M. van Winter (Eds), *Geschiedenis van de Provincie Utrecht*, 3 vols. Utrecht: Het Spectrum, Stichtse Historische Reeks [History of the Province of Utrecht].
- Winter, J.M. van (1998). *Sources concerning the Hospitallers of St John in The Netherlands, 14th-18th Centuries*. Leiden-Boston-Köln: Brill, pp.821.
- Winter, J.M. van (2001). Het (Palts?)graafschap Zutphen en het Hamalandse gravenhuis. *Bijdragen en Mededelingen Vereniging Gelre*, 92, 57-79, with folding table in the back cover 'Verwantschapstabel van de graven van Zutphen' [The (Palatine?) county of Zutphen and the counts of Hamaland].
 German translation (2005): Die (Pfalz?) Grafschaft Zutphen und die Grafen von Hamaland. In Ralf G. Jahn, Karl-Heinz Tekath & Bernhard Keuck (Eds), *Ein guter Nachbar ist ein edel Kleino. Das Herzogtum Geldern im Spannungsfeld von Bündnis und Konkurrenz an Maas, Rhein und IJssel*. Geldern: Verlag des Historischen Vereins für Geldern und Umgegend, 6377. [The (palatine?) county of Zutphen and the counts of Hamaland].
- Winter, J.M. van (2007). *Spices and comfits. Collected papers on medieval food*. Devon: Prospect Books (pp.439).

Routine Medicine is only for Those with a Routine Mind

Evert J. Dorhout Mees



I was born in 1925 into an intellectual family. My father was a judge and later a professor of law, but also had a keen interest in physics and was an expert carpenter in his free time. I think I inherited a ‘creative drive’ to produce something, either with my brain or with my hands, from him. As a boy, I developed an interest in history, starting, of course, with the birth of the Dutch Republic and William of Orange as my great hero. I acquired a lasting sympathy for people revolting against oppres-

sion and human rights violations.

I attended the beta (science) section of the gymnasium, but after graduation in 1943, I continued a year in the alpha (humanities) section to avoid the obligatory (fascist) ‘labor service’. During that time, I was interested in philosophy and psychology, but I also experimented with chemicals at home, which fascinated me enough to want to study chemistry. The universities had, however, been closed by the Germans in the meantime. Since a psycho-technical test had advised that I study medicine, I used the opportunity to start an unofficial medical study with the help of Utrecht University staff members. Thus, by the time Holland was liberated, I had become so interested that I continued this study. Looking back, I cannot imagine myself in any other profession. One acquires both intellectual and human satisfaction from being a doctor.

As a student, I took the opportunity to visit Czechoslovakia as well as Austria and Germany, because I wanted to know how a satanic ideology such as that of the Nazis could have come to pass.

Practicing medicine

Once I had entered the medical field, every aspect became interesting, but eventually I decided to specialize in internal medicine. During my internship, I discovered that my belief that my professors knew everything was quite mistaken. Two subjects seemed particularly neglected:

kidney disease and hypertension. Cardiologists did not have any interest in hypertension. They considered attempts to treat it useless if not harmful. I subsequently started a hypertension outpatient clinic, and became more and more convinced that hypertension is a kidney disease.

I was particularly impressed by an article by Sir Robert Platt, who argued that most of the abnormalities observed in renal patients are not mere failures, but the body's attempts to adapt to the limitations imposed by the process of the disease. I had the pleasure of visiting this perfect gentleman who maintained high ethical standards. He refused to be called a 'nephrologist', calling himself a 'nephrophile' (friend of the kidney). I still sincerely believe that a nephrologist should first of all be an internist, even a generalist. In order to broaden my horizons, I also went to assist Jean Hamburger (the founder of the Nephrology Unit at the Necker Hospital in Paris) for a few months.

In our country, there was only one outstanding pioneer in the field of kidneys, circulation and hypertension: Jan Borst in Amsterdam. He and his co-workers undertook meticulous clinical observation and balance studies, which showed that hypertension results from salt and volume retention by the kidney, and could be cured with a salt-free diet and mercury diuretics (the only drug available at that time). His ideas were later re-discovered and systematized by Arthur Guyton, the legendary head of the University of Mississippi's Department of Physiology and Biophysics.

In 1962, I spent a happy year with my family in St Louis as an assistant professor. I was invited there by Neal Bricker, the first director of the Renal Division of the Washington University in St Louis, on the strength of two articles that I had written and which had been inspired by Platt's hypothesis. I learned that a researcher should at least master, and preferably perform, the techniques used himself. This notion was completely unfamiliar to European minds, and still is in many countries.

In Dallas, I had the pleasure of getting to know Donald Seldin, who combines an extremely inquisitive and critical mind with good doctorship and a broad intellectual interest. During several trips to the USA in later years, I became acquainted with Arthur Guyton, whom I consider the greatest physiologist since Claude Bernard. My collaborator and future successor, Hein Koomans, and I had very useful discussions with him and his co-workers.

Guyton's approach appealed to us and was particularly well suited to the problems on which we were working. For me the most interesting aspect of nephrology was (and still is) pathophysiology: understanding how a normal kidney works and then trying to help it when it is diseased. The kidney is a wonderful organ. Starling once remarked that it seems to be 'endowed with intelligence'. According to the great comparative physiologist Homer Smith, its task is not just to make urine, but 'the stuff of philosophy itself'. The differentiated anatomical structure enables physiologists as well as pathologists to investigate more details than of most other organs. My interests developed along two lines:

First, how does the kidney work on the nephron level? This can be investigated with 'clearance' methods and also by micro-puncture. We limited our research to the first, using the renal clearance Lithium as well as others. The micro-puncture and micro-perfusion techniques needed so much investment in time and money that I considered them impracticable under Dutch conditions. Nevertheless, my successor Hein Koomans was able to set up a micro-puncture laboratory around 1990, but it was rather late and international attention was shifting towards other directions.

The second aspect was the regulation of body fluid volumes, circulation and blood pressure. Against strong opposition from the hospital management, I was able to buy an apparatus that enabled us to measure blood and extracellular volumes routinely, using short-lived radioactive isotopes (which would not be permitted today, of course). This opened the road to two main research lines: nephrotic syndrome and chronic renal failure. We expected to find low volumes in both conditions, but instead found the opposite.

We investigated patients with nephrotic syndrome from all sides and were able to put together many pieces of the puzzle, although the nephrological community was slow to accept them. The insights we thus gained into the dynamics of body fluids enabled us to treat our patients better and along more rational lines. However, our research appeared to be even more helpful for the other subject: volume and blood pressure.

The most important function of the kidney is to not only keep the composition, but also the volume of the body fluids within narrow limits. When kidney function is reduced by disease, it becomes increasingly difficult for the body to prevent expansion of tissue fluid, which

leads to an increased blood volume. This in turn causes the elevation of blood pressure (hypertension). The cause of too much tissue fluid is (modern) man consuming too much salt, more than 10 times the required amount. While drugs (diuretics) can force even a diseased kidney to excrete more salt, this is obviously impossible when the kidney fails completely.

Hemodialysis

Since Kolff's invention of the artificial kidney (haemodialysis), it is possible to prevent the inevitable death of patients without renal function by periodically circulating their blood through this apparatus. While it was first only used to treat reversible renal insufficiency, the method was adapted and has for 45 years been keeping patients with a permanent loss of kidney function in relatively good health. I was the first to apply this method in Holland, against strong opposition from the Utrecht University hospital management. They did not allow me to treat all the patients who needed this treatment, as they used the (rather liberal sums of) money paid by the insurance for other purposes. Consequently, I founded a non-profit organization, the Home Dialysis Foundation. Owing to this NGO's very good administrator, this treatment could be provided at a much-decreased cost, which caused an outcry among many dialysis doctors.

We worked hard to lower our patients' elevated blood pressures by applying the principles of volume control as outlined by Belding Scribner, the founder of chronic dialysis. It was hard to convince some doctors and nurses that certain patients were volume expanded, despite the fact that they appeared thin. I therefore sometimes had to sit next to the patient and carefully turn the ultrafiltration button until success was finally apparent.

I found dialysis treatment very rewarding in those years. Dr deWardener from London remarked: "For the first time in my career, I feel that I am keeping patients alive."

The Turkish connection

I had always intensely enjoyed my university work that combined patient care, teaching and clinical investigation. Nevertheless, I was not sorry when I was forced to leave at 65 – the atmosphere was gradually changing. The 'managerial revolution', once prophesied by Burnham, had finally reached the universities. Over-consumption of medical care

threatened and I felt that I could better apply my experience elsewhere. I thus applied to Ege University in Izmir, Turkey, where I was immediately accepted in a similar position as the one I had had in Utrecht, but without the administrative burden.

It is no exaggeration to say that the 8 years I spent there were the happiest and most rewarding years of my life. My wife Mia and I enjoyed the Turkish 'culture', the friendship and hospitality, and warm human interest at all levels of the society, most of all from the 'lower' classes. There were, of course, abuses galore, and more impudent and less sophisticated than in Holland. It was, however, amazing that my criticisms were accepted in Turkey, albeit not without some problems. It became apparent to me that I had to 'sow the seeds of doubt', and that criticism in science was closely related to a critical attitude at the social and political level. Consequently, I also became interested in politics and human rights, which I still am.

Cardiovascular problems

Although I first wanted to limit my activity in Izmir to teaching and patient care, I soon realized that some kind of research was needed to develop the self-criticism that is so vital to be a good doctor. For practical reasons, this had to be clinical research. This had always been my favorite research, but it was just about to be abandoned in the nephrology world.

We started further investigations on patients with nephrotic syndrome. Although this resulted in a publication, I abandoned the subject as the hospital laboratory was unreliable and the concept of quality control, which is essential for scientific research, was lacking among the staff members. When I once informed a responsible doctor that the blood tests results of different departments' laboratories differed 100%, he thanked me, but took no action. This was also due to the lack of team spirit. Needless to say that now, 18 years later, this has changed radically.

When we went to Izmir, there was a chronic dialysis department, but the patients were in a miserable condition. This was not only due to a lack of good materials, but more to the doctors and nurses' lack of pathophysiological insight. Most of the patients, in the wards as well as in the dialysis department, were 'over-hydrated', had severe hypertension and suffered from heart failure. That this had something to do with salt and fluid balance did not enter the doctors' minds. The professor of

paediatrics, who was responsible for the unlucky children on dialysis treatment, was specifically very obstinate, and sowing the seed of doubt was wasted on her. I had confrontations with her, which resulted in our taking over the care for these children. During my visit to Izmir in November 2007, I met three of these children, now grown up and in good health.

I was allowed such liberties due to my grey hair and because I was a foreigner. My Turkish colleagues would never have been allowed such behavior. Owing to the Turks' respect for my experience as a foreigner, I was almost given a free hand, particularly with the use of the echo-cardiography, which I had tried, but had never been allowed in Utrecht. Consequently, I told my colleagues that they should become 'circulatory physiologists', and make the heart the focus of our research.

I therefore concentrated my activity on the treatment of dialysis patients. Since this is mainly performed by nurses, it was important to explain the principles of salt and water balance to them as well. Here my wife Mia, who is a nurse, was of great help. In addition, she provided social support and helped to organize Sunday excursions for the patients. These were a great joy to them and always ended with singing and dancing!

My Turkish colleagues and I had made very interesting observations, but now we had to publish them in international journals, in which my colleagues had no experience at all. There were two obstacles: first, their completely unjustified lack of self-confidence as well as resistance from international editors who distrusted medical reports from Turkey. More importantly, to my amazement, international literature revealed that a lack of basic physiological understanding was not limited to Turkey, but was prevalent all over the world, particularly in the USA. Not only did they not urge their patients to restrict salt consumption, but they were also blinded by the 'evidence based' method that was and still is fashionable. I am still angry at the journal *Kidney International* that refused an article, in which, for the first time by means of Doppler-echo observations, a description was given of how valvular regurgitation disappeared in 21 patients after ultrafiltration. According to the journal, the article was refused due 'lack of controls'! We did, however, obtain the support of Eberhard Ritz, editor of a European journal, and finally published the article as well as another 20 papers – also in American journals.

This development was due to a happy concurrence of circumstances. First, the head of the nephrological department in Izmir considered me as 'older brother', an established authority in Turkey, and gave me a free hand with the training of the young doctors. These young people were, of course, the main authors of our remarkable success. Their open minds were the fertile soil for the 'seeds of doubt'. They were willing to work extremely hard and cooperate as a team, while most other university staff tried to make a career by disparaging their colleagues. One of the reasons the team did not want me to leave later was because I could protect them against the very conservative university establishment. Indeed, as one of the very few (politically left) professors wrote in a newspaper: "Our university is governed by a mafia". This honest statement indicates that he had lost any hope of changing the situation.

After 8 years, Ercan Ok, the head of the team, was given a professorship and the team had sufficiently proven themselves to carry on without my support. Since my return to Holland, I have kept in close contact with them, visiting once or twice a year; sometimes to lecture, discuss research projects, advise on writing articles, but always for friendship's sake.

As a result of my friends' efforts, there are now many dialysis centers in Izmir and further away. Nearly all of these centers' patients have normal blood pressure without the use of drugs and their survival rates are better than elsewhere.

Returning home

In 1998 we returned to the Netherlands and settled in a house with a large garden in the East of the country. After this second retirement, I wrote the book *Cardiovascular aspects of dialysis treatment*, which was translated into Turkish last year. I also directed my interest towards the social and economic aspects of medicine and human right problems.

As I indicated above, I was struck by the neglect of established scientific truths and the subsequently bad treatment of patients all over the world. One of reasons for this appeared to be the pharmaceutical industry's overwhelming influence on medical research, teaching and medical treatment. *The Lancet* once called doctors and the pharmaceutical industry 'uneasy bedfellows', but many doctors are quite comfortable in that position. The commercialization of health care also concerned me. Shortly after my return, I read a few publications by a new Socialist

Party that reflected my ideas perfectly. Thus, for the first time in my life, I became a member of a political party. I try to advise them and sometimes also provide criticism on matters of health care and Turkish politics.

During my stay in Turkey, I had ample opportunity to indulge in my old hobby: history, (particularly Turkish history). Contemporary history also means politics and, unfortunately, human rights violations, about which newspapers report nearly every week. I made contact with brave colleagues from the *Turkish Human Rights Foundation* (TIHV). As an observer for an international organization, I attended processes in Izmir and Ankara against these same doctors for 'helping terrorists' between 2000 and 2004. Later they were acquitted, though not without having been maltreated by the police.

Returning to the Netherlands, I found that far from being limited to Turkey, these issues were 'global'. I was particularly disgusted by our government's treatment of asylum seekers and the broad popular support for these inhuman acts. I therefore did volunteer work for a refugee support organization. Another unhappy surprise in the Netherlands was the fear and hatred of foreigners and of Islam in particular. We had, of course, seen many bad, but also many good aspects of Islam while in Turkey, but now I decided to study this subject more extensively. I presented the fruits of this study in the form of presentations to those who were interested. I do not harbor the illusion that these and other discussions and articles that I wrote on the subject have more influence than those that I wrote on health care (that is, nihil), but it keeps me busy and still provides satisfaction.

Can future emeriti profit from my experiences?

When we went to Izmir, there were no other foreign staff members at Ege University. Two retired Turkish-American professors arrived, but did not stay long: one because he was not really interested in improving the prevailing system and the other because his American wife did not like Turkey. The latter is all-important: if you want to achieve something, your partner should be as motivated as yourself. Knowledge of the language is equally essential. In the case of Turkish, this is not easy, particularly at an older age. You should, of course, accept and adapt to a different culture, which in the case of Turkey, is not difficult.

Biosketch E.J. Dorhout Mees

Evert J. Dorhout Mees was born on 14 August 1925 in Voorburg, The Netherlands. After completing his gymnasium schooling (grammar school), he studied medicine at Utrecht University. He spent his military service as a doctor in the Royal Dutch Air Force, specialized in internal medicine at Utrecht University and was appointed staff member of the medical faculty. In 1962 he was a visiting assistant professor at the Washington University in St Louis. In 1970 he was appointed professor at Utrecht University; his inaugural lecture was on: 'Salt, kidney and blood pressure, a special triangle.' His research focussed on hypertension, renal handling of salt and water, and the distribution of body fluids during health and disease, in particular the nephrotic syndrome. His team produced more than 300 articles that appeared in international journals. He was the first in the Netherlands to introduce chronic dialysis treatment and founded the Home Dialysis Foundation. He initiated the Dutch Nephrological Society and served as a council member of the International Society of Nephrology for 8 years.

After retirement in 1990, he worked as a professor at Ege University in Izmir, Turkey – the most rewarding 8 years of his life. He and a team of young doctors significantly improved the treatment of dialysis patients. After his return to Holland, he maintained contact with the Izmir team and also became engaged in human rights, Islam and Turkish politics.

Selected Publications

Dorhout Mees, E.J. (1957). Role of osmotic diuresis in impairment of concentrating ability in renal disease. *British Medical Journal*, *1*, 1156-1158.

Dorhout Mees, E.J. (1971) Elevation of uric acid clearance caused by inappropriate antidiuretic hormone secretion. *Acta Medica Scandinavica*, *189*, 69-72.

Geyskes, G.G., Boer, P., Vos, J., Dorhout Mees, E. J. (1976). Renin dependency of blood pressure. *The Lancet* *i*, 1049-1051.

- Dorhout Mees, E.J., Roos, J.C., Boer, P., Oei, H. J., Simatupang, T. A. (1979). Observations on edema formation in the nephrotic syndrome in adults with minimal lesions. *American Journal of Medicine*, 67, 378.
- Dorhout Mees, E..J. (1992). Fluid retention in renal disease. In S. Cameron, A. Davison, J.-P. Grunfelt, D. Kerr & E. Ritz (Eds), *Oxford textbook of clinical nephrology*. New York: Oxford University Press.
- Akcicek, F, Yalniz, T., Basci, A., Ok, E. & Dorhout Mees, E. J. (1995). Diuretic effect of furosemide in patients with nephrotic syndrome. *British.Medical Journal*, 310, 162-163.
- Dorhout Mees, E.J.(1995). Volaemia and blood pressure in renal failure: Have old truths been forgotten? *Nephrology Dialysis Transplantation*, 10, 1297.
- Cirit, M., Ozkahya, M., Soydas, C., Ok, E., Akcicek, F., Dorhout Mees, E.J. (1998). Disappearance of mitral and tricuspid regurgitation in haemodialysis patients after ultrafiltration. *Nephrology Dialysis Transplantation*, 13, 389-392.
- Dorhout Mees, E..J, (2000). *Cardiovascular aspects of dialysis treatment*. Dordrecht/Boston/London: Kluwer Academic Publishers.
- Özkahya, M., Ok, E., Toz, H., Asci, G., Duman, S. & Dorhout Mees, E.J. (2006). Long-term survival rates in haemodialysis patients treated with strict volume control. *Nephrology Dialysis Transplantation*, 21, 3506-3513.

Crossing Borders...

Marian C. Horzinek



I – this is how you expect an autobiography to begin – was born in Poland, educated in Germany, worked as a university professor mostly in the Netherlands and, as an emeritus professor, continue to do so internationally. The difference between my life before and after retirement is not so much the amount of work – but rather its focus. Currently, there is no formal agenda that disciplines my daily activities, no secretariat to type my letters and no young, intelligent student around to keep me sharp. However, on the bright side, there is also no need to attend dull lectures, doze away in uneventful committee meetings and write unpromising grant proposals. The present, third part of my life history is at least as pleasant as its childhood and professional phases, and certainly more fulfilling. I am thoroughly enjoying it. But let me begin at the beginnings.

My father was an ex-officer of the Polish army's mounted artillery, but 'converted' to adherence to the German cause when the region was annexed by the Nazis in 1939. Therefore, when Upper Silesia was liberated by Soviet troops in 1945, my family knew we were in for trouble. Our Bauhaus-style villa was confiscated - it did not help to exhibit our ethnicity by reorganizing the bookshelves to display the Polish titles in the front rows and hide the German ones behind. My family was arrested without prior notice and taken to a concentration camp - although, as a 10-year old, I experienced this as rather an adventure. A long odyssey followed by railway cattle wagons, horse carriages, the occasional automobile and shank's mare. It ended in a small provincial town near Berlin, in what was to become the German Democratic Republic (DDR).

My father had studied textile design, which included hand weaving – a craft that turned out to be very useful in the post-war years. A loom, two centuries old as the carvings indicated, was borrowed from a local farmer, and we started to produce fabric, using yarn provided by the customers. My sister and I also had part in this enterprise, helping with the lesser chores like weighing, sorting, spooling and dyeing. School

homework was allowed only after dark, by candlelight, when it was not possible to work in the shop. I grew up with the idea that brainwork is a privilege, a bonus. Paul de Kruif's book *Microbe Hunters*, that I stumbled upon in the attic of our 18th century home, shaped a fancy: I wanted to become an explorer, a researcher and I wanted to work with animals.

Education

The dream matured into a plan, and after crossing another border – this time to capitalist West Germany – and after high school, I enrolled as a veterinary medicine student at the Justus Liebig University Giessen. What a disappointment! With a few exceptions, the professors were unapproachable, the courses uninspiring, the veterinary environment was macho, brawny, self-sufficient and traditional. I first heard about Watson and Crick's seminal discovery of the DNA double helix in another faculty, in a biology lecture. I also attended lectures on medicine and the humanities, spent most of my time discussing politics and philosophy with friends, earning some extra money as a language tutor and playing in bands in seedy bars and the American Army Special Services Club. Student life in post-war Germany, in the late fifties, was very liberal indeed. The few exams were face-to-face encounters with the Herr Professor, sometimes at his home, and failing after several hours of intelligent conversation was virtually unheard of. These were indeed incarnations of Humboldt's ideas of academia.

Everything changed after moving to Hannover Veterinary School, where I quickly became fascinated by the lectures of a brilliant – though mostly inebriate - microbiologist, who had known Robert Koch's disciples from personal acquaintance (Robert Koch and Louis Pasteur are the founders of medical microbiology). This opened a window to a new world, the world I wanted to become part of. After graduation, I grasped the first opportunity to do work in the budding discipline of virology – in the Hannover Public Health Laboratory. Poliomyelitis vaccination of babies had just begun in Lower Saxony. The virus used for performing routine serology was grown in monkey kidney cell cultures, and the only vet around had the respectable weekly task of sacrificing a *Cynomolgus* (monkey). My superiors realized that my ambitions went further than this; they applied for a grant and I became the first research fellow of the *Deutsche Forschungsgemeinschaft* (German research community) in that unit – alas, also its only one. A

poxvirus infection, ectromelia, had become a problem in laboratory mouse colonies, and I was assigned to find where the virus hides between disease outbreaks.

In 1963, this was my first research assignment and I made some key observations, though not of a scientific nature. These observations would, however, guide me in the years to come – and would shape my ideas about the profession of a virus researcher, for which there was no formal training at the time but:

- Read the literature before touching a pipette (for non-biomedics: the instrument used to measure quantities of fluid; biomedical research is mainly about mixing fluids...);
- Don't tinker with a lab technique when somebody else has it up and running; try to learn it there;
- In the rare minutes that he dedicates to you, learn from your boss; if you must express a different opinion, package it as a humble suggestion rather than a critique.

In retrospect, the jump-in-and-swim principle of early German research education may appear wasteful, even irresponsible from the current efficiency point of view. However, most of those who did not drown not only stayed afloat, but some made lasting contributions to the new discipline. This was virology's pioneering period. It was learning by doing, there was no spoon-feeding, neither of working style, nor of information or experimentation.

Then, the Hannover Veterinary School decided to split the Microbiology Chair into two: Bacteriology and Virology. Dr. Manfred Mussgay, who had been the first to discover that the nucleic acid of the foot-and-mouth disease virus was its infectious principle and who had studied mosquito-borne encephalitis viruses in Venezuela, was appointed to the latter. I applied for a position at his new laboratory and became his first assistant. He was famous, knew the Max Planck Institute virology in-crowd, introduced me to the 'shakers and movers' in the field, and he knew how to plan and perform experiments. Other vets were hired, projects were formulated, group dynamics developed, the first papers were drafted and oral presentations were given at congresses. I learned the following during that period:

- Stick to your protocol, don't change the rules during a game;
- There are many intelligent people around: if you want to excel, you need to work harder than others;

- However: science alone is not enough to become a scientist, your relationship with fellow researchers makes the difference;
- Science is a writing profession.

In 1967, Manfred Mussgay was appointed President of the Bundesforschungsanstalt für Viruskrankheiten der Tiere (Federal Research Institute for Animal Virus Diseases) - the national high-security foot-and-mouth disease centre and, with its 30 odd scientists, the largest veterinary virology lab in the country. He invited me to Tübingen, to leave Caracas (where I had gone to continue his work), to eventually become Head of the Exotic Diseases Division. The next eight years of daily physical isolation, with a tedious decontamination ritual before leaving the building, taught me much about the psychodynamics in a community of egocentric inmates, about factions, gossip, aggression, suspicion and paranoia. I exaggerate, of course, but not much. Many a resident worker thought that my career was the result of nepotism, and my research ambitions were met with incomprehension. Why struggle? After all, there were few possibilities for career moves, and the Institution was already the most important lab in veterinary virology in Germany.

Apart from electron microscopy, ultra-centrifugation, separation techniques and protein analysis, I was taught an important lesson during these years: the crucial role of personal sympathy in research collaboration. My first doctoral student, imported from Hannover, brought with him the *feu sacré* of discovery. After working long hours, we used to visit the local disco for a beer and a chat. We have maintained the latter habit to this day, now mainly discussing science and policy; then however – with my family of four – I first started worrying about how I could reconcile competitive work with a private life.

Life in The Netherlands

One day, the President alerted me to a vacant university position in Utrecht, in the Netherlands. I submitted my credentials, gave a talk at the Veterinary Faculty and became professor and chair of virology and virus diseases in 1971. What a change! From arguably neurotic post-war Germany to a self-confident, super-democratic, ‘libero-dogmatic’, individualist, commercially successful society of indecorous but welcoming Dutch citizens. I found this country more exotic than I had experienced Venezuela, but did not really engage in social life. I rather focused on science, and wanted the virology discipline to become important for Utrecht University.

The first collaborator I hired was neither a vet nor a virologist but a biologist about to get his PhD on yeast organelles. I remember the general incomprehension about this choice only too well. However, my motives were simple: he was intelligent, came from another research culture, had been formally trained in biochemistry, and he knew more about molecules than I. This is where the action would be: molecular virology. This first selection became a working principle for me as Head of the Utrecht Virology Institute/Department/Division/Unit (different nomenclatures following bouts of administrative commotion): I only hired scientists who would add brain value to the group.

A late, collective apology is called for. In my new position and vested with formal authority for the first time, I copied the German leadership style, the *furor teutonicus*. It took me some time to adjust to the Dutch polder model, to rediscover the charms of 'sympathy management'. As one former collaborator intimated "...you catch more flies with honey than with vinegar..." .

Until my retirement in 2001, my scientific activities gravitated towards publication in international, multi-refereed scientific journals, the higher the impact factor, the better. I also wrote or edited a series of textbooks (in English, German, Dutch and Spanish), of which *Veterinary Virology* became the standard college text in the USA, and *Krankheiten der Katze* (translated into Czech, Slovak and Polish) the best-selling feline diseases handbook in Europe. Monographs, textbook chapters, the CD-ROM Encyclopaedia of Virology, scientific translations, PhD theses and patents complement my publication oeuvre. I held various editorial positions for scientific journals in the Netherlands, Belgium, Great Britain, Germany, Austria, France, and Italy, became founding President of the European Society of Feline Medicine (UK), and started the *Gesellschaft für Kynologische Forschung* (Germany), a fund-raising body for canine research. In May 2000, I launched an electronic current awareness Internet journal for all facets of veterinary research. My successor to the Virology chair, Prof. Peter J. Rottier, continues the molecular line of work and is a world authority, with a superb instinct for talent and a fine sense of humor.

Establishing the Utrecht Institute of Veterinary Research and the Graduate School Animal Health became my priorities during the last decade of my professional activities. I introduced the Utrecht model of bibliometric analysis and English as the standard language. As a result, the September 1999 evaluation of the VSNU (Association of Universi-

ties in the Netherlands) stated that the Utrecht Veterinary Faculty ranks “...among the top five veterinary schools in the world” and “...is the highest in Europe”. I do not regard myself as an utterly modest person, but I am wary of any self-aggrandizement. I only brought to fruition that which had its roots in the past: the Faculty had a long tradition of research quality assessment.

The post-retirement phase

I have been fortunate in my professional choices. The discovery of viruses and the exploration of their natural history still fascinate me, today however, in a more platonic sense than during the first two decades in Utrecht. Changing from active research to management was a logical move in the nineties, inspired by the superior specialist expertise of my staff, facilitated by the loyalty of my colleagues, who took over much of the teaching burden, and prodded by the Faculty’s wish to get me involved in administration. This was a fair request. I am still immensely grateful to have been allowed to 'fool around with molecules' without any obvious veterinary relevance, to build Utrecht’s reputation as the hub of coronavirus research worldwide (the SARS agent is a coronavirus).

There was still another motive to leave hands-on research: the perspective of retirement. Although a Japanese visitor once referred to me as an "extinguished" scientist (he may have meant 'distinguished'), I did not want to become one. I was actually looking forward to this new phase of professional activities – I had no doubt that they would be professional. However, without a laboratory to feed me new results, I envisaged science only on a meta-level, probably through publishing. My first initiative therefore, when still in university service, was to establish the electronic journal already mentioned and appropriately baptized *Veterinary Sciences Tomorrow* (www.vetscite.org). Together with an equally enthused associate editor, also retired, we run a two-weekly Internet news service for veterinary researchers, publish topical editorials and an occasional review article. We both work without monetary compensation, but the University library provides infrastructure support, web services and programming from within the Igitur Utrecht Publishing and Archiving Service.

The Utrecht formula of research management caught the attention of the Rector of the Veterinary University in Vienna, Austria and he asked me to form and chair an international Scientific Advisory Board; later I

was elected into the University's governing body (*Universitätsrat*) and I regularly consult with the vice-rectors, heads of department and individual scientists. Vienna is well worth the travel... .

I had pioneered feline virus research and when, after retirement, the Merial Vaccine Company (Lyon, France) asked me to form and chair an information team, I was easily convinced. The aim of the Advisory Board on Cat Diseases is to establish a rational base for recommendations on infectious disease control in cats. These include guidelines for prevention, which are based on the best available scientific evidence and the expertise of the 17 panel members from ten European countries. The Board meets every four months in a different city and its recommendations are published in several languages in vet journals and on two websites.

Other post-retirement assignments came along without any effort by me: positions on the boards of directors of two new biotech spin-off companies, a function in the Supervisory Board of the Netherlands Vaccine Institute and, only recently, a visiting professorship at the Autonomous University of Barcelona, Spain, where I expect to lecture undergraduate virology and engage in research projects.

Epilogue

My close friends in the Netherlands – a CEO, a business consultant and an interim manager – had predicted that there would be plenty professional opportunities after retirement and they were right. I expected my former students and colleagues, many of whom now occupy leading positions in academia, government institutions and industry, to ask me for advice, which indeed happened. Nevertheless, I did prepare for continuing activities after leaving university service in the many facets that science and veterinary medicine offer. I diligently cultivated an extensive network of contacts, which still takes the better part of every morning, trying to answer messages by return email. Being of a somewhat schoolmasterly disposition, as my wife would confirm, and of the conviction that education is mainly by example, I wanted my successors to see the point: that there is life after retirement. The most agreeable aspect is that you have a choice to accept only interesting and/or lucrative assignments.

Concerning this last remark: when receiving a request, I send an 'earthly matters' message saying "...while in university service, I considered (lecturing, assessing applications, writing reports, consulting

etc.) as part of my job, but as a self-employed person, I now sell my services on an hourly basis...". For the first time, I possess a quantitative measure of success. It is quite a pleasant experience.

Biosketch M.C. Horzinek

Marian C. Horzinek (71), studied veterinary medicine and obtained his Ph.D. equivalent (Habilitation) in virology in 1970 in Hannover, Germany; there he helped to establish the Chair of Veterinary Virology, then worked as a research fellow in Caracas, Venezuela, and at the Federal Research Institute for Animal Virus Diseases in Tübingen, Germany. From there he was appointed to the Chair of Virology at the Veterinary Faculty, Utrecht University, The Netherlands, where he lives since 1971; he founded the Utrecht Institute of Veterinary Research (1992) and the Graduate School Animal Health (1996) and was their first director.

Dr. Horzinek is professor emeritus of Utrecht University and held professorial appointments in Hannover, Ithaca N.Y and Davis, CA., USA; he was awarded science prizes in Australia, Belgium, Germany, Japan, the Netherlands, Spain, and Switzerland,. He is *doctor honoris causa* of Ghent University and the Hannover Veterinary School and was knighted in 2001. He has published some 300 articles, books and monographs and was member of the editorial boards of twelve international research journals. Presently he chairs the Advisory Board on Cat Diseases (ABCD), the Vaccination Guidelines Group of the World Small Animal Veterinary Association (WSAVA) and the Scientific Advisory Board of the Veterinary University in Vienna/Austria. He is member of the Netherlands Vaccine Institute's Advisory Council and founding president of the European Society of Feline Medicine (UK); in May 2000, he started 'Veterinary Sciences Tomorrow', an electronic current awareness journal.

Selected Publications

Horzinek, M.C., Reczko, E. & Petzoldt, K. (1967). On the morphology of hog cholera virus. *Archiv für die gesamte Virusforschung*, 21, 475-478.

Schneider, L.G., Horzinek, M.C. & Novicky, R. (1971). Isolation of a hemagglutinating, immunizing and non-infectious subunit of the rabies virion. *Archiv für die gesamte Virusforschung*, 34, 360-370.

- Horzinek, M.C. & Osterhaus, A.D.M.E. (1978). Feline infectious peritonitis: a coronavirus disease of cats. *Journal of Small Animal Practice*, 19, 623-630.
- Horzinek, M.C., Lutz, H. & Pedersen, N.C. (1982). Antigenic relationships between homologous structural polypeptides of porcine, feline and canine coronaviruses. *Infection and Immunity*, 37, 1148-1155.
- Horzinek, M.C., Weiss, M. & Ederveen, J. (1984). Berne virus is not 'coronavirus-like'. *Journal of General Virology*, 65, 645-649.
- De Groot, R., Luytjes, W., Horzinek, M.C., Van der Zeijst, B.A.M., Spaan, W.J.M. & Lenstra, J.A. (1987). Evidence for a coiled-coil structure in the spike proteins of coronaviruses. *Journal of Molecular Biology*, 196, 963-966.
- Egberink, H.F., Borst, M., Niphuis, H., Balzarini, J., Neu, H., Schellekens, H., de Clercq, E., Horzinek, M.C. & Koolen, M. (1990). Suppression of feline immunodeficiency virus infection in vivo by 9-(2-phosphonomethoxyethyl)adenine. *Proceedings of the National Academy of Sciences (USA)*, 87, 3087-3091.
- Snijder, E.J., Den Boon, J.A., Bredenbeek, P.J., Horzinek, M.C., Rijnbrand, R. & Spaan, W.J.M. (1990). The polymerase gene of Berne virus: evidence for an evolutionary relationship between toro- and coronaviruses. *Nucleic Acids Research*, 18, 4535-4542.
- Horzinek, M.C. (1999). Vaccination: A philosophical view. *Advances in Veterinary Medicine*, 41, 1-6.
- Day, M.J., Horzinek, M.C. & Schultz, R.D. (2007). Guidelines compiled by the vaccination guidelines group (VGG) of the World Small Animal Veterinary Association (WSAVA). *Journal of Small Animal Practice*, 48, 528-541.

The Sun, Giant Stars and Climate

Cornelis de Jager



My initial interest in the universe was sparked by my father, the schoolteacher Jan de Jager. Until I was five, we lived on the island of Texel where my parents and I had been born. In 1926 my father obtained a new position in the Dutch East Indies, now called Indonesia. One evening, it must have been November 1926, we crossed the island in his Ford to greet our relatives. Suddenly he stopped and pointed to the sky where we saw mysterious glows and streaks of red and green lights, fading and glowing, hovering over the starry night sky. “Do you see that?” he asked. “Those are the northern lights.” I will never forget it.

My father became principal of a primary school in Langoan, Indonesia, a mountain village in the northern part of Sulawesi. Once he told me, “We are living here at a latitude of one degree north. The polar star should therefore be visible one degree above the horizon.” He did not know that this star is not positioned at the celestial pole, but actually one degree off. From our site, therefore, the star could be two degrees above the horizon, at worst exactly on it, or somewhere in-between. We went up a nearby hill from where the northern horizon was fully visible, but did not see the polar star. It struck me then that what I later came to know as atmospheric extinction, hampers the observation of stars close to the horizon.

After six years we returned to the Netherlands on eight months’ leave. One winter night we saw two stars, one yellowish-red and the other bluish-white. My father’s explanation that the blue star was hotter than the red came as a surprise. Do stars have temperatures? Would it be possible to measure them?

A few years later, as a 14-year-old schoolboy at the main secondary school in Surabaya, a friend told me that he could show me the centre of the universe. Remarkable! Does the universe have a centre? One evening we took our bicycles to a field outside the city and under a wonderful, tropical, starry sky he pointed to a little group of seven

stars, the Pleiades. I was deeply impressed. At that instant the spark ignited that defined my future career.

My friend was, of course, wrong. His information dated from 1846 when an Estonian astronomer claimed that the Pleiades were the centre of the universe. Although he was soon proven wrong, his claim persisted for a long time in popular literature.

Utrecht

I passed my final secondary school examinations mid-1939 and was ready for university. The decision was to go to the Netherlands to study mathematics and physics, but halfway during the voyage to Europe, the Second World War broke out. After exchanging telegrams with my parents in Indonesia who ordered me to return, I nevertheless continued to Holland instead of returning to (as we thought!) a safer Indonesia. My choice had fallen on Utrecht, because one of my uncles lived there. At the university I learned that along with mathematics and physics, I needed a subsidiary subject. I selected astronomy and had the great fortune to meet an excellent teacher, Professor Marcel Minnaert. His course influenced my decision to study astronomy as my major subject after passing my *kandidaats* halfway.

In the middle of the war, our studies were finished. Students had to sign a declaration of loyalty or go and work in Germany's (war) industry. Those who refused – and that was 85% of all students – had to go into hiding. I was extremely fortunate in being allowed to hide in the astronomical observatory, an interesting, mid-19th century building. In a hidden room, I sat very quietly all day. After 6 o'clock in the evening, when the personnel had left, I was able to go to the kitchen to cook. I could, however, study my various subjects and was consequently prepared for the final, doctoral examination when the war was over.

A week or so later, at the end of 1945, Minnaert offered me a job as an assistant at the observatory. "Without cost to the State," he added. Which meant no salary – an antiquated system that still existed at Dutch universities at that time. I was as proud as could be, but my parents – back in Holland in the meantime – were less satisfied. When would this boy start earning an income? Happily, within a few months, I was offered a (paid!) assistantship in theoretical physics at Utrecht, and half a year later I became an assistant astronomer at Leiden Observatory. After Leiden, I returned to Utrecht, where I eventually obtained a professorship in astrophysics, the terms of which were later changed

into space research. I succeeded Minnaert in 1963 and from then onward lived happily with my wife Doetie and our four children in the beautiful director's home under the roof of the observatory. There we stayed for 40 years.

The quiet solar atmosphere

Minnaert was one of the world's most prominent specialists in solar physics. The observatory with its archaic 19th century telescopes had a fine modern solar spectrograph – initially the third in the world. Minnaert suggested that I use that instrument to study the shape of the spectral lines of the hydrogen atom in the solar spectrum and their variation over the sun's disc.

Here I should mention that the sun is entirely gaseous; its temperature is far too high for solid or liquid matter to exist. What we call the solar atmosphere is the transparent outer part of the sun. At that time, we had some knowledge of the physical processes involved in the formation of spectral lines in the atmosphere of the sun and other stellar bodies. Studying these processes yields the average properties – such as the average temperature, pressure, acceleration of gravity – of these atmospheres. However, when I started my investigation, the then current problem was to determine how these parameters vary with depth in the solar atmosphere. I found a way to use the hydrogen spectrum to obtain that information. Consequently, my research activity was initially directed towards a study of, what is now generally called, the model of the sun's atmosphere. That study was part of my doctoral thesis. In several steps over the course of the subsequent years, that model was refined and improved. Meanwhile, other opportunities presented themselves.

Solar activity and space research

The IGY (International Geophysical Year) lasted from mid-1957 to the end of 1958. The emphasis was on investigating the relationship between solar activity and the Earth. During that period and a few years after, I used the Utrecht spectrograph to examine changes in the spectra of solar flares, which is a sudden release of energy lasting for a few minutes to approximately half an hour. The energy released during an average flare is comparable to a thousand million Hiroshima atomic bombs.

How do these flares originate? My spectra showed that the information therein was insufficient for understanding the ignition of a flare. More was happening and I had the opportunity to focus on this study. During the IGY, the Soviets launched their Sputnik (4 October 1957), which was the beginning of space research. The US followed quickly, and soon afterwards the European nations also joined the ensuing space race. A European organisation for space research – bearing successive names COPERS, ESRO and ESA – was founded. I was involved in its development from the onset. Although the large amount of work partly prevented me from doing the research that I wanted to do, it also opened up unthought-of new opportunities. The Dutch government's involvement in space research provided the financial means to start a laboratory for space research in Utrecht. The personnel grew rapidly: from 3 in October 1961 to a hundred in 1970. The building-up of a new laboratory in this totally new field was extremely demanding, but eventually very rewarding.

Space research offers the possibility to see radiations that do not penetrate our atmosphere. Our first rocket experiments were directed at measuring the global X-ray emissions from the sun and answering the subsequent question on the temperature of the gases enveloping the sun. It is in the order of one million degrees, although in what we call activity centres, where solar flares originate, it is even higher. Our attention was quickly drawn to the study of solar activity.

Utilising an excellent instrument that we could place in a European satellite, we discovered that very early in flares, hot plasma (ionised gas) originates at temperatures in the order of some 50 million degrees. Once we even measured temperatures of 400 to 500 million degrees. Then the question arose of the origin of these transient sources of extremely hot plasma. To determine this, one needs hard X-rays of flares. With our 'Hard X-ray Imaging Spectrometer', an instrument that we could mount in a NASA satellite (the Solar Maximum Mission launched in February 1980), we could answer that question. Gigantic electric currents, in the order of a trillion amperes, which run through loop-like structures over the sun, occasionally collide. They then cause a cosmic 'short-circuit' with a consequent enormous release of energy. In 1996 Jun-Ichi Sakai and I wrote a book on the collisions and coalescence of current-carrying loops and their consequences.

X-ray astronomy

The universe consists of more than the sun. Stars and other celestial objects may also emit X-rays. The importance of observing the sky in X-radiation is that this radiation is only emitted by objects with temperatures in the order of millions of degrees. Hence, X-ray observations of the sky offer us a totally different view of the universe than observation with conventional instruments. Although the X-ray sources are at much larger distances than the sun, some of them produce such large amounts of hot plasma that their X-ray emissions are measurable from our spacecraft. The first Astronomical Netherlands Satellite (ANS), which was launched with help from NASA, enabled us to do this research. Besides producing a fine map of the celestial sphere as seen in X-rays, it also yielded some completely unexpected discoveries. Among these were the objects that we baptised X-ray bursters. These are stars at the end of their lives that accrete material from companion stars until instability occurs, eventually ending in an explosion. Another unexpected discovery was the X-rays emitted by the white dwarf companion of the bright star Sirius.

During the term of my successor, Prof. Johan Bleeker, the laboratory focussed solely on X-ray and Gamma-ray astronomy. With great success, I might add.

Administrative and organisational duties – Brussels, the IAU, COSPAR, ICSU and the Netherlands Academy

In 1961 I was offered an extraordinary professorship at the University of Brussels. The University, originally French-speaking, was becoming bilingual, and I was asked to teach astronomy. For 13 years I commuted to Brussels once a week. I look back with pleasure on my time in Brussels – not only for the excellent students, but also for the good personal relationships that developed. I sometimes still feel 20% Belgian.

In 1967 I was elected assistant-General Secretary of the International Astronomical Union and three years later I became Secretary-General, a post that I held from 1970 to 1973.

My appearance on the international organisational scene did not apparently remain unobserved, because in 1972 I was elected President of COSPAR, the international organisation for co-operation in space research. This organisation, a product of the Cold War, was set up to promote cooperation between the two political blocks, East and West. It was no easy task, yet a most rewarding one. One achievement was

even succeeding in getting delegations of the Eastern European countries to the 1977 annual conference that was held in Israel, and this despite the respective governments prohibiting participation! I held the COSPAR presidency from 1972 until 1978 and was re-elected for the 1982–1986 term.

In 1978 I became President of ICSU, the International Council for Science, the non-governmental counterpart of UNESCO. ICSU is a world-wide umbrella organisation covering all natural sciences. During my time, scientific institutions (academies, science councils) from 63 nations were also represented in ICSU. The presidency is a highly political job. During my tenure, the International Biosphere-Geosphere Programme was started and is still running. A very tough political issue that had to be solved was to have both mainland China and Taiwan represented in ICSU, in spite of China's claim that Taiwan is no more than a province of China.

In 1980 I was invited to become President of the Royal Netherlands Academy of Arts and Sciences. I declined the position, however honorific it would have been, for two reasons: the financial position of the space research laboratory had unexpectedly run into danger of the government's sudden cutting of the budget by 30% with dire consequences for the staff. I also realized that this function, more than the others that I had held, would take me completely away from research. Four years later, when the storm was over and I had delegated the directorate of the laboratory to Johan Bleeker, I accepted the position of Foreign Secretary of the Academy (1984–1990).

Hypergiant stars: A worthy task for a retired person

The ten years between 1970 and 1980 proved inhibiting regarding my scientific activities, as I had little time for thorough research. I remember one paper that was written in airport lounges. Towards the end of that period I longed for a time in which I would be free from administrative duties and could devote myself to scientific research. I knew that this period was imminent because in 1986 I would turn 65 and then retire from university duties.

Anticipating my retirement, I decided to change to a completely different part of astronomy. Whether right or wrong, I had developed the view that moving to another field of research would generate a fresh look and open the mind for successful research. I decided that the study of the most luminous stars would be such a new and promising field.

To break into the subject, I wrote a book *The brightest stars*, which was published in 1980. It was well received and shortly thereafter also translated into Russian.

The new research theme appeared fascinating. With a co-worker and a number of good students, I concentrated on those rare objects that we baptized hypergiants. These are the largest and most unstable stars – on average some 500 to 1000 times larger than the sun – that are losing mass, pulsating irregularly ... all signs of stellar instability. We discovered why there are no larger and more massive stars: they have totally unstable atmospheres and consequently lose matter very rapidly until they have again returned to some form of stability. We particularly concentrated on two of the most extreme hypergiants and found that instability starts when these, in their evolution, reach a certain level. In several observatories, we collected a multitude of spectra of one of these hypergiants over more than 20 years. We saw the star become unstable and later return to some form of stability. What will happen to this object later? We think that it will explode.

A new life on Texel, sun and climate

We had been living in the old director's house, under the same roof as the observatory, close to Utrecht University and the laboratory, where I went daily, since 1963. However, in 1986 my wife, Doetie, suddenly developed an infection in her spinal cord – a very rare disease, leading to a spinal cord lesion. The cause of her severe pains was only identified when it was already too late. After difficult surgery she was left partly paralyzed. Her condition deteriorated in the following years and our big home became too difficult for her to cope with. The solution came when our youngest daughter, who owns a hotel on the island of Texel (my place of birth), found a little house that was perfectly suited to our needs. We left Utrecht in 2003. It was a grave and saddening decision to leave the city of Utrecht, its university, the laboratory, the observatory and our circles of friends.

And what happened? After arriving on Texel, I met Prof. Jan de Leeuw, director of the Royal Netherlands Institute for Sea Research, a large research institute on the island. They were in need of someone specializing in solar research to assist their research on the climate and its solar aspects. Consequently, my former research theme reappeared in a slightly different context! I accepted thankfully and now have an office in Jan de Leeuw's lab where I work with great pleasure. Several

publications have since seen the light, another is presently with the publisher and the next few are in preparation. I have attended and also lectured at a few conferences, where I have met colleagues from long ago as well as many youngsters. How good life can be!

Biosketch C. de Jager

Cornelis de Jager (29-04-1921; Den Burg, NL), professor of astrophysics and space research at the Universities of Utrecht and Brussels, was director of the Utrecht Observatory and founding director of the Utrecht Space Research Laboratory, General Secretary of IAU (International Astronomical Union), President of COSPAR (International Committee on Space Research) and President of ICSU (International Council for Science). He was the founder and first editor of the journals *Space Science Reviews* and *Solar Physics*. He is a member of the Royal Netherlands Academy of Arts and Sciences, the Royal Belgian Academy of Arts and Sciences, the Academia Leopoldina (Halle, Germany), the Indian Science Academy and the Academia Europaea. He received honorary doctorates from Paris and Wroclaw. He was the recipient of awards and distinctions, among which the Gold Medal of the Royal Astronomical Society (UK), the Hale Medal of the American Astronomical Society (for solar research, US), the Jules Janssen Medal (for solar research, France), the Karl Schwarzschild Medal (astrophysics, Germany), the Gagarin Medal and Ziolkowski Medal (space research, S.U.), and the COSPAR medal for international cooperation. He received the Silver Medal of Utrecht. He is an honorary member of SCOSTEP, the international organization for solar-terrestrial physics. More at www.cdejager.tk

Selected Publications

Jager, C. de (1955). *Ontstaan en levensloop van sterren en planeten* [Origin and development of stars and planets]. Zutphen: Thieme, 154 pp. = Jager, C. de & Heuvel E.P.J. van den (1972). *Ontstaan en levensloop van sterren* [Origin and development of stars] (2nd ed). Zutphen: Thieme, 245 pp.

Jager, C. de (and some twenty others)(1957). Combined light and radial velocity observations of the variable star 12 Lacertae. *Nature*, 180, 1112.

- Jager, C. de (1962). Structure and dynamics of the solar atmosphere. *Handbuch der Physik*, 52, 80 – 362, 1959. Berlin: Springer. [= Jager, C. de: "Stroenie i dinamika atmosfery solncha", *Isdatelstvo Innostranoi Literaturny*, Moskva, 380 pp.]
- Jager, C. de (Ed.)(1969). *Sterrenkunde* [Astronomy], (4 Volumes). Amsterdam: Wetenschappelijke Uitgeverij, 900 pp.
- Jager, C. de (1974). An all-sky camera battery for X-ray astronomy. *Astrophys. Space Science*, 31, 417-425.
- Jager, C. de (1980). The brightest stars, *Astrophys. Monographs*, 19, Dordrecht: Reidel, 12+458 pp [= Jager, C. de Svesti naboloshei svetimosfi, *Isdat. Mir*, Moskva, 493 pp, 1984].
- Jager, C. de, Machado, M.E., Schadee, A., Strong, K.T., Svestka, S, Woodgate, B.E. & Tend, W. van (1983). The Queen's flare: Its structure and development: precursors, pre-flare brightenings and aftermaths. *Solar Phys.* 84, 25.
- Jager, C. de, Kuijpers, J., Correia, E. & Kauffmann, P.(1987). A high-energy solar flare burst complex and the physical properties of its source region. *Solar Phys.*, 110, 317.
- Sakai, J.I. & De Jager, C (1996). *Solar flares and collisions between current-carrying loops*. Deventer: Kluwer Acad. Publ. 192 pp.
- Jager, C. de (2005). Solar forcing of climate, *Space Sci. Rev.*, 120, 197-241.

Heart of the Wood Collection

*Alberta M.W. Mennega**



Born in Nijmegen, The Netherlands (1912). Her parents remained childless during the first 17 years of their marriage. Believing that they would not be blessed with children, her father sold his business and lead a life of leisure, providing sufficient opportunity to travel, etc.

'Bep' (Alberta) was eagerly welcomed as a long awaited daughter and 'exposed' from a very early age to different cultural circles as travelling had become the normal way of life.

Her father was an amateur biologist and a great admirer of people such as Jac. P. Thijsse. It was he who introduced her to gardening whilst she was still a toddler, thus sparking off her interest in flowers and plants.

After the First World War when travelling could resume once again, they made sure they had the appropriate floras prior to departing on their many trips through Europe as there was always plenty of interest generated from the flowers and plants encountered.

That she would go on to study biology was a foregone conclusion. Despite her first publication (75 years ago) being a botanical work – it was highly unusual for research carried out by a student to qualify for publication – she took on doctoral research focusing on animal physiology under Professor H.J. Jordan. Subject: 'Concentration of hydrogen ions and digestion in the stomach of some Vertebrates'.

Her remarks on that today: "I was actually being recalcitrant: everyone was expecting me to take up a botanical career, but now I took a different course. And Professor Jordan was a very inspiring teacher and researcher."

A job at Organon followed logically on from that doctoral research. But still she felt drawn to botany and in 1946 she was given the opportunity to return to the University of Utrecht. Professor Dr. A.A. Pulle, professor and chief executive at that time, and his assistant dr. J. Lan-

* Dr. Mennega was interviewed by her colleagues J. Koek-Noorman and P.J.M. Maas, and by the editor H.A. Becker.

jouw, requested her to set up a wood anatomy department within the then Institute for Systematic Botany of the State University in Utrecht.

At first, Bep's scientific work was solitary pioneering work: material and expertise, if any, were sadly lacking in the Netherlands at the time and international contacts could not be made as easily as today. However, Professor Johanna Westerdijk, renowned professor of phytopathology, enticed her with a grant to go abroad for three months. Bep opted for England where Metcalfe (Kew-London) and Chalk (Oxford), two authoritative botanical anatomists were working. Here she also met the top of the international world of wood anatomy. She brought the knowledge she gained in England back to the Netherlands, along with the scientific network that was initiated there.

Having experienced that international contacts are essential in the field of systematic botany, she used her many conferences and travels (some within the framework of the V.V.A.O.: Vereniging van Vrouwen met Academische Opleiding / International Federation of University Women) to visit wood collections and systematic institutes abroad. The goodwill she fostered through this enabled intensive collaboration. With the exchange of material, the Utrecht wood collection – and thus the research possibilities – expanded rapidly. The Utrecht wood collection currently comprises over 37,000 wood specimens, making it one of the largest scientific wood collections in the world¹.

Of the three main university tasks - science, education and administration - research was her passion. Education was the most gratifying when it involved university students in their 2nd, 3rd or 4th year. She never accepted the position of university lecturer, simply because of the expected additional administrative duties would take her away from her research.

But Bep interpreted research in a very broad sense and she did not shrink from taking this side-path. She willingly participated in taxonomical revisions of plant groups and at the same time studied their wood anatomy.

¹ Wood specimen: When a plant is collected for scientific purposes, a wood sample can be taken from the trunk or a branch in addition to the flowers, fruits, leaves, etc. The wood anatomy characteristics can be studied with a hand lens, or through a microscope. These can contribute to botanical taxonomic, evolutionary and ecological research (J.K.-N).

Based on the idea that scientific results and knowledge must be widely available to others, she wrote, together with J.C. Lindeman, her *Bomenboek voor Suriname – Herkenning van Surinaamse boomsoorten aan hout en vegetatieve kenmerken* [Tree book for Suriname – How to recognise Surinam tree varieties by their wood and vegetative characteristics]. The much broader and more general *Fa joe kan tak'mi no moi* [How can you say I am not beautiful?], is more well known among specialists and laymen. It comprises a two-volume Surinam field guide for a broad public, published in 1976, which she edited in collaboration with J.G. Wessels Boer, W.H.A. Hekking and J.P. Schulz. This field-guide, written in a language that laymen can understand, made it easy to recognise Suriname's common and most conspicuous plants. Both books bridge the gap between scientific works written by botanists and the interest and need of non-professionally trained nature lovers, and are still popular in Suriname today.

The *Verklarende woordenlijst van in de houtanatomie gebruikte termen* [Glossary of terms used in wood anatomy] published together with P. Laming in 1972 constituted a standardisation of Dutch wood anatomy terms. The internationally adopted 'IAWA list of microscopic features for hardwood identification' is partly based on this glossary (IAWA Bulletin n.s. 10: 219-332).

She is celebrated internationally as an outstanding researcher. In 1987 she was appointed Fellow of the prestigious Linnean Society of London.

After her retirement

After retiring in 1977, Dr. Mennega continued her scientific activities, initially working approximately 30 hours a week and gradually cutting back to just a few hours per week some thirty years later. Her activities included publishing her own works, collaborating in other people's research, attending progress meetings both in Utrecht and elsewhere in the Netherlands, and acting as a walking encyclopaedia for colleagues (thanks to her extensive knowledge acquired over the course of 60 years). She is and always has been adverse to the current political trend which obliges researchers to earn part of their income by charging (pecuniary) compensation for each service rendered. In her own words:

“I still liked the field of study. In 1977 I wanted to finish a couple of articles and colleagues kept asking me to contribute to an article,

or a chapter for a Flora. Our type of research requires many years of experience and knowledge of shapes and forms, more so than in many other biology disciplines. I was often able to use my knowledge in the service of others. Staying in contact with former colleagues and students kept me young. And I could still lend a helping hand in the curatorship of the wood collection”.

She carried out these activities professionally just as she did when she was still employed. During the 30 years following her retirement, colleagues and students alike considered her the greatest example of a dedicated and skilled researcher. This 'role model' will be remembered by many generations of students. It is essential that in this respect she is remembered for playing a pivotal and altruistic role in the Netherlands. On many occasions she was the expert for many archaeologists, museum curators and many other people, engaged in one way or another with wood and beyond, who appealed to her with their questions concerning problems or findings.

Under pressure of successive university cutbacks over the years, her wood anatomy department dwindled from three technicians, three researchers and numerous students in the 1970s to nil. In anticipation of a decision regarding the planned Centre for Biodiversity Research, where all large Dutch biological collections will be housed, the scientific management of the Utrecht wood collection was put into the hands of former colleagues who, in the meantime, have also retired.

Alberta Mennega Foundation²

Her experiences gained during her training in England and through field work in Suriname greatly influenced her. Based on the awareness that studying is more than simply sitting in lecture-halls, in the late 1980s Bep established a Foundation enabling students and young researchers to finance special activities within the scope of their studies, thus promoting botany in general but in particular the specialities of plant anatomy and taxonomy and plant ecology. During the past 20 years, close to 300 grants have been awarded to botanists undertaking field work in the tropics, congress attendance, special publications, herbarium visits and additional costs incurred by undergraduate- and postgraduate students during their specialisations or doctoral degrees.

² <http://www.alberta-mennega-stichting.nl>

Knight of the Order of Orange-Nassau

In April 2007, by way of thanks for her dedication to science, she was decorated with the Order of Orange-Nassau. Justly deserved for someone who had become a role model for friends, colleagues and students as well as for her genuine interest and devotion to the education of students which is borne out by her Foundation.

Biosketch A.M.W. Mennega

See interview 'Heart of the wood collection'

Selected Publications

Mennega, A.M.W. (1948). Suriname timbers I. Guttiferae, Vochysiaceae, Anacardiaceae, Icacinaceae. Utrecht: *Scientific Study Circle of Suriname and Curaçao*, 3. 59 pages, 8 plates.

Lindeman, J.C. & Mennega, A.M.W. (1963). *Bomenboek voor Suriname. Herkenning van Surinaamse houtsoorten aan hout en vegetatieve kenmerken* [Tree book for Suriname – How to recognise Surinam tree varieties by their wood and vegetative characteristics]. Utrecht / Paramaribo: Surinam Forestry Commission. 312 pages, 96 plates, 96 photos.

Laming, P. & Mennega, A.M.W. (1972). *Verklarende woordenlijst van in de houtanatomie gebruikte termen* [Glossary of terms used in wood anatomy]. Delft: T.N.O. Wood Institute. 68 pages.

Mennega, A.M.W. (1972). A survey of the wood anatomy of the New World Hippocrateaceae. In: A.K.M. Ghose & M. Yunus (Eds), *Research trends in plant anatomy* (pp.61-72). Bombay-New Delhi: Tata McGraw-Hill.

Mennega, A.M.W. (Ed.)(1976). *Fa joe kan tak'mi no moi. Surinaamse wandelflora* [How can you say I am not beautiful? Surinam walking flora]. *Nature guide*. Paramaribo: Stinasu, 293 pages.

Görts-van Rijn, A.R.A. & Mennega, A.M.W. (1994). 110. Hippocrateaceae. In: A.R.A. Görts-van Rijn (Ed.), *Flora of the Guianas, Ser. A, 16*, 3-81.

Mennega, A.M.W. (1997). Wood anatomy of the Hippocrateaceae (Celastraceae). *IAWA Journal*, 18, 331-368.

Mennega, A.M.W. (2004). Wood anatomy of subfamily Euphorbioideae; a comparison with subfamilies Crotonoideae and Acalyphoideae and the implications for the circumscription of the Euphorbiaceae. *IAWA Journal, Suppl. 26*, 68 pages.

Science and Management: Search for a Proper Balance

Pieter J.D. Drenth



This is a biography of a (behavioral) scientist who tried to find a proper balance between his fondness of scientific research and his great liking for management. In the early stages of his career, the scale tipped towards the science preference. In the course of time, however, the more strictly scientific activities were complemented, and later even almost substituted, by science management activities and meta-scientific reflections. I would like to submit that this is both logical and desirable. We know that with aging, ‘fluid’, creative intelligence declines and ‘crystallized’ intelligence (knowledge, experience, wisdom) is maintained or even increases. Therefore, generally speaking, reviewing, reflection and management responsibilities are better in keeping with the intellectual skills of an elderly scientist than continuous cutting-edge research. This shift in emphasis is also desirable: reflective activities and management responsibilities provide the scientist with better opportunities to remain active, also after his retirement when accessibility to data and the availability of experimental equipment tend to decrease. I hope to exemplify this by discussing my own career.

Early years

I was born in 1935 as the second child, and first son, of a harmonious, stable, Protestant family. My father was the headmaster of a Christian school in a Frisian village. He was an affectionate father, but simultaneously stern and demanding, both of himself and of his (six) children. My parents’ rearing and education of their children imparted their Calvinistic values of hard work and the optimal development of talents. For my secondary education, my father chose the best available school, the Gymnasium. I received my Gymnasium beta diploma in 1952, obtaining good grades for mathematics and natural sciences.

One of the first major decisions in my life was the choice of an academic discipline. I was eager to enter a new field of knowledge, and to learn new things that were not just a continuation of school subjects. After long periods of incertitude and wavering between medicine and psychology, I choose the latter because of its (supposedly) stronger scientific and research orientation. That was a disappointment. Psychology in the Netherlands in the first half of the '50s – and certainly at the Vrije Universiteit in which I had enrolled – still had a strong affinity to the humanities. Its practical starting-point was a mixture of psychoanalysis and *verstehende* psychology. It was argued that the qualitative analysis of test performance, as well as projective tests and observation, offered much richer insights than quantitative and experimental methods did. Like a salmon swimming upstream, I developed a strong distaste for the popular subjective approach, and a strong affinity for the 'statistical' method. I took 'useless' courses in mathematics, statistics, biology and physiology. I loved to apply psychometric and statistical techniques. Little computer support was available at the time, of course, and I had to carry out my first regression analyses and factor analyses by hand and with the aid of a desktop calculator.

My first employer after graduation (1958) was the Royal Dutch Navy. I served two years as a personnel officer (military duties), and was responsible for the selection and appraisal of navy personnel (both enlisted and professional). Working in the naval selection bureau with its – exceptional – statistical and empirical orientation further stimulated my interest in researching and critically testing common and generally accepted practices. I also used part of my time in the Navy to write my PhD thesis. I studied the underlying motives on which a choice of a career in the Royal Dutch Navy was based, and the question whether a prediction of subsequent behaviour and achievements could be made on the basis of the structure of motives and attitudes at induction. I received my PhD, *cum laude*, in 1960, some six months after I had left the Navy and was employed by my former professor and later promoter, J. Waterink, at the Vrije Universiteit in Amsterdam.

In the Netherlands, as in the rest of Europe, no one in psychology was at that time yet using computers for large-scale data analyses. A Fulbright scholarship for a 15-month stay in the United States (1960–1961) provided a welcome opportunity to become acquainted with these new developments. I had just married my wife Mieke and together we went in search of adventure in the USA. The post doc period

there comprised both study at New York University and work at the Social Science Research Division of the Standard Oil Company in New York. I also had my first experience of international conferences. Standard Oil was very generous in stimulating and supporting my participation in these meetings. The SO Group was also involved in a very interesting research project: the Early Identification of Management Potential. The study attempted to answer two operational problems of concern to the organization: how does one determine success in management, and how does one identify employees who have the potential to become successful in management positions. Large samples and data sets were used and a variety of potential predictors were tested. I enthusiastically joined the group, working on both intelligence and motivational measures. I was particularly fascinated by the experience of working with a (at that time) fairly large computer. A study trip during the two summer months of 1961 offered another opportunity to become acquainted with the American vanguards of personnel psychology. I was asked by the Dutch Navy to pay a series of visits to the advanced research institutes of the American Navy and Army as well as to American universities with a strong human resources programme, and to write a report about recent developments in selection and training. We covered some 20,000 kilometres and visited most interesting places throughout the USA.

Scientific career at the Vrije Universiteit

After my period in the United States, I was invited to become a lecturer at my Alma Mater, the Vrije Universiteit in Amsterdam, in 1962 and full professor in 1967. I taught tests and measurements, research methods, cross-cultural psychology, and an array of courses in the field of work and organizational psychology. In the beginning of the 60s, Dutch psychology underwent a rather sudden and significant change from a humanitarian, intuitive psychology to a quantitative, experimental, and empirical psychology and I returned to a much more favourable scientific climate than before my visit to the USA.

Nevertheless, much of the old tradition prevailed in the practice of psychology in the Netherlands. I was convinced that the Dutch psychology community and psychology students badly needed an explicatory introduction to the scientific principles of test theory and test interpretation. At that time there was no comprehensive Dutch textbook on test theory. Consequently, I wrote *The Psychological Test* (1966),

which was such an introductory textbook and which soon became required reading at most Dutch universities. It was thoroughly revised in 1975 and again (with Klaas Sijtsma) in 1990 and 2006. The book is still widely used by students and professionals.

Later, when participating in three major international comparative research projects – Industrial Democracy in Europe, Meaning of Working, and Decision-making in Organizations – I always happened (was urged) to be responsible for the design and methods. When it came to publishing the results of these studies, I usually wrote the chapter on the methodology and the comparative analysis methods.

In the meantime, I had been able to build a rather substantial staff with a strong research orientation. We were quite productive and published widely on our research projects on psychometrics and organisational psychology. Throughout my career, I have been (first) supervisor of 40 PhD theses, half of which were the theses of assistants or staff in my department. I am proud that 14 of these graduates have become professors at Dutch universities.

In the course of the '70s, I no longer exclusively focused on the publishing of monographs and results of our research, but – together with my colleagues Willems, De Wolff and Thierry – I also became involved in the editing and writing of readers and handbooks. The readers *Bedrijfspsychologie: Onderzoek en Evaluatie* (1970) and *Arbeids- en Organisatiepsychologie* (1973) and two handbooks (English editions *Handbook of Work- and Organizational Psychology* 1984 and 1998) resulted from these efforts.

It was not, of course, all sweetness and light. My scientific attitude brought me into conflict with the critical social movement that evolved among students and (junior) staff in the '70s. I was accused of maintaining the social status quo by my supposedly neutral, objective stance and my refusal to take (the proper) a priori side in the Marxist class struggle. Studies on the functioning and efficacy of the Works Councils in Dutch industrial companies, and on the effects of shift work were criticised for not being 'engaged' enough. It was not always easy to defend a strictly scientific approach against these revolutionary students. One positive spin-off of this movement was a critical reflection on the proper balance between scientists' scientific independence and social responsibility – a subject that I have since that time always given high priority in my thinking and writing.

I have also done ‘technological’ research, such as the development of tests, scales and inventories. I have published a number of such tests and personality inventories for the Dutch market, but the real challenge was the development of principles of application and general (decision) models for the use of tests, rather than the operational test-construction itself. The opportunity to become involved in test development in developing countries offered such a challenge. Projects were initiated and carried out in Surinam, Indonesia, Eastern and Southern Africa. The general principles that were addressed in this type of research included the relationship between school grades and aptitude tests, cultural differences and comparability of test scores, fair selection and discrimination, predictive versus concurrent validity in developing countries, and the optimal balance of achievement and intelligence measures in the prediction of school performance.

Science management and science policy

Throughout my career as teacher and researcher, I have had an affinity for management, (science) policy and advisory work. In addition to building and chairing a department, I have been a member (and often chairman) of advisory and planning committees within the faculty and University (twice serving as dean of the faculty), and outside the University. I chaired a number of Ministerial advisory committees, the two most important being ‘Violence in the armed forces’ (1987-1991), and ‘Selection of students for studies with a numerus fixus’ (1997-1998). Various advisory functions for larger companies and banks, as well as for a number of psychological consulting firms kept me closely connected to the practical world. Membership of the Supervisory Board (*Raad van Commissarissen*) of the Royal Shell (1991-2001) specifically provided fascinating insights into an interesting large multinational’s decision-making processes.

International contacts and activities were also significant for my later career development. As indicated above, my American Fulbright experience had laid the foundation of my international orientation. For a long time I was a member (and twice chairman) of the Human Factors Panel of the NATO Science Committee, and a member of the European Network of Professors of Work- and Organisational Psychology. I have become an ardent participant in and sometimes organiser of international conferences, and served for 20 years on the Board of IAAP. I chaired the first European psychology congress in Amsterdam (in

1989), an initiative that has developed into a successful tradition ever since. But all these activities seemed only finger exercises compared to the two serious, almost full time, managerial functions that I was asked to fulfil in the '80s and the '90s: Rector Magnificus (Vice Chancellor) of the Vrije Universiteit (from 1983-1987), and President of the Royal Netherlands Academy of Arts and Sciences (from 1990 - 1996).

The *Rectorate* is a truly executive and representative function. Within the Executive Board of the University, the Rector holds the central portfolio 'education and research'. He is also chairman of the College of Deans, the most important advisory body within the University. Regular consultation with the faculties, University Council, various staff bureaus and student fraternities ensures that he is abreast of the University's main vicissitudes. The function also has a strong representative side. The Rector is expected to attend a great many congresses, symposia and (inaugural and valedictory) addresses within his university. Important visitors, speakers, and guests are personally received by the Rector. He also represents the University within the Netherlands as well as internationally. I became active in the European Rectors' Conference (CRE) by, for example, participating in their biannual meetings, contributing to management training courses for newly appointed Rectors as well as workshops for Rectors in Latin America.

Since its foundation in 1880, the Protestant character of the *Vrije Universiteit* has developed (emancipated) from an orthodox to a rather progressive orientation. My own views with respect to the issue of science and religion took an analogous course. I grew up in a strict Protestant tradition, and gradually had to come to grips with scientific findings and conclusions that were not compatible with biblical 'truths' as I had learned them. I became increasingly critical. During my years as lector, I had already defended the point of view that there is no 'Christian science', which – at that time and at this university – was a rather heretical thought. Later I adhered even further to a strict separation of science and religion. In my view, for science *in strictu sensu*, there is no room for norms other than the logical-analytical norm. Independent objectivity has to be maintained against the pressure of ideological, political, economic, but also religious influences. In this sense, science can be considered value free. At the same time it has to be recognised that science, as the societal embedded process of knowledge accumulation, is faced with a variety of political, social and religious issues, which have to be taken seriously. It goes without saying that during my

Rectorate at this particular university, I was confronted with these philosophical and meta-scientific issues time and again. I enjoyed taking part (and often the lead) in these discussions.

The second major organisational responsibility at the end of my career was related to the *Royal Netherlands Academy of Arts and Sciences*, of which I have been a member since 1980. In 1987 I was elected Secretary/Treasurer and, three years later, President for a term of three years, followed by a second term until 1996. A national Academy of Sciences is held in great respect, and the Presidency affords a great deal of prestige and influence in the academic world. I quite enjoyed the nine years of executive responsibility.

An Academy is a platform for scientific communication, a promoter of high quality scientific research, and a science advisor (quality assessments, policy for science, science for policy, ethical and societal questions related to science). As President one does not only have to keep abreast of developments in science and higher education at the national level, but also (and increasingly so lately) at the international and especially the European level. In regular interviews with the media, the President's opinion is asked with respect to current issues in science and higher education. I was *ex officio* chairman of two large-scale international collaborative programmes, one with Indonesia, and one with China. Yearly if not more visits to these countries were part of the obligatory ritual.

Naturally, the Presidency of an Academy also entails a good deal of representation, both in the academic world and in society in general. I attended many scientific and public meetings, sometimes with genuine interest, sometimes purely from a sense of duty. In all countries, and certainly in the Netherlands, science policy and science funding has increasingly transgressed national borders and taken on an international dimension. Realising this, I have been quite active in the creation of a European platform for the national academies, and when the Charter for such a platform (All European Academies (ALLEA)) was accepted in Paris in 1994, I was elected as a member of ALLEA's Steering Committee.

Attending scientific meetings or symposia often also implied delivering a presentation. Many of them were published or otherwise distributed. At the end of my second three-year term as President in 1996, the Academy was kind enough to print a selection of these papers in a handsome book titled 'Gardening in Science'. Both this publication and

the conferring of the Commandership in the Order of Oranje Nassau formed a worthy conclusion to my Presidency.

The hope of a quiet withdrawal from science management proved to be in vain. I held another (three-year) deanship of the Faculty of Psychology and Pedagogics at my University, and a few time-consuming functions within the KNAW (including the chair of the Social Science Research Council (SWR)) and the European Commission (European Science and Technology Assembly, ESTA).

After retirement: All European Academies

On 14 September 2000, I gave my valedictory address with the title *Inter utrumque: de koninklijke weg*, in which I defended ‘keeping to the middle road’ as an adequate choice with respect to many dilemmas and problems in psychology. I illustrated this with my career and work choices in respect of the issues: clinical versus statistical prediction, an emic or etic approach in cross-cultural research, pure or applied research in science, verity versus utility as a standard in research, freedom and responsibility in science, and science or management in a scientist’s career.

At the same time I started a new, active after-retirement period, as I was elected President of the All European Academies in 2000. Three years later I was re-elected for a second term, which ended with the General Assembly meeting in Krakow in March 2006. These six years constituted another fine period in my career: I could almost dedicate myself full time to an international organization (that I had helped to establish) aimed at excellence in science and scholarship in Europe, which needed leadership and structuring and better recognition than it had received. With the assistance of a small but effective bureau, with a budget for travel and expenses (no honorarium), and with the support and advice of Standing Advisory Committees and ad hoc Working Groups, I could devote my energy to ALLEA. During these six years I visited a good many of the 52 Member Academies. I was invited to many European conferences, and was an *ad personam* or *ex officio* member of the Board of a variety of European institutions. ALLEA’s advices, particularly those on the 6th and 7th Frameworks, were for the most part well received in Brussels.

It was with satisfaction that I observed various speakers at the General Assembly meeting in Krakow acknowledging that ALLEA had grown into a viable organization with a good reputation and name rec-

ognition in academic Europe. On my resignation, ALLEA honored me with an appointment as Honorary President, and by publishing another collection of my papers, this time written or delivered during the six years of my Presidency of ALLEA. The publication's title, *Walks in the Garden of Science*, is a humorous reference to the title of the first anthology that was published at the conclusion of my Presidency of the KNAW.

A final word

My career has afforded me a great deal of contentment. One important circumstance has to be stressed in this respect. The fact that I could execute demanding and often time-consuming activities has only been possible thanks to the full support and backing of the 'home front'. A good deal of the daily concerns and care of our three sons vested in my wife Mieke's hands. She adapted her artistic activities (ceramics) and teaching duties to these responsibilities. Without her willingness and competence, I would never have been able to realise what I have achieved. I hope to make up for this in the remaining time granted us.

I am now formally retired. That means no compulsory addresses, no deadlines, no bulky reports, no ritual gatherings, no standard speeches, and no long meetings – just reading and lecturing/writing on topics that have kept me enthralled for years, but to which I could never give sufficient attention (*e.g.*, biology and evolution, history of science, science and values). I have, however, retained my membership of a few committees within the University, the KNAW and ALLEA. For the rest, I rejoice in family, grandchildren, friends and leisure time activities – more than I could before.

Biosketch P.J.D. Drenth

Pieter J.D.Drenth (1935, Ooststellingwerf, The Netherlands) studied psychology at the *Vrije Universteit* Amsterdam, and New York University (Fulbright scholarship) in New York. He received his PhD in 1960. He has been Lecturer of Psychometrics from 1962-1967, Professor of Psychology since 1967 and Emeritus Professor since 2006 at the *Vrije Universiteit* Amsterdam. He was Visiting Professor at Washington University, St. Louis, USA (1966) and University of Washington, Seattle, USA (1977).

His principal fields of interest and research have been test- and scale theory, intelligence theory, personality assessment, decision making, human resource management, and cross cultural psychology. His later publications have been also concerned with science policy and science organization, and social and ethical issues in science.

From 1982-1987 he served as Rector Magnificus of the *Vrije Universiteit*, and from 1990-1996 as President of the Royal Netherlands' Academy of Arts and Sciences. From 2000-2006 he was President (and since 2006 Honorary President) of ALLEA (the European Federation of National Academies of Sciences and Humanities).

For his scientific work he received two honorary doctorates (Gent and Paris V) and a number of rewards and prizes. Her Majesty the Queen of the Netherlands conferred on him the Knighthood in the Order of the Netherlands' Lion (1990) and the Commandership in the Order of Oranje Nassau (1996).

Selected Publications

- Drenth, P.J.D. (1966). *De psychologische test: Een inleiding in de theorie van de psychologische test en zijn toepassingen* [The psychological test]. Arnhem: Van Loghum Slaterus (302 pp).
1968: German translation, *Der Psychologische Test*. München: Barth Verlag.
1975: 2nd ed. *Inleiding in de testtheorie*. Deventer: Van Loghum Slaterus (420 pp).
1990: 3d ed. (with Sijtsma, K.). *Testtheorie*. Houten: Boom Stafleu Van Loghum (302 pp).

2006: 4th ed. (with K.Sijtsma). *Testtheorie*. Houten: Boom Stafleu Van Loghum (495 pp).

Drenth, P.J.D., Wieringen, P.C.W. van & Hoolwerf, G. (2002). *DTHN, Drenth Testserie Hoger Niveau (NAT, VAT, TNVA)*. Lisse: Swets Test publishers.

Drenth, P.J.D., Thierry, Hk., Willems, P.J., & Wolff, Ch.J. de (Eds) (1980-1984). *Handboek arbeids- en organisatiepsychologie* (2 Vols.). Deventer: Van Loghum Slaterus (1984, English edition), *Handbook work and organizational psychology*, 2 Vols. Chichester: Wiley.

Drenth, P.J.D., Thierry, Hk., & Wolff, Ch.J. de (Eds)(1989-1996, 2nd ed., Student edition, 1997). *Nieuw handboek arbeids- en organisatie-psychologie*. Deventer: Kluwer (1998, English edition). *Handbook of work and organizational psychology*, 2nd ed.: 4 Vols. Hove: Psychology Press.

Drenth P.J.D. (et al. IDE-International Research Group)(1981). *Industrial democracy in Europe, vol. I (449 pp), Industrial relations in Europe vol. II (227 pp)*. Oxford: Oxford University Press.

Drenth, P.J.D. (et al. MOW-International Research Team)(1987). *Meaning of working: A cross-national study*. London: Academic Press (400 pp).

Drenth, P.J.D. (1996). *Tuinieren in de wetenschap* [Gardening in science]. Amsterdam: KNAW/Noord-Hollandsche (208 pp).

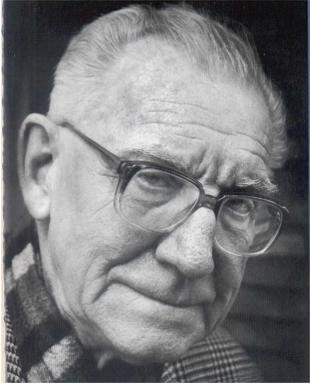
Resing, W.C.M. & Drenth, P.J.D. (2001, 2nd ed. 2007). *Intelligentie: meten en weten*. Amsterdam: Uitgeverij Nieuwezijds (192 pp).

Drenth, P.J.D. (2006). *Walks in the garden of science*. Amsterdam: ALLEA/KNAW (254 pp).

Drenth, P.J.D. (2007). Wetenschap en religie [Science and religion]. *TH&MA, Tijdschrift voor Hoger Onderwijs en Management*, 5, 19-25.

My Life with Sociology

Ivan Gadourek



Why sociology?

As a boy, I liked chemistry. I had a laboratory of my own, in which I produced poisons, explosives and Bengal fires, which appealed to the phantasy of a teenaged boy living in South Moravia. Later on, when I became more 'human', this interest developed into an interest in medicine. My father, who discovered my fancy for Sinclair Lewis's *Arrowsmith*, secretly bought a microscope and kept it in his closet as a surprise gift for when I reached adulthood. However, since I lost interest in medicine, I never received the microscope. I remember the day on which this change occurred. During dance lessons at our school, dutifully attended by the sixteen-year-olds, I suddenly realized the futility of my intended life purpose. That morning, the news broadcast had mentioned that there had been three thousand casualties on the Eastern Front. I asked myself: "What is the use of a doctor patching up individuals when they are destroying themselves by the thousands in murderous wars?" Medicine was not sufficient an answer for an awakened humanist spirit. As a diligent reader of Thomas Masaryk, the choice was obvious: sociology.

Formal training

After discovering my passion for sociology, I had to complete two more years of secondary school. When I passed the final exam in 1942 and was ready for university, all universities in Czechoslovakia were closed due to the Nazi occupation. The authorities sent students to factories to work long shifts (12 hours per day or night) as manual workers to prevent them from joining the resistance. I remember secretly reading Marcel Déat's *La Sociologie* during the long nights and organizing slow-down actions at the same time. In spite of the long working hours, we joined the resistance anyway.

Our war experiences had reached a decisive momentum when we enrolled at a university in the spring of 1945. We were older, politically sophisticated, and used to fighting for democracy. I attended the lec-

tures and participated in the seminars of the sociologist Inocenc Arnošt Bláha, and continued to participate in the resistance group as well. Owing to my knowledge of languages (German, French, Russian and English), I became a foreign ambassador of our resistance group. In recognition of my activities during the war, I was elected chairman of the non-Communist students union of the Masaryk University. Reading and studying were therefore restricted to nocturnal hours. I obtained my Master's degree in philosophy and sociology during February 1948 when the Communists came into power. Almost immediately, the news that all passports were invalid was made known. One was only allowed to travel abroad with the explicit permission of the Communist government. Sociology was denied a scientific discipline status. Furthermore, Individuals who opposed the new regime were incarcerated and persecuted. With the secret agreement of our resistance group, I decided to flee the country - finding exile in the Netherlands.

Why research?

I have been asked why I chose research rather than theory. In the Netherlands, sociological theory formation is often confused with arguments in favor of an adequate choice of sociological frame of reference: should it be a Marxist, Functionalist, or Rational-choice sociology? As a student of philosophy and a devout pupil of Thomas Masaryk, I was impressed by the latter's System of Concrete Logic. I read Hobbes, Locke, Hume, John Stuart Mill and Bertrand Russell. Consequently, I pondered an inductionist logic for a long time before embracing Sir Karl Popper's 'razor' for discarding false theories. The explanation of concrete issues gained priority in my mind and drove me to research.

External factors

After I had fled my country, I was lucky to find a job at a research institute for preventive medicine in Holland. I did basic health research for bacteriologists, physiologists, chemists and other specialists doing research on health.. During the evenings, I followed courses in sociology, which had just been recognized as an academic discipline. In 1951 I received my Master's degree *magna cum laude* – I was also the first sociologist to graduate from Leyden University. The psychologists who worked at the Department of Mental Health of the aforementioned institute found it interesting to have a sociologist on their team and instructed me to study the structure of Sassenheim, the community sur-

rounding the factory where they undertook pioneering work in human relations. They gave me *carte blanche* as far as the object of the study was concerned: "Just show us what a sociologist does when studying a community of human beings". As a stranger who had been living in the Netherlands for only three years, this was a nice challenge. As a Czech refugee, I was grateful towards my benefactors and hosts and therefore devotedly studied the cultural pattern and social structure of the Sasenheimers.

Allocthonous roots

I was extraordinarily busy during my first five years in the Netherlands. I followed the Czech communist press daily, while the members of our resistance group in Czechoslovakia sent many eye-witness accounts of the abuse of power. I reconstructed a picture of how a democratic country was being transformed from a free society into a Soviet satellite state and passed this knowledge on to the western press. In the fall of 1952, when the liquidation of the Prague leadership (Slánsky and others) took place, I decided to write a book on this macro social change process. Professor Van Heek, who supervised my studies in Leyden, surprised me by asking whether I would submit the book as my doctoral dissertation. He even proposed to have it printed and published in Leyden. By using Gurwiche's construct of social control, some elementary concepts of topological thinking and a Sorokinian construct of sociological space, I tried to show how the Soviet pattern was dominated by the political sector, while religion was reduced in significance and influence.

Institutional research

It was not my book, but rather the recently obtained doctorate that improved my position at the institute where I worked. I was allowed to hire co-workers, especially when money to attract a new research project arrived from external resources. Industries also became interested in social sciences at that time. At that time, the shipbuilders, De Schelde, on the isle of Walcheren were concerned about the population trend of migration to the great cities (especially Rotterdam) where workers were less dependent on employers' monopolist position. At the request of these shipbuilders and with their financial support, we drew a random sample of males between the ages of 20 and 40 years and questioned them about their attachment to their local areas and their

willingness or intention to migrate. I was also finally allowed to plan research on a national scale, which was financed by the Institute of Preventive Medicine. Being charmed by the theory of cognitive dissonance and in admiration of the ex-post-facto experiment that proved the relationship between cancer and the smoking habit, I was intrigued by the effects of smoking on the Dutch population. Consequently, I decided to undertake a national survey to explore these effects. However, the director of the Institute forced me to focus on drinking habits, which limited my freedom of choice to include a few items of general sociological interest regarding social participation and cultural involvement. In order to interview some 1300 inhabitants, from 92 communities properly (our interview schedule consisted of 157 questions!), I hired Leyden sociology students to help.

Professorship

In 1958, Groningen University offered me a full professorship in sociology at the Department of Economics. A young sociologist from Utrecht who came to our department, wrote an essay on a mathematical model for world peace, whereupon I decided to teach sociological research methodology. Since I realized that not all students who enrolled in sociology intended to become researchers, I presented a seminar on modern scientific thinking, using my erudition in the fields of logic and epistemology. Later on, I published my lectures in a text-book, which became rather popular in the Netherlands and Belgium¹. Furthermore, I launched a semi-experimental study of absence behavior on a national level. At that time, the number of working hours lost to illness was at an all time high since the war years, which was largely attributed to the workers' poor morale. According to the group cohesion theory, people who like and esteem one another are satisfied with their work, achieve good work results, are more attracted to the group and are less inclined to absenteeism. During a refined cause-to-effect experiment, we selected 107 groups of shift-workers from 18 firms in the country based on their frequent absence in the six months preceding our research: 27 high absence groups and 27 low absence groups were selected. A control group of people doing the same work (a parallel shift) was selected for each group. In total 2 227 workers were selected to fill in the 132 items in our interview schedule. We constructed attitude scales by means of factor analysis and computed the groups' averages. We were

¹ *Sociologische Onderzoekstechnieken*, Arnhem 1967, more than 3,000 copies sold.

able to reject the leading hypothesis: workers dissatisfied with their jobs and firms are not more often absent from work. It seemed that people who are satisfied with the firms for which they work are more likely to absent themselves. Theoretically, the study failed, as we did not have an alternative hypothesis in case the original one was rejected. With the exception of management circles, the acceptance of this monumental study was very poor. Nevertheless, it remained one of my most cherished publications (*Absences and Well-Being of Workers*, 1965).

As time went by, I became a senior professor and was often responsible for the entire department of sociology at Groningen University. Consequently, I was obliged to delegate the sociology of medicine to a younger colleague and busy myself with general sociology. Deep in my heart, I do, however, regret the abandonment of my 'daughter' - medical sociology.

Transfer of knowledge

My professorship extended from 1958 to 1984, which can hardly be called a homogeneous time. During the first ten years of my teaching career, university life was peaceful and the students appeared tolerant of my mistakes in the Dutch language. I, on the other hand, became tolerant of their never consulting the foreign books to which I referred. I was, however, less tolerant of their fear and hatred of quantification ('numeracy') and bestowed much time on trying to teach them that statistical significance was not a kabalistic term. My war experience made me a fervent protagonist of democracy and I tried to promote active participation according to democratic rules in all face-to-face groups. When the students rose, demanding more say in the administration of universities, we were prepared. For a while things went well; students who served on steering committees helped us to reach rational decisions based on individual convictions and judgments. However, student representatives, elected during mass meetings, soon started acting according to party guidelines: interrupting committee meetings to consult their bosses, suddenly making political proposals (e.g., a faculty letter to the US embassy protesting bombardments in Vietnam) and generally displaying provocative, infantile behavior. The transmission of knowledge to masses of younger, Communist-manipulated students was blocked; these students furthermore approached Marx with the fervour of the newly converted.

However, my relationship with the older students remained excellent. We had lively seminars, they participated in the major research projects that I organized, or followed scientific interests of their own. During the 26 years of my professorships, I helped eighteen students to obtain doctorates in sociology (which is of high academic standard in the Netherlands: the dissertation must be published in a book and be approved by the academie senate). Eight of them became professors at various universities in the country.

Opus magnum

In 1974, owing to the favorable peer-judgment of my publications rather than my unbending stance during the student turmoil, the Netherlands Organization for the Advancement of Pure Research awarded me a grant for a repeated survey of attitudes and norms on a national scale. I was struck by the difference between the developments in my native and host countries and decided to study the non-violent, 'creeping' social change in the Netherlands. The project had to be based on changing values in the basic sub-systems, essentially on changing behavioral values and norms in various social positions; in other words, changing social roles. Together with H. Knol, my co-worker on the project, we constructed and selected 178 questions for our interview schedule, from which 411 items could be distilled per interviewee. In 1975, we entrusted a public opinion research institute with the collection of data from 91 residential areas. The great amount of data that resulted from successfully interviewing 1358 people was reduced by means of factor analysis and cumulative scaling to 25 normative scales. Two years later (the agency did not provide grants for longer periods of time), we repeated the collection of data and received the cooperation of 1133 people. Over a thousand people were interviewed on both occasions, thereby forming the basis of the evaluation of our panel study. Multivariate techniques and log-linear models were used to evaluate the changes over time. The results of the study appeared in 1980²) and in 1982 (my Social Change as Redefinition of Roles). We found three dimensions dominant in Dutch society: the religious dimension chiefly depended on the way a person was raised, while the political dimension was determined by socio-economic status. In the Lisrel model of structural relationships, these two dimensions were related to a third inde-

² See the doctoral dissertation of Hans Knol, *Dominante houdingspatronen in een pluriforme samenleving*, Groningen.

pendent cluster of variables, which was called 'tolerance' by Knol (based on attitudes towards drug-usage, sexuality, marriage, emancipation of women, children, etc.). The younger, better educated cohorts scored higher on this dimension. In my book, I had to report some negative results: as expected, the shifts on the attitudinal scales were small between 1975 and 1977 due to the short interim between the interviews. By applying multivariate analysis to less reliable differential scores, we were able to signal the existence of both the trend (in terms of the increasing permissiveness of new, modern role-conceptions) as well as the anti-trend (the reversal of the values of the sham cultural revolution of the late sixties). Combined with the findings of the log-linear model analysis, we could conclude that secularization, increase in education and emancipation appear to be prime movers of change.

Early retirement

In the early eighties, the Dutch government imposed limits on the expansion of universities. Being less than 65 years of age, I applied for an early retirement when a young researcher was threatened with discharge from our department. The thought that I would be free from teaching and administrative chores and that I would be the master of my own time appealed to me. Computer technology had also improved to the extent that individual research workers were no longer dependent on large government machines since they owned desktop or portable computers. My research career, in retrospect, consisted of years long of laborious creating and collecting social science data. Under the pressure to publish the results of costly surveys a relatively small part of time was spent on elaboration and analysis. The idea of spending my time entirely on secondary data-analysis appealed to me.

For our data on general issues, I chose the most elaborate factor-analytical (and cumulative) scales, which were applied to the national sample of 1358 inhabitants. Again, playfully rather than dictated by strict methodological rules, I considered the ordinal scores of 22 variables as being of quantitative nature and applied a multivariate technique, rarely applied by the sociologists in the Netherlands - discriminant analysis. The question I asked myself was: "Do our scales distinguish between the concrete groups of individuals aggregated over time and space?" Regarding the first, I naturally thought of the generations that professor H. A. Becker had identified in his studies. The first function that I distilled through my analysis clearly distinguished the pre-

war generation from the rest, with declining values in subsequent generations. It denotes the 'less tolerant', 'less progressive' (to use the terminology of Knol, or Middendorp), or, in my terms, the less inclined to roles re-definition. The second function significantly distinguishes the recent, 'lost' generation from Becker's 'silent' generation.

A secondary analysis was also undertaken, this time on the data from The National Electoral Data Project, 1972-1995.³ This prolonged the possibility of structural analysis by another 23 years. The diminishing working-class and the increasing number of single (unmarried) people were added to the characteristics of the main trend. The book was handed to the participants at a seminar held on the occasion of my 75th birthday (see 'On the variability of social life', 1998).

Back to the roots

One of the paradoxes of my life is that the actual date of my retirement coincided with the liberation of my native country. Since I was no longer a refugee, I visited Prague and Brno as a free man in 1990. As I was only 67, I became feverishly active in helping to rebuild the neglected fields of cultural life in my country: I gave lectures on sociological methods in Prague, Brno, Bratislava, even in the north-Moravian city of Opava; provided financial assistance to gifted young researchers in medicine or social science for a three-month study in the Netherlands; became a co-founder of the International Institute for Political Science at Masaryk University; provided financial support for the university publishing house, etc. In 1992, the Masaryk University awarded me an honorary doctorate in respect of my research work in the Netherlands. Although I remained in the Netherlands, I did some research on Czechs. An American colleague, professor Jiri Nehnevajsa from Pittsburgh University, had collected 623 questionnaires from victims of Soviet persecution (former inmates of concentration camps and other prisons) containing approximately 60 items that could be quantified, as well as personal accounts of work in uranium mines and life after being released. After Nehnevajsa's sudden death, his widow sent me the data to analyze. The publication appeared in Czech in 1997, one year before my 'Variability', and was gratefully received by my friends and co-workers who were ex-prisoners themselves (see my *Zalárováni*, Brno, Masaryk University, 1997).

³ Kindly provided by Dr. W. van Schuur and the Steinmetz Archives in Amsterdam.

Farewell to sociology

During my active life, I consciously or intuitively followed the teaching of my spiritual teacher, Thomas Masaryk. After the publication of my last book in English, a rupture in my thoughts became manifest. As the first president of Czechoslovakia, Masaryk, who was also the first teacher of sociology in Prague, sought to reconcile belief and science; he was a deeply religious man, of Unitarian rather than orthodox views. In spite of his life-long struggle against the 'Titanism' of modern man, there was a strange streak of individualism in his thoughts. "I want to be myself after my death", he used to emphasize, suggesting a belief in the self as an independent Leibnizian monad. Critical of transcendental speculation on the hereafter, I realized that there is a substitute for immortality: *litera scripta manet* (those who write, stay). All writers continue to live in the memory of mankind. As with Plato or the Jewish prophets, the ideas of men remain on earth, triggering spiritual clones of authors in diligent readers. However, currently everybody strives for this kind of immortality; publishing frequently, scarcely reading. Owing to this development, myriads of people will soon rise, each claiming uniqueness and eternal life. At the same time, human writ as a means of communication seems to have been supplanted by a crucial invention of our times: digital electronic communication. The peaceful feeling of blessing that accompanies writing has been disturbed. Therefore, I wondered: is all publishing not a hidden form of ego-tripping? Is Masaryk's adage itself not a remnant of the 'Titanism' that he tried to defeat? The old Indian teaching of self-abnegation offered itself as an alternative. This inner skepticism was reinforced by some external events: an article on the diminishing trust in the Czech government and parliamentary institutions was refused by the sociological review in Prague. I also received a refusal from the youngest editor of *Mens en Maatschappij*, my writing was found untheoretical. I gave my critics the benefit of the doubt and have not published on sociology since turning eighty. To escape from the danger of mere biological subsistence, I wrote another book in my native Czech: memories of my youth (Cestou Komenského).⁴ This paper is in a sense a continuation of my Czech memoirs. I wrote it with a feeling of duty to appease those who ask about my life; am I still ego-tripping or passing on the love of sociology to the next generations?

⁴ My friends in the West vainly asked for a translation. This paper provides a short translation.

Biosketch I. Gadourek

Ivan Gadourek was born in 1923 in Brno, Czechoslovakia. He is a MA in philosophy (sociology) and in English from Masaryk University. In 1948, after the occupation of his country, he migrated to the Netherlands. He became a research-worker at the Netherlands Institute of Preventive Medicine, Leyden. At Leyden University, he obtained a MA degree in social sciences (1951, magna cum laude) and became a doctor in social sciences in (1953). From 1958 to 1985, he worked as professor of sociology and methodology of social science at Groningen University. Publications on his major research projects: *A Dutch Community, Social and Cultural Processes in a Bulb-Growing Region in The Netherlands* (1956); *Hazardous Habits and Human Well-Being* (1963); *Absences and Well-Being of Workers, Social Matrix of Absence-Behaviour, Satisfaction and Some Other Attitudes in Contrasted Groups of Workers from Large Industrial Plants in the Netherlands* (1963); *Social Change as Redefinition of Roles, A Study of Structural and Causal Relationships in the Netherlands of the 'Seventies'* (1982). He is a member of the Royal Netherlands Academy of Arts and Sciences, and doctor honoris causa at Utrecht University and Masaryk University. In 1985, he retired. He published on scientific subjects until the age of 80.

Selected Publications

Gadourek, I. (1953). *The political control of Czechoslovakia*. Leiden: Stenfert Kroese.

Gadourek, I. (1955). *Kennissociologie* [Sociology of knowledge]. Den Haag: Servire.

Gadourek, I. (1956). *A Dutch community*. Leiden: Stenfert Kroese.

Gadourek, I. (1963). *Riskante gewoonten en zorg voor eigen welzijn* [Hazardous habits and human well-being]. Groningen: J.W. Wolters.

Gadourek, I. (1965). *Absences and well-being of workers*. Assen: Van Gorcum.

- Gadourek, I. (1967, 1969). *Sociologische onderzoekstechnieken* [Research-techniques in sociology]. Arnhem: Van Loghum Slaterus.
- Gadourek, I. (1982). *Social change as redefinition of roles*. Assen: Van Gorcum.
- Gadourek, I. & Nehnevajsa, J. (1997). *Zaláfovani, pronásledovani a zneuznani* [Incarcerated, persecuted, forgotten]. Brno: MPÚ.
- Gadourek, I. (1999). *On the variability of social life*. Groningen: Sociological Institute.
- Gadourek, I. (2006). *Cestou Komenského* [The way Comenius marked]. Brno: Barrister & Principal.

Becoming a Geographer

Gerard A. Hoekveld



It was my dream to become a historian – a dream, because in the fifties the Department of History only allowed gymnasium graduates to enrol and I was an HBS-A graduate. However, HBS-A graduates who had obtained their *kandidaats* (bachelor) certificate in Human Geography were allowed to take History as their main minor. I consequently decided to study Human Geography as a necessary step to becoming a history teacher. Then I met Professor A.C. de Vooyo, the only professor in Human Geography at the University of Utrecht. In spite of his profound contempt for HBS-A graduates, I was inspired to become a geographer. I thus studied both Geography and History. In the fifties, there was a shortage of teachers; the majority of Geography graduates therefore became secondary school teachers. Only a small number of these graduates started careers in planning. While still studying, I too became a geography teacher.

My career as a geographer

After completing my military service as a lieutenant in the Dutch Royal Air Force in 1959, I returned to teaching geography at a lyceum in Amsterdam. During this time I worked on a doctorate thesis, taught teachers who wanted to obtain a secondary school teaching qualification and became an active committee member of the Society of Dutch Geography Teachers. There I met geographers working in many different professions. Although I liked teaching very much, the prospect of having to do so for the rest of my life was daunting.

After having obtained my doctorate (the thesis was on an urban geographical subject: *Baarn, the Development of a Suburb*) I was offered a job at S.I.S.W.O. in Amsterdam. There I had to prepare research that universities would undertake for the Ministry of Housing and Planning. In S.I.S.W.O., I became acquainted with the then emergent planning business, but also with the different sciences' struggle to obtain a firm footing in that domain.

In those years, it was mainly planners who had been trained as geographers who conducted the study of cities in the Netherlands. Two of them, very competent and influential, had been appointed professors of planning. Other appointments were at hand. Although all geography departments throughout the Netherlands, and particularly in Amsterdam, were studying urban geography there was no formal chair for urban geography in the country. Without a formal chair, geography ran the risk of losing the study of cities, an important field, to planning, the new science. When I was offered a post as lector (which was similar in rank to a junior professor, but was later abolished) at the Free University, I accepted.

This appointment was at a new department for human geography, founded by Professor M.W. Heslinga. I saw an opportunity to claim official recognition for urban geography in the way the chair was described. However, the Free University only wanted somebody who could ensure that geography teachers received good training and not an urban geographer. The negotiations took more than a year, but ultimately Heslinga succeeded in having my version of the official description of the position accepted. It read 'the urban and rural geography of Western countries' and – by way of compromise – I was charged with establishing educational geography (*onderwijsgeografie*) as an extra task.

My first action on being appointed was to ask for three months' unpaid leave for a visit to the US. There, a paradigm shift had taken place. Spatial analysis had introduced the neo-positivistic use of theories, models and statistical techniques. This visit thus enabled me to start the new sub-discipline at the foundation of the modern developments in the U.S. Although chairing and staffing the two very different groups of urban and educational geographers was not always easy, it was very satisfying. The building of a new staff specifically enabled me to pick excellent, well-motivated young staff members. When I eventually left the Free University for Utrecht, the urban and rural geography section had 11 staff members, of whom 10 wrote their doctoral thesis and five of whom are currently professors.

After the first staff member of the educational geography section had completed a brilliant thesis, he was appointed as my successor as chairman of the group of educational geographers in 1976. From then on I was free to concentrate on urban geography. In a common curriculum, students were trained in urban and rural geography as well as

planning, although planning and geography research was undertaken separately.

When I had arrived at the Free University, there were, besides Prof. Heslinga, only three other scientific staff members for geography and planning (a small subject taken by a small group of various types of students). In 1984, when the Free University decided to transfer its human geographers to the University of Amsterdam, exchanging them for the latter's physical geographers (an exchange or trick deemed necessary to meet the government's requirement to reduce the fields of study and costs), the sub-faculty had 66 scientific and administrative staff members and about 600 students.

The closing of the sub-faculty in 1985 was not due to a lack of quality. The faculty was ranked second after Utrecht in the Netherlands. Observers later remarked that the sub-faculty was too self-contained regarding its curriculum and research programmes. It was this that led to the argument that the faculty was very 'loosely' related to the rest of the Free University and could therefore be disposed of without damaging that university as a whole.

However, I did not want to leave for the University of Amsterdam with the majority of the staff and students. In Utrecht, Professor H. Verduin-Muller, who occupied the educational geography chair, considered early retirement due to ill health and wanted me as her successor. The faculty however, wanted to use her chair to start a new sub-discipline: regional geography. This traditional, mainly descriptive branch of geography, had not kept up with the 'scientification' of the other subdisciplines of geography. As I had written about the need to modernize regional geography, I was again asked to combine educational geography with a 'new' field. Fortunately, educational geography at Utrecht disposed of excellent senior staff members, which allowed me to concentrate on regional geography. In order to augment the graduates' job opportunities, I instituted another subject: administrative geography (*bestuursgeografie*). This subject comprised large components of law and sociology. Indeed, those who took this course found jobs immediately despite the poor job market at that time.

At Utrecht University, I had a completely different position than the one at the Free University in Amsterdam. At the latter, I had a large administrative workload and a wide array of functions, both within the faculty and the university. At Utrecht, I came into a much larger faculty with many professors. I was not asked to perform administrative func-

tions and was given free reign to concentrate on teaching and research. Again, there were enthusiastic students attracted by something new and challenging. The staff members (originally numbering 15) whom the Dean assigned to regional geographic research were less enthusiastic. Most of them, myself included, had no experience of regional geography and had their own specializations. They were not pleased to have to start a new specialization – which they had not chosen – at a time of increasing pressure to accommodate growing numbers of students and to publish more than was previously expected. Furthermore, the continuous pressure to economize meant that young regional geographical graduates could not be appointed as staff members. Moreover, the intention to introduce modern quantitative and qualitative techniques and modeling into regional geography was cold shouldered by most of the staff. In the end, when conducting research, I only collaborated with my colleague from the research techniques chair, three staff members and my wife, who was still employed by the Free University. We studied and compared regions in the Netherlands, France and Germany.

In 1997, a new round of economizing threatened the faculty. The two professors who had worked for more than 40 years (and had thus acquired maximum pension entitlements) decided to leave. I was one of them. As regional geography research requires fieldwork and some amenities, I concluded I should not continue but look for niches that could be researched with only a computer and a library. This niche appeared to be the role of ethics in applied geography.

After retirement

In 1998, the first year of my retirement, I still worked four days a week. I not only had to prepare my valedictory address (on administrative geography, a case study of a local conflict), but there were also 14 students who still had to complete their theses for their *doctoraal* (Master's) examination. I also wanted to travel, as all geographers do. The Dean gave me a parking pass, continued use of an office, a secretary and access to facmail and the library. He moreover agreed to have the small book on ethics and applied human geography published that I intended to write. The students eventually concluded their theses and by 1999, only the occasional student asked for help or was sent by colleagues.

The last ten years have been characterized by three phases: the period 1999 to 2003, the period 2003 to approximately mid-2005 and the

period 2005 to the present. The first phase was one of much activity, not only in the academic sphere but also as a church member and in other social circles. It was also a productive one. I served on many committees that evaluated dissertations – at Utrecht University as well as the two universities in Amsterdam. I was also a member of committees that visited geography departments at Dutch and Flemish universities. Furthermore, I presented two courses for planners on regional development for a commercial organization, participated in a governmental committee that prepared a landscape conservation policy, compiled a small atlas for the city of Breda, several times advised the K.N.A.G. committee that worked on reforming geography education and examination in secondary schools, wrote articles – largely on invitation – on different subjects, etc. Occasionally, I lectured students as a guest lecturer. The most pleasant task was not a demanding one: participating in a jury that biennially awards historians who have published an innovative book on urban or regional history. I was thus given an opportunity to return to my first love – although I had never lost sight of it, as I always subscribed to historical journals.

However, in 2003 and 2004 I was hospitalized five times, underwent surgery four times and chemotherapy weekly for half a year. These two and a half years had a considerable impact on my work and me. I could only finish the book on ethics and applied human geography. Until that time, work on the book had been postponed due to the many other interesting issues that had crossed my path. I was, however, no longer capable of fulfilling obligations involving regular meetings and functions, which had previously provided opportunities to meet entertaining networks of colleagues and other people. Although I visited the faculty as often as possible, I could no longer keep track of the rapidly changing academic environment, as the reorganizations of teaching and research specifically included many staff changes. The faculty office had also been reorganized and 'my' secretary had retired. Although she had worked for many academics, she had been the mainstay of my connection with the rest of the faculty.

In the third phase from 2005 to the present, I am once again active, albeit less energetically. This is partly due to physical constraints and partly to my increased awareness of not having so much time left to spend with my family and friends. The most important feature of this phase is probably the loss of connections with the faculty staff at Utrecht University and other organizations. The continuous demand to

write contributions or participate in activities has disappeared. I have to rely on my own initiatives. Despite facmail, invitations to be present at events and good relations with all the people whom I still know, I find it difficult to reinstate intensive contacts with the faculty. Nevertheless, by concentrating on urban geography, ethics and planning I still have great pleasure in being active again.

Impediments and benefits when being active while enjoying retirement

I am indeed enjoying retirement now, but it has taken me some time not to miss the cheerful and challenging contacts with my students and to value the freedom of retirement. In spite of this, the first five years after retirement were the best ones. My faculty was very supportive in 1998 and has remained so to this day. My former staff members are always friendly when I drop in for a (short) while. Nevertheless, I increasingly feel like a stranger as old faces have disappeared and others regard me as a relic. I do not get to know new staff members and the secretaries whom I knew so well are no longer there. This is, however, the normal turn of events and I am surprised that it has taken so long to come about.

Did matters go wrong before my retirement? Yes, two matters might have been arranged more effectively. Firstly, I did not sufficiently prepare myself for retirement. Perhaps I had been too busy at that time. I vaguely intended to do something with ethics, but had not made commitments. Nevertheless, I do not know what might have been better: a large project for many more years or a large array of small projects. Now, at the age of 73, it is clear that only little projects that do not require much time or collaboration with others are most appropriate. In 1998, however, bigger projects might have been better as they would have presented prospects of far-reaching results, securing financial and other support as well as a proper embeddedness in larger research programmes. Secondly, I did not make arrangements to take part in teaching activities, although I would have liked to do so. I was too afraid of being in my successor's way or of hampering staff members in giving their new ideas full scope. Once timetables have been established, it does not make sense to present oneself. Moreover, as the economy threatened staff members with compulsory redundancy, they had to make themselves indispensable, and it seemed almost immoral to offer to relieve their workload when one is no longer burdened by such worries.

In my opinion, the main problem after retirement is the gradually diminishing contact with new deans, professors and staff and faculty managers. This lack of contact hampers obtaining support for small projects, particularly when financial aspects are involved, as well as keeping pace with new developments in research and policy. Having a cup of coffee with colleagues is often the most efficient way of having contact and remaining informed. I have already mentioned the impact of changes in the organization and staffing and of my illness. Perhaps a solution for the problem of losing contact is the assignment of someone who is well connected with the faculty and can be retired staff members' first contact person. Such a person should also have the competence to indicate the activities through which retired staff members might serve the faculty.

I was not only driven by the wish to gain new experiences and break new ground, but was also afraid that, by disappointing those partners who asked me to participate in specific events, I was furthering the demise of my networks. Now, having been retired for almost ten years, I have noticed that the world is full of people who are willing to help when necessary, even if you are not part of their networks. With a library pass, a computer and being ever so curious about the development of my discipline and the world, I continue to study and publish on small geography-related projects.

Biosketch G.A. Hoekveld.

- Born in Baarn on 7 May 1934.
- Studied Human Geography and, as main minor, History at the University of Utrecht from 1951-1957.
- Did military service from 1958-1959.
- Taught geography in Amsterdam and Amstelveen from 1959-1965.
- Obtained a doctorate from the University of Utrecht in 1964.
- Planned spatial planning research at the Interuniversity Institute for Social Sciences (S.I.S.W.O.) in Amsterdam from 1965-1967.
- Was lector in Human Geography at the Free University in Amsterdam from 1967-1971, thereafter professor from 1970-1998, specialising in the urban and rural geography of Western countries in the period 1967-1970.
- Professor of Regional Geography and Educational Geography at the University of Utrecht from 1985-1998.
- Awarded the Plancius medal by the K.N.A.G. in 2003 for his scientific work in geography and furthering the application of geographical knowledge in practice.

Selected Publications

Hoekveld, G.A. (1965). A theoretical contribution to the construction of models for use in the geography of settlements. *Tijdschrift voor Economische en Sociale Geografie*, 56, 201-209.

Hoekveld, G.A. (1967). *De geografie als onderwijsvak in Nederland: enkele ontwikkelingslijnen van aardrijkskunde op de middelbare school* [Geography in education in the Netherlands: Some main developments of geography in secondary schools]. Inaugural lecture at the Free University in Amsterdam. Kampen: Kok.

Hoekveld, G.A. (1969). Zoeken naar de inhoud en de grenzen van het onderwijsgeografisch bezig zijn [Looking for contents and limits of geography teaching]. *Geografisch Tijdschrift* (Nieuwe Reeks K.N.A.G.), 3, 334-344.

- Hoekveld, G.A. (1971). De geografische beschouwingwijze [The geographical perspective]. In G.A. de Bruyne, G.A. Hoekveld & P.A. Schat, *Geografische verkenningen, 1*, 11-36. Roermond: Romen (reprinted several times).
- Dieleman, F.M., Hoekveld, G.A., Jobse, R.B. & van Weesep, J. (1973). *Geografie van stad en platteland in de Westerse landen* [Geography of cities and rural areas in the Western countries]. Roermond: Romen (revised edition in 1978).
- Hoekveld, G.A. (1990). *De Gelderse Vallei; een regionaal geografische benadering* [The Gelderse Vallei, a regional geographic approach]. Inaugural lecture State University Utrecht. Faculteit Ruimtelijke Wetenschappen, Utrecht.
- Hoekveld, G.A. & Hoekveld-Meyer, G. (1993). Regional policy from a regional geographic point of view: A comparison of the Dutch provinces Friesland and Zeeland. *Fennia*, 171, 99-135.
- Hoekveld, G.A. & Hoekveld-Meyer, G. (1994). Regional development in regional and social contexts: key concepts of regional geographic methodology. In C.P. Terlouw (Ed.), *Methodological exercises in regional geography: France as an example. Nederlandse Geografische Studies*, 179. Utrecht: K.N.A.G./ Faculteit Ruimtelijke Wetenschappen, 13-62, further 63-119.
- Hoekveld, G.A. (1998) *Burgers, bestuur en een ringweg: bestuursgeografische beschouwing van een ruimtelijk conflict in Baarn* [Citizens, municipal government and a ring road: An administrative geographical study of a spatial conflict in Baarn]. Afscheidscollege (Valedictory lecture). Utrecht: Faculteit Ruimtelijke Wetenschappen.
- Hoekveld, G.A. (2008). Applied geography and ethics in spatial planning; the Dutch National Spatial Strategy (2006). *Tijdschrift voor Economische en Sociale Geografie*, 99 (in press).

Realism and Idealism in Political Science

Andries Hoogerwerf



Most of my life I have found pleasure in thinking and writing about politics and society. Immediately after having completed my secondary education, I found a position as an apprentice journalist at a local newspaper in The Hague. Some years later I became an assistant of the parliamentary editor. In the meantime, I did a correspondence course in public law. When I had passed the examination, the professor advised me to study law at a university. However, my editor-in-chief, who was a lawyer, convinced me to start studying political and social sciences.

I studied political science at the Vrije Universiteit in Amsterdam between 1954 and 1960. In the same period, I was a foreign editor and later the chief editor of the night shift of the national newspaper *Trouw*.

After the completion of my study, I accepted an invitation to be a political science lecturer at the university where I had studied. The main fields in which I taught for the next nine years were: politics of the Netherlands, modern political ideas, and empirical theoretical approaches in political science.

In 1964 I obtained my doctoral degree in social sciences with a dissertation on Protestantism and progressivism. The dissertation was based on an own survey of more than 900 Delft citizens as well as historical sources from the 19th and 20th centuries. A jury of 12 professors from various universities rewarded the dissertation with the Kluwer award for Social Sciences.

A long stay in the United States in 1965 gave me an opportunity to do research on the staff members of Congress in Washington D.C., and to have discussions with political scientists at the University of Michigan, Stanford University and a few other universities. I found conversations with eminent political scientists like Gabriel Almond, David Easton, Heinz Eulau, Arnold Heidenheimer, and Warren E. Miller particularly inspiring. I received useful advice on the preparation for the first national election survey in the Netherlands. This survey was done in 1967, and I was one of the two research leaders.

In that period, an incident occurred that was typical of the last phase of columnization (in Dutch: *verzuiling*) in Dutch society: the organization of many segments of society along religious lines. In 1966 the Faculty of Social and Cultural Sciences of the Protestant Vrije Universiteit proposed that the university board appoint me as an associate professor (in Dutch: *lector*). However, the chairman of the board, who was also the top manager of an industrial concern, refused because I was a member of the Dutch Labour Party. The chairman doubted that a social democrat could be a good representative of a Protestant university. However, the senate, in which all the professors are represented, insisted on my appointment, which was realized in 1968. My inaugural lecture dealt with the representative role of members of parliament.

A year later I accepted an appointment as professor of political science at the Catholic University in Nijmegen, in the south of the country. The staff and the students welcomed me cordially, all the more since the appointment of a Protestant at a Catholic university was considered another sign of the final phase of columnization.

My inaugural address dealt with democratisation, rationalisation, differentiation, and integration as forms of change in political systems. The choice of this subject reflected the social and cultural climate at the end of the sixties, with its emphasis on democratisation and other forms of change.

During my six years at Nijmegen, others and I jointly realised the start and construction of a full study in political science. In the same period, I supervised the national election surveys of 1972 and 1973, did research on the distance between local government and citizens, and wrote an introductory book on political science besides many other publications.

In the meantime, the influence of neo-Marxism among students at Dutch universities, and especially in the social faculties, grew strongly. This resulted in long periods of conflict at various universities. In 1973, when I proposed the appointment of an empirical researcher as a lecturer, the students demanded the appointment of a Marxist. The conflict led to students occupying the Institute of Political Science for no less than 106 days.

During the last year of my Nijmegen period, I enjoyed a sabbatical in the serene scientific atmosphere of the Netherlands Institute for Advanced Studies (NIAS) at Wassenaar.

In 1975 I accepted an appointment as professor of policy science at the University of Twente in Enschede, in the east of the country. There I be-

came one of the founders and, for some years, chairman of the new Department of Public Administration. The efficiently organized department was a success. After some years, there were about 900 students and a total of about 100 staff members. The climate for research and teaching was excellent. A national committee of experts once evaluated the University of Twente's political science and policy science group as the best of 54 university groups in related fields. Many of my students received doctorates, and four of them became professors.

My chair was the first in policy science in the Netherlands. The development of the field had started about 10 years earlier in the USA, but in the Netherlands pioneering was still required. This was a fascinating challenge that stimulated me to many new insights, concepts and hypotheses.

My work in policy studies as well as in political science was partly inspired by Arnold Brecht's book *Political Theory: The Foundations of Twentieth Century Political Thought* (1958). The author explains that the question whether something is valuable can only be answered scientifically by referring to a value, norm or goal, or other ideas on what is valuable.

This scientific value relativism, as it is called, opens the door to scientific evaluations based on the comparison of a value, norm or goal with an existing situation. One possible application of this is evaluation research, in which goal attainment is judged by comparing the situation before and after the implementation of a policy with the goal of that policy. This approach is particularly important for policy science, as this science deals with the analysis of goals, means and the effects of policies and related questions concerning the effectiveness, efficiency and legitimacy of policies. Inspired by this approach, my inaugural address at the University of Twente was devoted to the effects of public policies. In the following years, my group's research programme first resulted in a large number of theoretical, methodological and empirical publications on evaluation research concerning the goal attainment and effectiveness of public policies.

A second line of theory and research dealt with the process of designing policies. This process was analytically divided into eight steps: the analysis of the instruction for the designer; the problem situation; causes and consequences of the problem situation; the formulation of the ultimate goal; the consideration of means and their possible effects; the design of the implementation; the consideration of costs and benefits; and the ultimate formulation of the policy design. This second line proved

very useful for training students in designing policies, but it also resulted in empirical research on the various ways in which policies are designed in the practice of public administration.

A third line of theory and research had to do with what was called 'policy theory from practice'. Such a policy theory was defined as all the (causal and normative) suppositions on which a particular policy is based. This concept proved to be useful for evaluation research as well as for research on designing policies. The causal suppositions of a policy theory can be tested in evaluation research and also be used in the analysis of the design process.

A fourth line was research on the course of the policy process and its subprocesses: agenda building, designing, decision-making, implementation, maintenance, evaluation, and feedback.

Most of the research that my group did was pure research tuned to scientific questions, but we also did applied research in respect of the practice of public administration. Contacts with politicians and public servants were a stimulus for our scientific work. However, when the board of the University insisted on more market-oriented research, I was part of an opposition movement of professors who defended the vital importance of pure research.

My 33 years of work at three universities resulted in more than 300 professional publications, most of them in Dutch, but several of them also in English, French, Spanish, Italian and Indonesian. Some of the books were widely used in teaching as well as in the practice of public administration. My papers were presented and discussed in several workshops that I lead for the European Consortium for Political Research, and at various other national and international conferences and congresses. In the same period, I published more than 100 columns and popular articles.

Life after retirement

Towards the end of 1993, at the age of almost 63, I retired from the University. One of the reasons for this rather early retirement was a reorganization of the Department of Public Administration from monodisciplinary into multidisciplinary groups; a reorganization that I could not support. Other reasons were that I had been working for 45 years, and was a bit tired of committee work, teaching, and guiding research. Above all, it was my intention to find more time for studying and writing.

The University offered me an office for my work as a retired professor, but I preferred working quietly at home, with the support of my wife, who reads every word that I write before it is published.

In the preceding years I had not prepared for my retirement period. Consequently, I had no concrete plans for future activities. My first task after retirement was to write my farewell address on the decay of politics. When that was done, I wrote down the provisional titles of some books that I hoped to publish within the next few years.

The laboratory of a political scientist consists of the reality of politics and society. For my work in that laboratory, I did not need much more than good health, a personal computer, some paper, and the university library.

Since my retirement, I have to date published ten new books and revised some older ones. This was for the most part made possible by the university library, which generously supplied me with any publication that I needed. Besides reading and writing, I did some committee work for the Royal Netherlands Academy of Sciences in these years, and also gave lectures for various audiences, mostly based on one of my publications. Discussions in public and private settings offered a fruitful stimulus for my work.

As far as the subjects of the publications are concerned, I decided to leave the field of policy science, and return to my old love: political science in its broadest sense and the adjacent social sciences, especially sociology, political and social philosophy, and history. Instead of doing extremely specialised research, I prefer writing studies on broad subjects and spanning long periods.

The approach I have chosen for my publications in this period is often evaluative. In other words, it is a confrontation between values and empirical evidence. The values are derived from political and social philosophy, and the empirical evidence is mostly based on existing research results. This confrontation leads to an analysis of social or political problems, their possible causes, and possible solutions.

The first book I wrote during this period, *Politiek als evenwichtskunst* (The Balance of Politics, 1995) is a synthesis of my earlier publications. It consists of a macro evaluation of politics in the Netherlands since the middle of the 20th century viewed from various fundamental dilemmas of values. The chosen dilemmas are: public authority and private initiative; democracy and leadership; freedom and equality; unity and diversity; idealism and realism; rationality and legitimacy; change and order.

In view of the growing violence in the Netherlands since the seventies, I published a systematic analysis of the social and cultural backgrounds of various forms of violence: *Geweld in Nederland* (Violence in the Netherlands, 1996). The explanation of violence is sought in social problems related to cultural tensions, social inequality, social disintegration, and the disfunctioning of democracy.

The critical discussion on the position and role of elites in politics and society inspired me to write *Elites in de democratie* (Elites in democracy, 1997). Starting with elite theories of the 19th century, an analysis was made of the personal characteristics, sources of power, networks, and tasks of political elites, as well as the possibilities of a non-elitarian democracy.

The permanent controversy regarding the relationship between religion and politics stimulated me to publish *Christelijke denkers over politiek* (Christian thinkers on politics, 1999). This book presents a systematic analysis of the ideas of 13 theologians, from Augustine to Dorothee Sölle, on the mutual political tasks of the government, citizens and churches.

My next book was inspired by the endless political discussion on social inequality. In *De onweerstaanbare gelijkheid* (The irresistible equality, 2001). I analysed the ideas of about 50 thinkers since Plato on equality and inequality. Chapters were devoted to equality in the context of human nature, religion, power, property, progress, freedom, labour, class, race, and sex. My conclusion is that over 25 centuries none of the many thinkers formulated the problem of (in)equality and its solution clearer than Aristotle did.

In the Netherlands, as in other countries, the terrorist attacks in America on 11 September 2001 fostered the growth of intolerance towards immigrants, and especially towards Muslims. This was one of the reasons why I wrote *Wij en zij: Intolerantie en verdraagzaamheid in 21 eeuwen* (We and they: Intolerance and tolerance in 21 centuries, 2002). The book contains an analysis of the historical development of thinking on intolerance and tolerance in the course of the ages. The last three chapters present an analysis of problems and policies in the multicultural society from the point of view of freedom, equality and solidarity.

The continuous criticism of politicians was reason enough for publishing *Wegwijzers voor politici* (Signpost for politicians, 2004). It is a study on visions concerning the roles, tasks and virtues of rulers and other politicians. These visions range from that of king Hammurabi of Babylon in the 18th century BC to those of thinkers in the 20th century of our era.

Waves of optimism and pessimism in society inspired me to write *Vooruitgang en verval* (Progress and Decay, 2006). This book is a study of the philosophy of history. It tries to answer the question how thinking on society's progress and decay has developed in Europe since Greek Antiquity. The ideas of great thinkers are analysed with regard to progress and decay in the fields of knowledge, religion, intellect, equality, freedom, solidarity, diversity and democracy.

The process of secularisation in Europe and especially in the Netherlands was a motive for writing *De toekomst van het christendom* (The Future of Christianity, 2007). The development of Christianity from the beginning to the 21st century is analysed in relation to the modernization of society. It is also evaluated from the point of view of seven fundamental dilemmas: institute and movement; orthodoxy and religious liberalism; political involvement and mysticism; tradition and renewal; rationality and mystery; democracy and leadership; unity and diversity. One of the conclusions is that Christianity has often chosen a one-sided answer to these dilemmas. A search for equilibrium between the two poles of these dilemmas would have been better tuned to the survival of religion in a modernizing society.

The growing intolerance towards immigrants and Muslims motivated me to writing *De Donkere Onderstroom* (The Dark Undercurrent: Extreme Behavior in Politics and Society, 2008).

When people ask me why I write, my stereotyped answer is: "My goals are to achieve more clarity, and to improve the world. The former has succeeded rather well, the latter much less so to date".

One reviewer suggested that my impulse to continue working could be explained by Max Weber's theory on Calvinists' restless professional labour. My answer to that is that I was born into a Calvinist family, but already chose liberalism in religion, and social democracy in politics when I was young.

As far as the social sciences are concerned, I am convinced that the key words for good scientific work are objectiveness, systematics, analysis, and exactness. In my view, these key words are applicable to evaluations as well as to empirical research and theory.

Social sciences can and should combine realism and idealism. Empirical research that is not inspired by philosophy runs the risk of becoming trivial and cynical. Conversely, philosophy that ignores empirical evidence easily becomes unreal.

Biosketch A. Hoogerwerf

Andries Hoogerwerf was born on 11 March 1931 in Delft, in the Netherlands. He studied political science at the Vrije Universiteit in Amsterdam, became lecturer and associate professor of political science at that university (1960-1969), professor of political science at the Catholic University in Nijmegen (1969-1975), and professor of policy science at the University of Twente in Enschede (1975-1993).

He has been chairman of the Netherlands Political Science Association and other professional organizations, as well as editor of several scientific journals for many years.

He is a member of the Royal Netherlands Academy of Sciences, and knight in the Order of the Dutch Lion. He received the Kluwer award for Social Sciences for his dissertation, and the G.A. van Poelje award of the Dutch Association for Public Administration for his scientific work in public administration.

Andries Hoogerwerf is married and has three daughters. To his hobbies belong walking, cycling, modern literature, and theatre.

Selected Publications

Hoogerwerf, A. (1964). *Protestantisme en progressiviteit* [Protestantism and progressivism]. Meppel: Boom.

Hoogerwerf, A. (1972, 1979). *Politologie* [Political science]. Alphen aan den Rijn: Samsom.

Hoogerwerf, A. (Ed.)(1978, 8th printing 2008). *Overheidsbeleid* [Public policy]. Alphen aan den Rijn: Samsom/Kll.

Hoogerwerf, A. (1990). Reconstructing policy theory. *Evaluation and Program Planning*, 13, 285-291.

Hoogerwerf, A. (1992). The market as a metaphor of politics. *International Review of Administrative Sciences*, 58, 23-42.

Hoogerwerf, A. (1995). *Politiek als evenwichtskunst* [The balance of politics]. Alphen aan den Rijn: Samsom (new ed. Budel, Damon, 2003).

Hoogerwerf, A. (2001). *De onweerstaanbare gelijkheid* [The irresistible equality]. Budel: Damon.

Hoogerwerf, A. (2002). *Wij en zij: Intolerantie en verdraagzaamheid in 21 eeuwen* [We and they: Intolerance and intolerance in 21 centuries]. Budel: Damon.

Hoogerwerf, A. (2006). *Vooruitgang en verval* [Progress and decay]. Budel: Damon.

Hoogerwerf, A. (2008). *De donkere onderstroom: Extreem gedrag in politiek en samenleving* [The dark undercurrent: Extreme behavior in politics and society]. Budel: Damon.

Epilogue

The EU Strategy for the Human Resources in Science and Technology: Career and Mobility of Researchers in a new ERA*

Introduction

The discussion on how to create an attractive and competitive European labor market for researchers is embedded in the Lisbon Strategy, which aimed at making Europe within a decade a leading knowledge based economy in a competitive world. The Lisbon Strategy endorsed the project and the ideas set out in the Commission Communication for creating a European Research Area (ERA), which was issued in 2000¹. The ERA was indeed launched at the Lisbon European Council of March 2000 and was conceived as a means of coordinating national and European research policies in terms of objectives, research programs, research infrastructures, expertise and resources.

The ERA is about creating a genuine European 'internal market' for research and a single labor market for researchers. Europe faces growing global competition for the best talents and demographic challenges. Recent years saw a considerable increase in EU policy measures and actions for the career and mobility of the human resources in science and technology. Shortages in research personnel became a major issue of concern. Another major issue of concern was how to prevent highly skilled personnel and talented researchers from abandoning their careers in Europe in favor of more lucrative opportunities in the US and elsewhere. How to increase the global attractiveness of Europe as a research infrastructure base for competent researchers from all around the world has become an equally important issue. For Europe to become a leading knowledge based economy, the European Commission proposes now a new partnership with the EU Member States and new measures and actions in order to ensure that the necessary human resources in science and technology are available in ERA.

* The editors are grateful for the encouragement of the EC Directorate-General for Research, who helped us to bring the Epilogue to a favourable conclusion.

¹ Communication from the Commission, *Towards a European Research Area*, COM (2000) 6

Europe needs researchers: The mobility and career strategies for the ERA

With a view to improving policies and better investment in research, ERA would have not been just research funded by the Commission. ERA would have to be based on well-articulated interactions between the European, national and regional policy making processes, the totality of European research irrespective of the funding source.

One of the key issues in the ERA Communication was how to increase the number of highly trained researchers in Europe. The ERA Communication urged the need to develop an integrated European strategy for the career and mobility of the human resources in the EU. It drew special attention to increasing mobility of researchers as an instrument for the transfer of knowledge. This entailed introducing a European dimension to scientific careers; preventing Europe's best scientists from abandoning their careers in Europe in favor of more lucrative opportunities in U.S. and elsewhere; and making indeed Europe a more attractive place for researchers from all around the world.

One year later in 2001 the European Commission published the Communication for the Mobility Strategy for the ERA². The Communication raised serious concerns with regards to the shortages of the human resources needed in ERA. Europe is suffering from a brain drain of researchers, particularly to the US. Its level of researchers per capita of the workforce is lower than both the US and Japan. The take-up of science and research among young people is also lower than both the US and Japan. Women are under represented in the research sector and often discriminated against in Europe. Notwithstanding the fact that the EU is a source of highly skilled researchers for other knowledge based economies, reliance on the migration of suitably qualified workers from outside the EU would not be sustainable in the long term. Adding to these the aging of human resources in science and technology, it becomes apparent that the shortage of researchers is a very serious problem to reflect upon.

Through a succession of European summits from Lisbon in March 2000 to Barcelona in March 2002, the strategic European goal was set by the Heads of States and Governments: an increase in the average research investment in the EU from 1, 9% of GDP to 3% of GDP by

² Communication from the Commission, *A Mobility Strategy for the European Research Area*, COM(2001) 331 final

2010 (of which 2/3 should be funded by the private sector). Thus, addressing the shortages of supply of high qualified researchers was not only a necessary condition for advancing the knowledge based economy. It became also an important factor for attracting and sustaining increasing investment in research³. The 3% objective would not really make sense without sufficient numbers of highly skilled and motivated researchers. In addition to replacing aging research personnel, it was estimated that between 600,000 and 700,000 more researchers would be needed in order to reach the objective of investing an average 3% of GDP in research by 2010⁴.

Barriers to researchers' mobility in Europe became obstacles to the creation of the ERA. Increasing the quantity of highly skilled researchers, retention of researchers, and attractiveness of research careers, are some of the key words, which have been constantly used over the recent years when working towards the development and implementation of Community actions for human resources in Europe and when discussing the necessary conditions for creating a true and open European labor market for researchers.

Towards a single labor market for researchers: Community actions for the professional development of researchers in ERA

It is true that many EU actions for researchers at the European level have been gradually developed since the launch of the ERA in 2000⁵. The European Researcher's Mobility Portal was launched in 2003 for researchers seeking to advance their careers and personal development by moving to other countries. It provides information about training grants and jobs. As a complement to the Portal, the European Network of Mobility Centers (ERA-MORE network) was launched in 2004 and now comprises 200 Mobility Centers in 35 countries and provides tailor-made assistance to mobile researchers and their families.

³ Report of the High Level Group on Human Resources for Science and Technology, *Increasing Human Resources for Science and Technology in Europe*, April 2004.

⁴ For Key figures 2005 for science, technology and innovation See: www.cordis.lu/indicators/

⁵ Commission Staff Working Document, *Mobility of Researchers and Career Development*, Implementation Report 2006

After broad stakeholder consultations in 2005, the European Commission adopted the European Charter for Researchers and Code of Conduct for their recruitment (European Charter and Code). The Charter and Code aim to provide equal rights and obligations for individual researchers throughout Europe by specifying the roles, responsibilities and entitlements of researchers, as well as those of funders and/or employers of researchers. Both documents are aimed at encouraging and developing best practice across Europe.

In 2005, the Council of Ministers has adopted the Commission's proposal for a Directive and two Recommendations introducing a 'scientific visa' to enable the creation of a specific residence permit for third country researchers, independent of their contractual status. In effect, the 'scientific visa' is the World's first legislative effort supporting researchers' mobility and constitutes a first legislative step towards opening the European labor market to the best talents from all over the world. Besides the legislative action, Commissioner Potočník launched officially in the U.S. in 2006 the ERA-Link initiative to network researchers outside Europe with membership in the U.S. reaching 3 000 in the first year and steadily growing. ERA-LINK Japan will be launched this year and ERA-LINK China in 2009.

The financing of researchers' cross border mobility and career development is a necessary condition of a genuine European labor market for researchers. Marie Curie' actions as well as support to visiting programs for larger European research infrastructures, has opened a plethora of crossing borders opportunities. This has facilitated enormously the moving of young and senior scientists wanting to expand their research experience and life-long learning in another European country to both the public and the private sectors.

The 7th Framework Program 2007-2013 with a total budget of €54 billion for research is now in full swing. Through the 'People Program', the Research Infrastructures and the 'Ideas' Specific Program, to name few of the major programs for research training and career development, FP7 will invest considerably in new opportunities for researchers and the financing of their career moves, either geographically or between sectors.

Rethinking ERA and realizing a single labor market for researchers: Green paper and the European partnership for researchers

There has been a widespread debate recently on the future of ERA and a renewed strategy for researchers. The Commission has published the Green paper 'European Research Area: New Perspectives' in April 2007⁶. The report reviewed progress and raised a number of questions on how to deepen and widen ERA in order to boost its contribution to the renewed Lisbon Strategy for growth and jobs. The report draws on over 1000 responses to the public consultation on the Green Paper. The consultation results show that the original ERA objectives remain valid and relevant. 'Researchers' careers and mobility', 'international cooperation' and 'research infrastructures' were identified by the respondents as the three most important areas in terms of need for action at the EU level. While there is little demand for binding legislation, there is significant support for considering legislative action to improve the careers and mobility of researchers, as well as for a new-binding legal framework for pan-European research infrastructures.

"Some progress has been made" states the Commission's Green Paper on new Perspectives for ERA. Nevertheless, careers and mobility, international cooperation, research infrastructures, joint programming and knowledge sharing remain today the main concerns of European research actors. Following the publication of the Green Paper on ERA, the Commission appointed a number of expert groups to look into specific aspects of these five areas of concern and help the Commission to prepare proposals for concrete initiatives in 2008.

Mobility, recruitment, gender, social security and the Charter and Code of Conduct were just some of the topics highlighted by the ERA Expert Group for Researchers⁷. On recruitment and careers, the expert group recommends that the entire process becomes as transparent as possible well in advance, together with the selection criteria. A major barrier to mobility is insecurity regarding the transferability of social security and pension rights and the Expert Group calls for the Commission and Member States to ensure greater coordination of social secu-

⁶ Green Paper, *The European Research Area: New Perspectives*, COM(2007) 161 final

⁷ European Commission, *Realising a single labour market for researchers*, Report of the ERA Expert Group, EUR 23321, 2008.

rity systems and make the most efficient 'use' of retired, still active scientists.

The group urges the Commission to promote awareness of the European Charter and Code among both senior and junior scientists and calls the funding agencies to make the principles with regards to recruitment, working conditions and social security an integral part of their grant conditions. Political will and commitment could be boosted by a label awarded to institutions that apply the Charter and Code principles.

The concrete proposals for action came soon after from the Commission in the Communication 'Better careers and more mobility'⁸, which called for a new partnership with the Member States for the human resources in ERA. Alongside renewed efforts for the adoption of the European Charter and Code, proposals for action include the following key areas: the systematic opening up of recruitment; meeting the social security and pension needs of mobile researchers; providing fair employment and working conditions; and ensuring that researchers have the necessary training skills.

The Member States are expected to adopt a national action plan early 2009 setting out specific objectives and actions to achieve the aims of the partnership. In 2010, an overall evaluation of the situation and results from actions will be made and the need for further EU action to address specific outstanding issues will be considered.

Enhancing the contribution of researchers after their retirement in ERA

Considerable efforts have been made to collect systematic data on the full extent of human resources for science and technology in ERA. In cooperation and with the support of the Directorate General for Research, the Joint Research Centre (JRC) has undertaken the Integrated Information System on European Researchers (IISER) project. It aims at setting up a sustainable European-wide information system to provide a dynamic overview of researchers' stocks, flows, mobility career development and motivations.

Overall, the IISER system is building on three components: Stock taking of new statistics developed by Eurostat and OECD, and notably

⁸ Communication from the Commission, *Better Careers and More Mobility: A European Partnership for Researchers*, COM(2008) 317 final

via the CDH (Career of Doctorate Holders) project; improvement to current data collection with ad-hoc surveys launched by IPTS; and regular up-dating and analysis of statistics and qualitative information.

The stock of researchers in full time equivalent in Europe has been growing at a rate of 3% a year for the past ten years. According to the estimations made, there would have been about 1.95 million researchers in head-counts the EU25 in 2007⁹ (1, 31 million in full time equivalent). Medium term forecasts show that the number of researchers in the EU25 is estimated to be nearly 2, 1 millions in 2010 (1, 4 million in full time equivalent).

In 2006 some 6% of the EU human resources in science and technology were non-nationals (*i.e.* citizens of a country other than their country of residence). These non-nationals were divided between citizens of other EU countries and citizens of countries outside the EU. Overall, throughout Europe the mobility of researchers remains still limited, as only 3% of these highly skilled employees in the EU countries are citizens of another EU country¹⁰.

Some progress has been made but there is still a lot, which needs to be done to ensure that human resources are available, improve their carriers and increase their mobility in ERA. The upcoming retirement of researchers is now combined with a declining interest of young people in scientific careers. This situation invites us to reflect on dedicated actions aiming at enhancing the contribution of the scholars and researchers after their retirement:

- For a start, we suggest to improve quantitative data and statistics collection with regard to this potential pool of researchers;
- Quantitative data should be collected on issues such as how many researchers wish after their retirement to remain active producers and disseminators of knowledge and expertise? A survey of the attitudes and activities of senior researchers who had retired three to five years earlier might provide us with useful insights into the interest of retirees in continuing to carry out research and disseminating their knowledge;
- There is need also for collecting information about the national policies and the practices of academic authorities with regard to retired

⁹ European Commission, Joint Research Centre (IPTS), *The stock and forecasts) of researchers in the EU*, Draft IPTS 2007

¹⁰ Eurostat, Statistics in focus, *How Mobile are highly qualified resources in science and technology?* , 75/2007

- researchers. Data and information will help us identify as well as exchange best practices in ERA;
- Last but not least, new measures and mobility schemes should be explored, which suit better the needs of senior retired researchers.

Conclusion

Since the establishment of ERA in 2000, the EU has undertaken many policy initiatives and developed actions aiming at improving the career and mobility of researchers. It has been increasingly recognized that the economic potential of the EU is ultimately dependent on the skills and mobility of highly trained people that transfer knowledge and ideas. Measures and actions have concentrated on how to increase the numbers of highly skilled researchers and improve cross border mobility as well as mobility between academia and industry. To make ERA a leading knowledge area in the world, there is still a lot to be done. In 2007, the Green paper on the future perspectives of ERA, called for new efforts and actions. The Commission seeks now a renewed partnership with the Member States for making the free market of researchers a reality. ERA needs more researchers as well as the experience of those researchers, who wish to remain active producers and disseminators of knowledge after their retirement.

About the Editors

Fascinated by Progress in Sociology and Social Methodology

Henk A. Becker



When my parents married, my mother changed her nationality from Dutch to German. In 1945 my father died. My mother, my brother and I then migrated to The Netherlands, which, at that time, meant that I had to integrate into Dutch society as soon as possible. Starting from scratch, I acquired a working knowledge of the Dutch language within three months. I was thirteen years old and learning a new language was relatively easy. Coming to grips with the Dutch pattern of culture took much more time, however. During the last years of my secondary education, I combined a full-time administrative job with evening classes at a private school.

After completing my secondary education, I enrolled at Leyden University as a law student. In my second year, a series of lectures by Professor Van Heek, a sociologist, made a great impression on me. I had a 'déjà vu' experience: what Van Heek told us about patterns of culture and their dynamics appeared remarkably familiar to me. No wonder – I had acquired the Dutch cultural pattern under circumstances of high pressure when I was a teenager. Van Heek's course required the students to write an essay. When my essay was discussed, I was absent, but afterwards I was told by fellow students that an assistant professor running the paper session had told them: "From his essay, I have the impression that Henk Becker has been studying sociology for some years." Stimulated by Van Heek's lectures and the remark by the assistant professor, I decided to switch from law to study sociology – a decision I have never regretted.

After obtaining my BA in sociology, I took a full-time job as a sociologist at a government department and worked on my MA in sociology in the evenings, which I duly received 'with honours'. Shortly afterwards, the Rotterdam School of Economics (RSE), now called Erasmus University Rotterdam, started a faculty of sociology and I was invited to become the head of its research centre. I also became an as-

sistant professor in the sociology of policy studies. In the meantime, I wrote my doctoral dissertation on a topic on the sociology of occupations. The fieldwork focused on the careers of top and middle managers, and also on the supply of and demand for managers in the Netherlands. My research project drew some attention, because I ran a program on the RSE's brand new computer that generated random numbers – this was one of the first computer simulations in Dutch sociology.

The year that I defended my thesis, I was also appointed full professor at Utrecht University. At that university, I had two chairs: one in sociology, the other in the methodology of social research.

Working as a sociologist in Utrecht

In November 1968, I started my job at Utrecht University – right in the middle of a large number of students and young staff members' 'cultural revolution'. My very first lecture was interrupted and the trouble continued for quite a while. At a mass meeting, a student quite openly fired a pistol at me. Luckily it turned out to be a fake one. In 1971 I was appointed dean of the Faculty of Social Sciences and I remained in that position for two years. In 1973/1974 I was a fellow at the Netherlands Institute of Advanced Studies in Humanities and Social Sciences (NIAS).

The year at NIAS offered an opportunity to plan my research and teaching for the years to come. I decided to arrange my reading, writing and teaching around three themes: (1) general sociology, specifically life courses, (2) the methodology of applied social research, and (3) the state of the art in sociology. This arrangement implied that I would do research and publish on two specialist areas. Reading about the state of the art allowed me to acquire a broad view of the discipline, which I needed to teach general sociology, while also permitting me to publish on this subject area.

I had the good fortune to become a member of a research group of economists and sociologists, the latter combining general sociology with policy studies and consultations. The research group not only offered courses to BA and MA students, but also to post-graduates. Furthermore, this research group was characterized by the close integration of its members and a warm social climate. Owing to retrenchments, the research group had to close its doors in 1990. Together with a number of members of my old research group, I joined an organizational unit

specializing in sociological theory and methodology. The 'Interdisciplinary Centre for Social Theory and Methodology' was an early adopter of the strategy of focusing on publishing in English in international scientific journals, keeping an eye on citation indexes and anticipating ranking procedures in the world of science.

Preparing for retirement

Approximately fifteen years before my formal retirement, I decided to prepare for this event with great care. I started off by withdrawing from as many committees, consultant positions, etc. as I could, since I had decided to continue to work in the three areas I had initially chosen. I would, however, specialize more systematically in a restricted number of subjects.

In 1985, 13 years before my formal retirement, I started to publish on *generations*. In 1988/1989 I again spent a year at NIAS where I coordinated an international group of scholars from demography and sociology, focusing on life histories and generations. At the end of that NIAS stay, a symposium was organized, followed by the publication of its proceedings. From that time on, I concentrated on studying generations, earning a reputation as 'a sociologist of generations'.

Plants, animals and patients have life courses. In biology and epidemiology, research on life courses and cohorts has advanced considerably. Sociologists and related social scientists can profit from these advancements. Since the 1970s, many countries have undertaken a large number of social surveys of life courses and the data from these surveys have mostly been deposited in data archives. Consequently, social research can profit from a huge set of data that is awaiting secondary analyses at relatively low costs. Research on generations requires an analysis of (a) one or more non-linear changes on a macro level, (b) the effects of these macro changes on the behavior of individual social actors in their cohorts, (c) the clustering of cohorts afflicted by these changes, and (d) their effects on culture and institutions. The cohorts and generations research area is not only blessed with advanced research methodology and an abundance of data, it also profits from developments in society that call for analysis and policy formation. This specifically applies to the consequences of demographic irregularities. In 1946, the first baby boom cohort was born in most Western countries. The late baby boomers were born in 1970. In the first half of the 21st century, the greying of the population will have serious conse-

quences. Will the baby have to pay for the boom? Research on these developments is regarded as having social relevance.

With regard to *research methodology*, I specialize in a type of ex-ante evaluation called social impact assessment (SIA). Focused on cohort analyses, I concentrated on publishing textbooks and articles on SIA. I joined the International Association for Impact Assessment, serving as its first non-American president in 1991/1992. In 2000, based on my research on and teaching in the area of social impact assessment, the IAIA bestowed the Rose-Hullman Award on me for my contribution to demographical impact assessment.

I furthermore continued to analyze the recent history of the *state of the art* in sociology and the future development of this discipline. A major trend deflection occurred in the early 1980s: internal conflicts were reduced and each of the major traditions started to concentrate on making progress with regard to their specific ambitions. In my publications on changes in sociology, I elaborated on the outcomes of these campaigns. I tried to prove that the discipline had joined the vanguard in the social sciences.

Enacting social roles after retirement

Since formally retiring in 1998, many of my activities have been closely related to what I did before. I consequently do not regret the energy spent on preparations for the period after my formal retirement. I continued working approximately four days per week. After that period, I changed my pattern of activities. I went to the university on Tuesdays only, working at home on the other days. Gradually, I reduced my workload to about twenty hours per week.

I have been able to stay active in my former social network. After ten years, I still communicate regularly with many former colleagues and students through face-to-face contact, but mostly on the Internet. I often do research and publish together with former students and assistants, many of whom have been appointed full or assistant professors and some of whom have their own research companies.

In retirement, I am enacting a role set, and most of these roles partly overlap. In research on the activities of retired academics, I discovered that many of my fellow retirees enact role sets similar to mine.

Publishing and doing research

My fascination with generations has remained. I published on the theory of generations and also completed a research project on ‘Technology Generations’. I am still engaged in a research project on generational differences and language barriers, combining this analysis with the development of a multilingual communication system called *Linguafranca*[®].

The last ten years I have constantly tried to discover the causes of a number of the persistent confusions in the discussion on generations – both in sociology and in related disciplines. In 2008, an article on this subject will be published in the ‘Zeitschrift für Familienforschung’.

In 2006, the Faculty of Social Sciences of Utrecht University published a book on its history. I contributed a chapter on the history of sociology at this faculty, summarizing my conclusions regarding recent developments in sociology in general, and at Utrecht in particular.

Teaching and lecturing

I continued to supervise doctoral dissertations until the age of 70. From that moment onward, I no longer had the legal right to be a supervisor. I have therefore restricted myself to participating in ceremonies.

For some years I continued to present a course on the ‘University of the Third Age’ that Utrecht University offers in co-operation with other institutions. The course I presented dealt with looking back at the twentieth century and exploring the next century.

By means of video-conferencing facilities, I acted as a guest professor at the University of Johannesburg in South Africa. My contribution to a post-graduate course at that university dealt with the application of social impact assessment. I used an approach called evaluation and design. During the video-conferencing sessions, the participants and I evaluated a regional development plan and designed an alternative plan.

I also presented a course to foreign students preparing for their doctoral dissertation at Utrecht University. In ‘Ars Promovendi’, I introduced them to the strange cult surrounding the defence of a doctoral dissertation at a Dutch university.

Consulting

Strangely, my work as a consultant was almost never called ‘consulting’. Instead, I was invited to present courses on social problems, ap-

plied research (such as social impact assessment) and the methodology of social change. The participants in these courses were managers and scientists working at the host organization.

Sometimes, consulting by a sociologist includes practical interventions, like guiding an experimental innovation. In other disciplines, activities like these are called ‘clinical activities’.

Managing

For three years, I co-ordinated a platform for retired professors at Utrecht University. After that period, I continued to contribute to the activities of this platform by, for example, stimulating co-operation between retired academics in the Netherlands.

In 2006, I co-ordinated a science court on ‘Creativity in science, art and religion’ held in honour of the 365th anniversary of Utrecht University. In 2007, I co-ordinated a symposium on ‘Progress in Science and the Survival of Faith’ organized in honour of the 20th anniversary of the Utrecht Summer School.

Maintaining an infrastructure for my work

Utrecht University allows me to share an office with a colleague in its main building. In 2000, I started a small business, the ‘Utrecht Centre for Applied Sociology’, which is an institutionalized framework for research projects and similar activities that generates funds for my work in science.

Continued fascination with the dynamics of sociology

One of the prime movers of my work in sociology has been, and still is, a fascination with this discipline’s struggle for a fair position in the world of science. The disciplines in science are engaged in a zero-sum game. Each discipline fights for the top position in this hierarchy, or at least a relatively high position. As a rule, research programmes in sociology comprise three phases: an exploratory phase of qualitative research, a main phase of quantitative research and a retrospect phase of qualitative interpretation and historical positioning. Other disciplines criticize sociology for its ‘soft’ aspects, ignoring the structure of the average research programme. Furthermore, rival disciplines criticise sociology for its accomplishments in the main phase of its research programmes. As a rule, the critics refuse to acknowledge the advances made and the vanguard position achieved. Confronted with all this

criticism, sociology nevertheless continues to fight for recognition. Societal change, like increases in social inequality, growing tensions and conflicts, demographic irregularities like the baby boom and the baby bust, and the quest for a knowledge society, comes to its rescue. These instances of societal change lead to a growing demand for sociological research, interpretation, and policy formation. I am still fascinated and inspired by sociology's struggle for survival and recognition.

Biosketch H.A Becker

Henk A. Becker [Heinz Alfred] was born in Greifswald, Germany in 1933. His father, a Ph.D. in theoretical physics, was employed as a researcher at the Medical Faculty of the University of Greifswald at that time. Later, he was appointed director at a research centre in Berlin.

- 1936: the family moves to Berlin;
- 1945: his father, a civilian, dies. His mother, his brother and he migrate to the Netherlands in 1946 to live with family for a number of years;
- 1950: with his mother and brother, he moves to The Hague;
- 1953: he enrolls as a student at Leyden University, first in the Law Faculty, two years later in Sociology;
- 1958: he obtains an MA in sociology at Leyden University (honours);
- 1956–1964: he serves as a staff member at a government department;
- 1964–1968 : he is appointed assistant professor in sociology of policy studies at the Institute of Sociology at the Rotterdam School of Economics, now Erasmus University Rotterdam. He is also appointed head of the research section at the Institute of Sociology.
- 1968: he acquires a Ph.D. in sociology at the Rotterdam School of Economics. In the same year, he is appointed professor of sociology as well as of methodology of social research, at Utrecht University.
- 1996: he becomes a Knight in the Order of the Dutch Lion.
- 1998: he formally retires as professor of sociology as well as of methodology of social impact assessment, at Utrecht University
- 2000: he is awarded the Rose-Hulman Award by the International Association for Impact Assessment for his contribution to research on the demographic aspects of social impact assessment.

Henk Becker is married to Johanna Enzlin. The couple has two daughters and two grandsons.

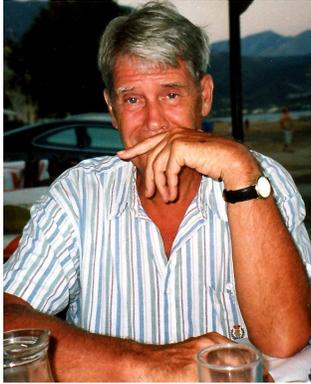
Selected Publications

Bryant, C.G.A. & Becker, H.A. (Eds)(1990). *What has sociology achieved?* London: MacMillan.

- Becker, H.A. (1992). *Generaties en hun kansen* [Generations and their opportunities]. Amsterdam: Meulenhoff.
- Becker, H.A. & Hermkens, P.L.J. (Eds)(1993). *Solidarity of generations: Demographic, economic and social change and its consequences*. Amsterdam: Thela.
- Becker, H.A. (1997). *Social impact assessment: Method and experience in Europe, North America and the developing world*. London: Routledge.
- Goor, A.-G. van de & Becker, H.A. (2000). *Technology generations in The Netherlands, a sociological analysis*. Maastricht: Shaker.
- Becker, H.A. & Verhoeven, N. (2001). *Utrechtse emeriti, een sociologische verkenning* [Retired professors at Utrecht, a sociological exploration]. Utrecht: Utrecht University.
- Becker, H.A. & Vanclay, F. (Eds)(2003). *The international handbook of social impact assessment, conceptual and methodological advances*. London: Edward Elgar.
- Becker, H.A. (2005). De geschiedenis van de sociologie [History of sociology]. In W. Koops, H. van Rinsum & J. van Teunenbroek (Eds), *De sociale wetenschappen in Utrecht, een geschiedenis* [The social sciences in Utrecht, a historical account] (pp. 227-250). Hilversum: Verloren.
- Becker, H.A. & Sanders, K. (2006). Innovations in meta-analysis and social impact analysis for tech mining. *Technological Forecasting and Social Change*, 73, 966-980.
- Becker, H.A. (2008). Karl Mannheims 'Problem der Generationen' – 80 Jahre danach. *Zeitschrift für Familienforschung* (in print).

Late Bloomer

Johannes J. F. Schroots



I was born in the ruins of bombed Rotterdam on June 5, 1943 – which makes me a war child – with dental problems that were to bring staggering dentist bills for the rest of my life. Sixty-five years on and retired against my will, I am now experiencing first-hand the late-life effects of early experiences. This confrontation with *Janus*, the Roman god of the human life-course, is now becoming all too intense, but let me start at the beginning.

My father was an office clerk, who survived forced labor by the Nazis, lent a helping hand to the Dutch resistance, and went into hiding during the last years of war to escape the raids of the German occupying forces. He worked very hard and ended his career as executive director of an international shipping company. My mother, in spite of her many talents – she was a fairly good actress – and much to her regret, remained a housewife. That is how things went in postwar, pre-empted Holland. She took care of me and my older brother, who was born at the beginning of the World War II. My younger brother, the third and last child in the family, was born just after the war. The orthodox Roman Catholic faith of my parents, which strictly prohibited the use of contraceptives, explains why we were born in spite of the terrible war conditions.

All studies of autobiographical memory show that there is a very special period in life, the ‘bump’ period between the tenth and thirtieth year, which middle-aged and older adults have more memories of than is to be expected on the basis of the classic forgetting curve. In the *bump* period of their lives people start dating, have their first relationships, are educated, look for their first job, feel physically strongest, become politically aware, go to the best movies of their life, read the most memorable books, listen to their most loved music, and experience their most intensive learning. The *Janus theory of life-course dynamics* explains the disproportionately high recollection of memories from the bump period in terms of maximal neurophysiological encod-

ing and storage of information. That is why I have modeled my life story according to this theory, which says that life experiences from the bump period have a crucial influence on a person's life and career.

Adventure

Postwar Rotterdam was a heavily mutilated city, where urchins had the time of their lives playing in the deserted neighborhoods among the ruins of bombed-out houses and half-built apartment buildings. I had a free spirit and together with my elder brother and a boy from our block we loved to spend all day exploring our area. We took sandwiches with us and set off on adventures, preferably to garbage dumps in the neighborhood where the most exciting things were waiting to be discovered under the debris: a broken toilet bowl, parts of stairways, doors and windows, a rusty spring mattress, shards of glass in all colors of the rainbow, and, most of all, lots of rubble. Everything was broken, rusty or in an advanced state of decomposition, but we could not have cared less. We wished for nothing more than to throw stones, hammer at broken sinks with an iron bar, collect indefinable parts and study the mechanics of a lavatory. I was driven by a searching mind and believe that I picked up my later interest in the study of aging at the garbage dump. *Nomen est omen* – the name is a sign. Given the start of my life, it is with good reason that I bear the name of Schroots, which means 'scrap' or 'junk' in English.

Discipline

One bad day – I was barely eight years old at the time – my family moved to Amsterdam. At a stroke I lost almost everything: my friends, the street and the areas of wasteland, the neighbors who took care of us, granddad and grandma, and all the other members of our extended family. Overnight I became a good boy, who lived in the classy neighborhood of South Amsterdam, studied the piano, attended a reputable Catholic boys' school, and was teased about his heavy Rotterdam accent, which I have never completely got rid of. Some language functions reach their zenith at a very early age. Apparently, my time window for learning a different accent had nearly closed. Modern language instruction ought to be more sensitive to primary, biology-driven language systems.

When I was in sixth grade my grades were good enough for me to take the entrance exam for the elite classical department (Gymnasium) of *Ignatius College*, the Catholic high school for day students run by Jesuits, the Counter-Reformation soldiers of Christ. There was a strict, almost military regime with a rigid schedule: mass at 8:00, classes from 9:00 to 4:30, homework, piano study, and bedtime at 9:00, day after day. When I reached the fourth year, I had to choose between the *alpha* and *beta* department. Alpha emphasized the humanities, beta the sciences. Despite being a mediocre student I chose the harder beta section, to keep all options open when it came to deciding on a university. My choice did not please the Jesuits, as too many beta students meant they would have to create an extra class, which cost money. My parents were immediately put under pressure to make me change my mind, but after begging and pleading with my father I was allowed to go to the beta section. Sticking to one's guns in the face of opposition definitely helps build character. No doubt the key to my highly idiosyncratic career as a scholar, in which I faced problems and always chose meaning and content rather than status and power, originates from this period.

Freedom

During my last few years in high school I had a hard time deciding what career to pursue. I wanted to go to university, of that I was certain, but not of which subject to choose, as I was interested in almost everything. What's more, I was quite a good piano player and also thought the school of music had its appeal. After a long period of considering medicine and psychology, I chose the latter, in combination with the preparatory class of the Amsterdam School of Music (Conservatory). I may have a hard time making up my mind, it must be even tougher for the present generation of high school students, considering the countless new subjects they have to choose from.

Within a year psychology turned out to be the perfect choice, whereas music school proved to be a flop and I dropped out. I hadn't realized that studying the piano professionally requires at least four hours of practice every day, and that there are minor classes to take as well. It took me at least two years before I had the courage to look the hard truth of my failure straight in the eye – in music I was and still am a mediocre talent and I had never had before the experience of mediocrity. The disillusion was so severe that it was at least another ten years before I touched the piano again. Nevertheless, I am still proud that as a

second-year student of psychology I played the *concertante* harpsichord part of Bach's *Fifth Brandenburg Concerto* on a harpsichord with a piano action, and accompanied by a student orchestra. Nowadays I play a real harpsichord.

Psychology was an easy study for a student with a background in the sciences and also offered various links to other academic fields, from physiology to mathematics and from philosophy to history. In the course of the six years I spent studying psychology I was able to satisfy my growing interest in scientific research by working as a research assistant at the Free University in Amsterdam (VU, Department of Physiology), the University of Southern California (USC, Andrus Gerontology Center), the TNO Institute for Perception (IZF, Soesterberg), the TNO Institute of Preventive Health Care (NIPG), and the Netherlands Institute of Brain Research (NCIH), in that order. The VU and NCIH gave me an elementary training in neurophysiological behavior research; at the TNO Institute for Perception I was initiated at top level in the mysteries of experimental memory research, under the supervision of Andries Sanders (and I have three co-authored articles on 'Cognitive categories and memory span' to show for it, published in the *Quarterly Journal of Experimental Psychology*, 1968-1969); USC and the NIPG put the final stamp on the rest of my 'career', although it was then not done to use the word career, as it betrayed ambition, something you weren't supposed to have in the academic world of those days.

The Danish philosopher Kierkegaard once said, "We are living our lives forwards, but understand it backwards". In retrospect, I can understand how the letter I wrote at the age of 23 to the world-famous gerontologist James E. Birren at USC in Los Angeles, requesting information about electronic reaction-time equipment, has led to a chain of increasingly intimate contacts, in both the professional and the personal sphere. The letter from a foreign student, a complete stranger who had yet to gain his bachelor's degree, was answered with an invitation to come and see the equipment in person in Los Angeles. I complied that very same summer in 1966, and Jim Birren – who was later to become my mentor and friend – subsequently asked me to stay on as a research assistant, but after three months I decided, homesick as I was, to return to Amsterdam. I went back to the magical center of the world (as Amsterdam called itself in those days) with its Provos and Kabouters, workers' riots, Paradiso music temple, Dam Square, hippies and all the rest. I lived and loved in the sixties and enjoyed my freedom to the full.

Work

1970 saw the end of the party called freedom. I was going to be drafted, after having gained two master's degrees, one in experimental psychology and one in industrial psychology, both with honors. I was lucky, for I was given the opportunity to spend my time in the military as a researcher at the TNO Institute for Perception (a department of the National Defense Organization), the former leading institution, where I had once, as a student, been a research assistant. I was to have been involved with the latest psycho-physiological studies; however, the pacifistic mood of the sixties had not left me unaffected. I refused to do classified military research and allowed myself to be disqualified for military service. Only later did I realize I had forfeited a brilliant career as researcher.

Because there was rent to be paid I worked for a while in such non-satisfying jobs as market researcher and adjunct secretary for the democratized VU University Council (one man, one vote). At the age of 27, single and at the end of my *bump* period (although I was unaware of that at the time), I decided to withdraw entirely from the ivory tower of science. Without hesitation I accepted a simple, part-time job as literature researcher (neuropsychology) at the TNO Institute of Preventive Health Care (NIPG, Leyden). I was fortunate to previously have been a research assistant with the multidisciplinary research project *Functional age of industrial workers*, conducted under the supervision of Hans Dirken, or I would never have got the job.

I went to work without much ambition, but certain things happen in spite of one's self. In no time I had gathered a team of multidisciplinary researchers and was doing research into children with the *Minimal Brain Dysfunction* syndrome (MBD or ADHD). I slowly extended my research to include the problem of learning disabilities, and that was also the topic of my thesis when I gained my PhD at the Free University (with Pieter Drenth as my supervisor). An important element of my thesis was the new research method I had developed. I used a combination of experimental-psychological and psychometric techniques, called *limit testing*, which allowed me to measure not only the cognitive development of 4- to 8-year-olds, but their *learning potential* as well. Unfortunately, I learned something else in this *post-bump* period: It is very difficult, nearly impossible, to combine play, work and life. If you really want to do your scientific work well, you'll have to toil in full

concentration and care not for comfort. The price to pay for quality research is high, perhaps too high for most of us.

Turning point

To some people the end of the post bump period – somewhere around your 35th birthday, when you think you have seen it all – is reason to fall headlong into a midlife crisis. No sooner had I obtained my PhD then I left for the United States, to spend a sabbatical year there on the invitation of Jim Birren. I had been granted a research fellowship by the International Fogerty Organization to study gerontology, a subject about which I was completely ignorant (I had never even heard of Alzheimer's disease). It was also a subject I wished to remain ignorant about, because the elderly came from a different planet, but I did feel attracted by the idea of a free life under the California sun. That year was a turning point in my life as a researcher.

For a start, I fell into a depression. My project manager went on maternity leave, leaving me all on my own and it turned out no one at the Andrus Gerontology Center (USC, LA) was interested in my expert knowledge of the field of cognitive developmental neuropsychology. The elderly, common gerontologist opinion held at the time, are ill and infirm and show neither growth nor development. But in a short time that had become my very problem: How does one get aging and senescence to agree with growth and development? I was wondering what on earth I was doing in Los Angeles, but fortunately I realized that there was a place for me, too, in the sun. More or less by coincidence, and later strongly encouraged by Jim Birren, I hit upon a topic that was to dominate at least twenty years of my working life: the use of *metaphor in science*.

I freewheeled as I worked on a metaphorical description of growing old and aging in the time of the life-course. With the application of metaphors in mind I also designed the first, primitive version of an instrument to map the human life-course, the *Life-line Interview Method* (LIM). This instrument was to become, in 1995, the starting point for my longitudinal research into the autobiographical memory.

With these metaphors and by using diagrams for the visual representation of developmental and aging processes I gradually came to realize that development and aging might well be the flip sides of one and the same life-course. Years later this idea, promoted by systematic thinking in metaphors and alternatives, led to a scientific breakthrough, as is de-

scribed in the *Janus model of life-course dynamics*. And so my sabbatical year in the US, where, thanks to Jim Birren, I became acquainted with a whole new field of research, has been of the greatest importance for my further career as a scientist.

But this is all ‘reason’ and ‘ambition’. Without ‘affect’ even the greatest scientist will not get far. In my case, the leading role as the love of my life was played by Marla Kleine, who many years later presented me with the two most precious gifts in my life, Anna and Eva, but at the time that was still hidden in the future.

Intermezzo

Back in Holland it was business as usual. I developed the LIM into a practical measuring instrument, did some experimental research among elderly persons who were demented or depressed and elderly who weren’t, but my heart and mind just weren’t in it. The sluggish, bureaucratic research climate at the NIPG was strangling for someone who was used to the inspiring atmosphere of a top academic institution, where it was completely normal to burn the midnight oil and go out for breakfast at three in the morning, just because your colleague knew this nice diner. Nevertheless, I was promoted and made responsible for a team of co-workers, but thank God Jim Birren came to my rescue again five years later when he asked me to spend a year at the Andrew Norman Institute (ANI) for Advanced Gerontology and Geriatrics (USC). That year meant a breakthrough in my thinking. Based on Ilya Prigogine’s revolutionary theorem about order out of chaos through self-organization, I theorized that

The aging of living systems can be conceived as a nonlinear series of transformations into higher and/or lower order structures or processes, showing a progressive trend toward more disorder than order over the lifespan and resulting in the system’s death.

I regard the result, my chapter on theory formation *On growing, formative change and aging*, as one of my most important contributions to gerontology literature. Shortly afterwards, and co-authored by my friend and mentor Jim, I published a second fundamental contribution, titled *The nature of time: Implications for research on aging*. I was 45 years old and a living contradiction of the stereotypical idea that post-bump researchers were no longer able to do creative scientific research.

I decided to go ahead on my own; together with my colleague Clemens Walta I founded the European Research Institute on Health and Aging, the ERGO foundation.

From 1990 till 1999, under the flag of ERGO and with varying success, I ran a couple of European research projects. I did this together with a colleague from the Autonoma University of Madrid (Rocio Fernandez Ballesteros) and one from the University of Bonn (Georg Rudinger) and as part of the EC Framework Programs. Looking back, I can say that I seriously underestimated what is involved with standing on one's own legs, without the support of a large research organization. In the end, the University of Amsterdam (UvA) offered to take me under their wings, but by then it was too late. Devoid of income and having been systematically sabotaged by the competition, the heavily subsidized Dutch state universities, ERGO was forced to drop out of the EXCELSA project, then just started, the multidisciplinary *Cross-European Longitudinal Study of Aging*, in which no fewer than seven countries took part. I decided to leave the market for it was and return to my *alma mater*, the Free University (VU).

Senior researcher

The various threads of research I had done in the distant and not-so-distant past finally came together at the VU. As part-time senior researcher I was given the opportunity to continue the longitudinal LIM research into the autobiographical memory and the human life-course I had started at the UvA in 1995. I worked together with my assistant Marian Assink, who gained her PhD with a thesis on this topic in 2008. The co-authored (Assink & Schroots), commercial edition (2009) will be published by Hografe & Huber (Göttingen, Germany), under the title: *The dynamics of autobiographical memory. The LIM / Lifeline Interview Method*. The special aspect of this PhD is the uninterrupted line of three generations of researchers involved with it: Pieter Drenth (Schroots' and Assink's supervisor); me, Johannes Schroots (Assink's supervisor); and Marian Assink.

Because the VU was unable to offer me a full-time position I went looking for a second source of income. Good fortune had it that at that very time Pieter Drenth, who had seen his career crowned with the Presidency of ALLEA (European Federation of National Academies of Sciences and Humanities), was looking for a part-time executive director with international research experience. After ample deliberation –

this was, after all, an administrator's office – I accepted the honor-bestowing offer. As a result, I have served the European science policy from 2001 at the very highest level, together with my executive secretary Maarten Langemeijer, for seven years. It may have been a fruitful experience, but it was not a position I felt committed to with heart and soul.

How different was the case with my theoretical study of the relation between growth and senescence. Because I believe even senior researchers need to engage in life-long learning, in 2000 I enrolled in an introductory course on computer simulation, supervised by Cor van Dijkum from Utrecht University. After seven years of struggling with the subject matter and many serendipities and Eureka's, I finally found the solution to the classic problem of the human life-course: How can the transition(s) of development into aging be explained? Essentially, the solution of the problem is that (simulated) processes of growth and senescence do not take place one after another – growth first, followed by senescence – but rather simultaneously; and what's more, from conception until death. In *the Janus model of life-course dynamics*, we present the differential equations for the computer simulation of various lifespan data from biology, psychology and demography.

I am a late bloomer. At the age of 45 I reached the first peak in my career and now at 65 I have experienced a breakthrough in my thinking about aging and the human life-course. Unfortunately, both VU and ALLEA must adhere to the legal rule that makes retirement mandatory. But I am not ready to retire and will continue to work in the field of autobiographical memory and life-course dynamics. After all, I have just begun.

Biosketch J.J.F. Schroots

Johannes J.F. Schroots (1943, Rotterdam, The Netherlands) is director of ERGO (European Research Institute on Health and Aging). He studied psychology at the Free University in Amsterdam, he received MA's (cum laude) in experimental, industrial & organizational psychology (1969, 1970) and a PhD in social science (1979).

From 1999 until mandatory retirement in 2008 he was senior gerontology researcher at the Free University and (from 2001) executive director of ALLEA (European Federation of National Academies of Sciences and the Humanities). From 1990-2000 he was adjunct professor of human gerontology at the University of Amsterdam and chair (from 1993) and projectleader (NL, from 1998) of EuGeron (EC concerted action on Gerontology: Aging, Health and Competence) and EXCELSA/Pilot (Cross-European Longitudinal Study of Aging), respectively. From 1980-1990 he was coordinator of the NIPG/TNO department of Preventive Health Care for the Elderly.

His research focuses on life-course dynamics, multidisciplinary issues of development and aging, and on the longitudinal study of autobiographical memory as measured with the LIM | Life-line Interview Method.

He is a fellow of the Andrew Norman Institute for Advanced Study in Gerontology and Geriatrics, University of Southern California, Los Angeles. He is editor of books on adult development and aging, and has published scientific articles on the psychology of aging, autobiographical memory and life-course dynamics. He is a member of the editorial boards of two international research journals, and a fellow of the Gerontological Society of America.

Selected Publications

Schroots, J.J.F. (1979). Learning potential and limit testing. In J.J.F. Schroots, *Leyden Diagnostic Test (experimental version)(LDT-E). Volume V: Cognitive development, learning potential and school achievement* (pp. 221-230). Lisse: Swets & Zeitlinger (doctoral dissertation).

- Schroots, J.J.F. (1988). On growing, formative change and aging. In J.E. Birren & V.L. Bengtson (Eds.), *Emergent theories of aging* (pp. 299-329). New York: Springer.
- Schroots, J.J.F. & Birren, J.E. (1988). The nature of time: Implications for research on aging. *Comprehensive Gerontology C*, 2, 1-29.
- Schroots, J.J.F. (1991). Metaphors of aging and complexity. In G. M. Kenyon, J.E. Birren & J.J.F. Schroots (Eds.), *Metaphors of aging in science and the humanities* (pp. 219-243). New York: Springer.
- Schroots, J.J.F. (1995). Gerodynamics: Toward a branching theory of aging. *Canadian Journal on Aging*, 14, 74-81.
- Schroots, J.J.F. (1996). The fractal structure of lives: Continuity and discontinuity in autobiography. In J.E. Birren, G.M. Kenyon, J.-E. Ruth, J.J.F. Schroots & T. Svensson (Eds.), *Aging and biography: Explorations in adult development* (pp. 117-130). New York: Springer.
- Schroots, J.J.F., Fernandez-Ballesteros, R. & Rudinger, G. (Eds.) (1999). *Aging in Europe*. Amsterdam: IOS Press. Pp. 187.
- Schroots, J.J.F. (2000). *E cinere resurgo*: Autobiography of a geropsychologist. In J.E. Birren & J.J.F. Schroots (Eds.), *A history of geropsychology in autobiography* (pp. 249-269). Washington, DC: American Psychological Association.
- Schroots, J.J.F. (red.)(2002). *Handboek psychologie van de volwassen ontwikkeling en veroudering* [Handbook of the psychology of adult development and aging]. Assen: Koninklijke Van Gorcum. Pp. 562.
- Schroots, J.J.F. (2008). *The Janus model of life-course dynamics*. Amsterdam: Stichting ERGO | European Research Institute on Health and Aging. Pp. 39.

