

## Opportunities and Challenges in an Ageing Society

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# **Opportunities and Challenges in an Ageing Society**

Edited by W.J.A. van den Heuvel, R. Illsley, A. Jamieson and C.P.M. Knipscheer

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## Foreword

The Royal Netherlands Academy of Arts and Sciences is the most prominent governmental advisory body on all matters of science. Both through individual membership and in a variety of official capacities the Academy maintains close contact with all governmental bodies associated with scientific research. The Academy also promotes national and international collaboration in education, and it is a member of the International Council of Scientific Unions, of the International Organisation of Medical Sciences and of the Union Académique Internationale.

A few years ago, the Royal Netherlands Academy of Arts and Sciences initiated the promotion of concerted expert meetings by making grants available in order to bring together a selection of internationally well-known scholars for a two or three day colloquium. Each of the invited contributors presented a paper on the topic under discussion and revised or extended his/her contribution based on the comments given. One of the selected colloquium themes in

1989 concerned the opportunities and challenges of an ageing society.

This volume contains the proceedings of the conference, held on the 26th through the 28th of October 1989, in the Conference Centre of the Academy in Amsterdam. The initial proposal for the colloquium was the result of a Dutch and British collaboration. On the Dutch side, Wim van de Heuvel, a professor in medical sociology at the Department of Health Sciences at the University of Groningen and Kees Knipscheer, a professor of sociology and social gerontology at the Department of Sociology/Social Gerontology at the Free University in Amsterdam were involved. On the British side, Raymond Illsley, the project leader of the Age Care Research Europe, a cross national research project funded by the CGC Medical and Health Research Committee of the Commission of the European Communities (DG XII), and Anne Jamieson, the research coordinator for this research project, were involved.

The editors are very grateful to the Academy for financial and managerial

support in organising this inspiring and daring enterprise of bringing together scholars from a number of different scientific areas. The financial contribution of the Age Care Research Europe also should be acknowledged. The patience of the authors has been put to the test several times; however, we hope that the end result will

prove to have been worth all efforts.

Wim van den Heuvel  
Raymond Illsley  
Anne Jamieson  
Kees Knipscheer

Amsterdam, September 1991.

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## Part I



**Introduction:  
'Opportunities and Challenges in an Ageing Society'**

**Population ageing: gloom or hope?**

Nobody challenges the basic demographic fact that the populations of the developed countries are ageing. Observers from all disciplines may be rather vague about its details - the extent and speed of the process, the periods of maximum change, the point at which demographic dependency ratios reach a peak, and the variations between the heterogeneous population structures of developed countries other than their own. The basic facts, however, are unchallengeable: we know existing age

distributions, life-expectancy is likely to continue to increase and nobody expects increases in birth rates large enough to modify the ageing tendency of the existing population significantly. Since the 1970s, there seems to be little disagreement about the social and economic consequences of population ageing. Population ageing has been seen, in scientific meetings, journalistic commentaries and political statements as a threat to prosperity, social services, inter-generational relationships, innovation and technological development. Some re-appraisals are beginning to emerge (see Gutmann 1987; Laslett 1989). The editors of this volume felt that such re-appraisals were both overdue and too limited. Their purpose in organising the workshop on which this volume is based was to stimulate a more comprehensive re-appraisal in which advantages and opportunities should receive as much attention as disadvantages and problems.

In this introductory chapter we present two quite different scenarios of the consequences of population ageing in developed, and particularly European societies. We also briefly note the

Table:  
Percentage of population aged 65 and over<sup>1</sup>

	1980	1990	2000	2010	2020	2030	2040	2050
Belgium	14.37	14.15	14.70	15.90	17.74	20.78	21.89	20.79
Denmark	14.41	15.32	14.87	16.67	20.11	22.56	24.70	23.17
France	13.96	13.79	15.28	16.26	19.45	21.76	22.72	22.33
Germany	15.51	15.51	17.12	20.35	21.74	25.82	27.60	24.48
Greece	13.14	12.28	14.97	16.76	17.80	19.49	20.99	21.06
Ireland	10.72	11.29	11.12	11.08	12.57	14.74	16.92	18.86
Italy	13.45	13.77	15.31	17.28	19.37	21.92	24.15	22.61
Luxembourg	13.52	14.64	16.74	18.12	20.15	22.38	22.03	20.28
Netherlands	11.51	12.69	13.46	15.13	18.89	22.96	24.77	22.61
Portugal	10.17	11.80	13.54	14.13	15.63	18.24	20.40	20.59
Spain	10.85	12.74	14.36	15.53	17.00	19.64	22.68	22.86
U.K.	14.87	15.13	14.48	14.61	16.27	19.24	20.43	18.74
Canada	9.51	11.37	12.84	14.61	18.59	22.39	22.47	21.34
Japan	9.10	11.41	15.20	18.62	20.92	19.97	22.66	22.30
U.S.	11.29	12.23	12.15	12.79	16.16	19.49	19.80	19.31

Source: O.E.C.D. Ageing Populations. The Social Policy Implication 1988.

<sup>1</sup> 1980 actual proportions; 1990 to 2050 projected proportions.

information and perspectives relevant to both of the scenarios presented by our contributors. Our concern is not to promote one or the other scenario but to question whether they are based on fact and thus the extent to which they can be reliably used as pointers to future events, processes and policies. Stereotypes about elderly people tend to be inherited from the past (where again they may have been stereotypes) and probably have little relevance today.

Furthermore, stereotypes about elderly individuals tend to be applied to the ageing of populations for which they have no necessary relevance - population ageing is affected by changes in all age-groups, not only by a proportionate increase of the oldest groups. The consequences of an ageing population are an amalgam of many factors; some like the age-distributions themselves are relatively predictable, but most are dependent on either biological, economic or social changes for which predictive criteria are frequently speculative. The components include:

#### *Demographic and macro-economic issues*

- future birth rates
- future life expectancy, and particularly the upper limits of survival and the proportion of the population likely to reach them
- distribution of resources between generations
- attitudes towards collective responsibility for ensuring adequate living standards for retired persons
- future levels of productivity

#### *Age groups and social relations*

- changes in kin structures and networks
- directions of inter-generational support
- numbers and proximity of potential careers
- work and other commitments of potential careers

#### *Retirement and the labour market*

- the intellectual and physical nature of

work

- the acceptability and efficacy of training older workers
- attitudes to work and retirement among older workers and employers
- age-related career patterns
- changes in the proportion of women in paid work
- the length of education, ie. the proportion of young adults not in productive work
- trends in expenditure on education
- patterns of unemployment and retirement

#### *The functional abilities and health of older people, and the implications for services*

- changes in the functional abilities of older people, their capacity to retain and learn skills
- older people as resources in the labour market and in the community
- changes in the care needs of older people and their demand for services
- intensity, efficacy and efficiency of health and social services for an ageing population

Many of these parameters, being broadly stated, contain layers of assumptions within them. The nature of the assumptions made will determine the predictions of future scenarios. It is therefore important to make such assumptions absolutely clear and subject them to closer scrutiny and testing. The two scenarios outlined below represent opposing perspectives built on combinations of alternative assumptions about the components listed above. The first, "pessimistic" scenario does not differ greatly from that frequently employed by politicians and commentators over the last 15 years. The second, more "optimistic" scenario is only recently gaining some credence.

#### **Scenario 1: A pessimistic outlook**

Scenario 1 begins with "dependency ratios" - estimates of the non-working population. It notes that, because of low birth rates in the

recent past, cohorts now moving into the work-force are relatively small compared with earlier decades. They are, moreover, smaller than the cohorts now leaving the work-force at the other end. The population of working age has thus become, or is becoming, a smaller proportion of the total population. Using the "dependency ratio" terminology, a larger proportion of the population has become dependent upon a smaller proportion of workers. The relative shrinkage of the work-force is exacerbated by two further factors: the need for longer and longer periods of training before becoming part of the work-force, and the tendency of older people to retire early. It is thus shrunk by both late entry and early retirement.

The problem is not just one of numbers. Youth, now in short supply, also means new workers with recent training in fast-moving technologies, a capacity or drive to innovate and high levels of energy and motivation. The older workers, forming a higher proportion of this ageing work-force, are more conservative, less able to innovate, less able to adapt and learn, but because of their seniority they occupy most of the positions of power and decision-making. For all these reasons an ageing work-force means a weakened economy.

That economy, however, must provide for the needs, not only of the young, but of a much increased number and proportion of elderly persons, who because of increased longevity are themselves as an age group becoming older. Elderly persons are not only non-productive but they require care - particularly the oldest among them. Much of this care has in the past come from the family and particularly from daughters. Such support is, however, less likely to be freely available because children of the old elderly are likely themselves to be elderly, and thus potentially in need of care, and those who are younger are more likely to be in full-time work as well as having children of their own to care for. This therefore implies a substantial increase in formal services, a further diversion of people out of productive

work. Elderly persons, moreover, make much more use of medical services and the increase in the old elderly is likely to mean heavy demands on residential care, and particularly the most expensive of all forms, hospital care.

Social security contributions to pay for the upkeep and the health and social care of this increased and costlier dependent group will demand a higher and higher proportion of the wage-packets of the working population. Resulting high taxation will reduce motivation and productivity and ultimately produce inter-generation conflict and a retreat from notions of collective responsibility. The younger generation may not be willing to update the incomes of older people to keep them in line with rising national standards of living.

In short, this scenario emphasises the problematic aspects of ageing societies and the "burdens" entailed in these changes.

## **Scenario 2: An optimistic outlook**

Scenario 2 accepts the basic demographic facts but does point out that the idea of general population ageing affecting developed countries equally and at the same historical point is overstated. In some countries, like for example the U.K. or Denmark, the proportion of the population aged 65 plus has already reached a peak (over 15% of the population being over 65), and further increase is not expected until after 2020. These countries have already confronted and adapted to many of the problems. In other countries, for example Ireland or the Netherlands, the proportion of the population aged 65 plus is still relatively low. The peak dependency ratio here, as well as in many other countries, will not occur before 2020; they therefore have plenty of time to adapt and, even more importantly, the pace of change is so great and the time interval so long that the impact of changes in age structures is likely to be very small compared with that of other social, economic and political change.

Most examples in Scenario 1 make the mistake of applying the demographic projections to today's economic and social conditions - whereas they should be applied to various dates in the future. For example, projections of the population should be paralleled by projections of production. These would of course be speculative, with wide margins of error, but, short of world economic disaster, they are all likely to be more realistic than the use of today's levels. Experience over post-war years has shown a steady and substantial decade-by-decade expansion in production and in standards of living. Continued into the future, even at a more pessimistic lower rate, such economic growth would more than offset population change.

The argument that ageing itself will slow down economic growth is equally suspect. It is based on unproven assertions about the relationship between individual ageing and innovation (not comprehensively analysed) which cannot be applied to population-ageing. The generation of growth is dependent upon many political, economic and social factors, which are overwhelming compared with the relatively small and gradual changes in age-structure. Scenario 1 implies continued technological change to which it is thought an older work-force would adapt with difficulty - but if technological change is built into the forecasts, so should its associated benefits, for example increased productivity or new technologies improving the health and lifestyle of older people.

Similarly, many assumptions about adaptability and adaptation of the labour market to the changing age structures are either unproven or incomplete. A major assumption is that economic vigour and the vigour of youth are linked; this is a highly dubious assumption in the modern corporatist world where decision-making structures and processes have no necessary linkage with age. The assumption about the lower ability of older persons to adapt may also be exaggerated, being based on past employment experience in which little

attempt has been made to re-train workers or, as seems more likely in the future, to make arrangements for up-dating or re-training throughout working life. It is probably true that, other things being equal, management would prefer to replace older workers with cheaper, younger workers, but things are not often equal, and the present wage/age arrangements where older persons get higher wages or salaries just because they are older, is an inherited custom which like other features of employment contracts is negotiable, and therefore in principle changeable.

Early retirement is an equally complex issue having little relationship to an ageing society. The provision of pensions at fixed ages such as 60 and 65, originally meant to supplement the incomes of persons who retired, have come to be the trigger for compulsory retirement in most countries and organisations. Shortage of human resources might be counteracted if retirement rules become more flexible and allowed, or even encouraged, those who so wished to continue working past the present retirement limits, and if work itself were made more attractive to older workers thus reducing the volume of voluntary early retirement. However, over the last decade, most early "retirement" has not been voluntary but the exaggerated impact of large-scale unemployment upon older workers, reflecting stereotypes of elderly workers and an associated discrimination against them. Since older persons have been encouraged to give up work in the late 1970s and 1980s to help solve the problems of unemployment, it is odd to hear arguments about shortage of labour caused by the early retirement of the elderly. Furthermore, it must be emphasised that projections regarding human resources should consider the potential skills of women workers, which in most countries are widely under-used.

In considering the burden carried by the economically active part of the population, it is important to bear in mind that whilst the retired persons end of the spectrum may be growing, those at the other end of the

spectrum, i.e. the under 16 year olds have always posed a considerable burden on the economy, albeit one which is more widely accepted as an "investment". The declining birth rate has reduced this burden, although the extent to which expenditure on education, for example can be - or indeed should be - reduced proportionately is debatable.

The ill-health and dependency of the elderly population is frequently exaggerated. Longer survival reflects better health than in previous cohorts of elderly persons. We are talking about persons of 55-60 upwards of whom the great majority are physically and mentally healthy and capable of carrying out their daily activities without external assistance. The nightmare scenario of decrepit elderly children having to care for their more decrepit parents is, and is likely to remain, a most unusual occurrence. Just how far functional abilities will be extended in later years as life-expectancy has been, is still a matter for speculation, but without adopting the more extreme hypotheses it seems most unlikely that disability will increase at the same rate as life-expectancy.

There is also a reverse care scenario to be considered. The fit young elderly are increasingly, in terms of age, vigour and numbers, in a position to help their children in household and family activities, and there is evidence that substantial financial help is given. Dependency is not a one-way phenomenon.

These observations suggest that whilst indeed the percentage of elderly persons in the population is increasing, the "burden" is not likely to increase proportionately. Because many labour resources can be more efficiently deployed, because developments in technology are likely to bring greater productivity and higher living standards, because the health and physical abilities of older persons are improving and because age-relationships do not operate in only one direction, the threat of inter-generation conflict seems remote - certainly empirical evidence is thin and unimpressive, though it could be argued that a shorter working life

and the anticipation of a longer retired life may strengthen inter-generation conflict.

This raises one final point of a quite different nature. Laslett's concept of the Third Age, distinct from that of the shorter Fourth Age of dependency, sees this period as the peak of life, a period of culture and leisure freed from the burdens of work and career, of family and responsibility, a period when persons still fit and active are also able to assist families and communities, and to share their skills and experience. In this sense of "one of the most rewarding ages of human life", it becomes not separate from work but the reward for which people strive.

### The contributions in this volume

#### *Demographic and macro-economic issues*

Paul Johnson addresses many of these issues and imponderables in his review of the costs and benefits of population ageing. He reinforces the point that the potential costs vary greatly between countries, both in timing and in the percentage increase of elderly persons in the population, but for most countries, the hardest crunch will not occur until well into the next century. This perhaps is not so much important in giving governments time to implement mitigating policies, as in emphasising the long period of uncertainty in other fields of relevance i.e. what is likely to happen over the next 35 years to productivity and living standards, to health, to education and above all to the distribution of power and wealth between age groups. His point that the traditional flow of financial support from working children to retired persons is now being reversed, allied to the increased electoral power of the older population, adds a further dimension to inter-generational relationships. So too does his discussion of pay-as-you-go and funded pensions systems and of private and public systems. The important point seems to be not the systems themselves, but whether money saved by either public and private systems is

used to boost economic growth and whether or not the systems are re-distributive. Johnson's analysis ranges over wider areas and makes many specific points, but one is impressed by the degree to which the future impact of an ageing policy is contingent upon imponderables and upon the adoption of positive policies by public authorities and by employers.

### **Age Groups and social relations**

Fry uses data from seven communities in the developing and developed world to stress how the meanings of age-structures are created by the economy. The replacement of traditional family and community economy by the more fluid wage-economics changes the balance of relationships and responsibilities. Wage economies emphasise the individual, autonomy and achievement, they encourage not only the material culture but personal mobility and hence freedom from ties to the family, community and ethnic groups. Political institutions in the shape of social security and pension systems have supplemented family support systems. The signatories of the "inter-generational contract" have changed from the family to the state. But the flow of support continues - in both directions. When we consider the amount of care that is invested in adult children, in grandchildren and in the support given to spouses and peers, it is difficult to call older adults "unproductive".

The reciprocity of inter-generational relationships and support is further explored in the contributions of Hagestad, Attias-Donfut and Glatzer and Diewald. Hagestad's cohort studies in Norway, extending across three generations, emphasise inter-generational family relationships rather than household exchange, pointing out that the views from the top of family trees are different from perspectives at the bottom - or from household to household. She identifies a major shift from the "bottom-heavy" household of many

grandchildren, many siblings and few grandparents to the more recent widespread emergence of the "top-heavy" family with more grandparents than parents and even fewer children. Her findings challenge the prevailing views that this creates a burden. In the modern Norwegian family most support flowed down generations from old to young - financial assistance, help in illness and support in child-rearing. Modern grandmothers were found to be more supportive than traditional grandmothers from bottom-heavy family structures. Attias-Donfut points to the importance of family relationships and transmissions (cultural, educational, financial and practical) in both directions across the generations and over the life-span - as opposed to the more limited question of who is going to look after old people in illness and dependency. The modern vertical family encourages solidarity across generations, a tendency enhanced by increases in life expectancy and associated processes of cultural and patrimonial accumulation. Attias-Donfut sees this as a transfer opposite to that of national solidarity (the so-called inter-generational contract) and one which puts "the burden of the elderly" into perspective. Glatzer and Diewald report on a study of support given by an adult sample in (West) Germany; age and household composition clearly emerge as important factors. In general, spouses and parents - and children - are the most important sources of network support and young and middle-aged groups contribute more to the inter-household support exchange than the older group. Special problems arise for widowed persons and those who are childless. Older persons give less support than other age-groups, except to spouses and except for care given to the children of their young relatives and for help with personal problems.

### **Retirement and the labour market**

All our commentators on retirement and the

labour market note that early retirement and consequently a lower representation of older workers in the labour market has occurred over more than a decade in developed societies. Its extent may vary from country to country according to each country's balance of declining and growing industries, but its near-universality argues a generalised movement not greatly influenced by local variations in pension arrangements or by policy attempts to spread work more evenly across the work-force. Rein and Jacobs in a review of trends across five major economies conclude that the trend towards the early exit of workers from the labour force is primarily driven by labour market dynamics rather than by pension regulations. They see it as a general labour market phenomenon in all countries and not restricted to certain industries. Kohli considers a number of strategies to modify the trend or its consequences e.g. partial, flexible or gradual retirement, but noting either the employers', individuals' or state reluctance to implement them, comments: "But good reasons alone do not produce the preferred outcome; it is the dynamics of interest among the actors involved that is decisive". Sørensen notes the effect of labour market structures on the nature of retirement and the status of the retiree. In open employment structures e.g. self-employment, where the relationship between performance and earnings is most direct, transition to retirement may be more gradual, more influenced by the individuals' assessment of the relative merits of continuation versus retiral and in any case not such a change in social status as for those retiring from closed employment e.g. careers within organisations. There, performance and pay may be less closely related and early retirement may be the result of employers' pressures. Amman addresses the question of "how in recent decades, did older workers become increasingly a target group for labour market policies?" He also explores the relationship between orientations and behaviour learned in the world of work and integrated into the personality and

expectations of life in retirement.

A certain paradox emerges from these discussions about trends in the labour market and their impact on retirement. On the one hand, an ageing work-force and early retirement are seen as threats to employers and employees partly because of a hypothesised shortage of labour and partly because the smaller work-force will need to provide output not only for their own consumption but that of a larger body of "non-productive" persons. On the other hand, it seems that the trends of early exit from the labour force are themselves the result of employers' individual and collective decisions. Employers, it is said, prefer to compete for younger workers rather than the various alternative strategies for re-structuring the labour force to retain and retrain older workers. If the economy is able, with a smaller but younger and highly skilled work-force to maximise its output while shedding older workers (as employers' behaviour suggests) this directs the "problem" of an ageing population back to the life, lifestyle and income of the retired and how the national output is divided rather than towards problems of production.

#### **The functional abilities and health of older people, and the implications for services**

The interests of individual employers or of the aggregate body of employers is not, of course, synonymous with the interest of the economy - nor is it necessarily based on an informed assessment of options. Rabbitt, in a well-documented, research-based review of cognitive abilities in older people makes the point that the factors which allow people to live longer allow them to remain well in later life and "greatly enhance the time-span over which they are capable of sustaining their maximum intellectual, social and economic contributions. Thus deliberate, active investment, by any society, in factors which tend towards the prolongation of the lives of its members is not at all a suicidal escalation

of the demands which are likely to be made upon the unproductive sector of the population. It is rather an extremely prudent conservation of unique intellectual resources". His work suggests that individuals vary greatly in the degree to which they age cognitively. The use of a fixed retirement age is doubly wasteful in retaining workers whose abilities have declined and in making persons retire compulsorily when they may be more capable than many persons 20 years or more younger. Equally important is his point that there is also variability within individuals in their retention of different skills. Growing evidence suggests that older members of our societies may maintain to a formidable degree "crystallised skills which they have spent a lifetime acquiring and which they maintain by continued use". Evidence is also accumulating that whilst older persons may take longer to master a new skill, their levels of attainment are much greater than previously supposed as is also their ability to retain new skills once acquired. If therefore work-force dynamics and social policy included the re-training of older workers this could be "as valid, and as rewarding in old age as in youth".

The analysis of morbidity by Ford and Frischer is less re-assuring, as data on medically observed and assessed morbidity are scarce. They have used data on self-reported illness to estimate trends in age-specific morbidity. They arrive at a paradox - that whilst there have been large and significant declines in all-cause and in most cause-specific death rates, there appears to have been a slight general secular increase in self-reported morbidity. After reviewing many studies and a variety of approaches they "do not consider that any of them arrive at an informed and balanced account of the likely medium and long-term future."

Variabilities in the age and speed of decline in functional ability is taken up by Maddox in his review of health status and health care. Such variability, and its correlation with indicators of socio-economic experience, he interprets as evidence of modifiability in trajectories of ageing. Whilst

neither accepting nor rejecting Fries' ideas about the rectangularisation of the survival curve and the compression of morbidity he notes that rapid change always produces some pessimistic prophets and that such pessimism produced half a century ago dire scenarios about population ageing which have proven groundless. Short of rectangularisation, he affirms that secondary prevention (reduction of disabling consequences) and tertiary prevention (reversal of disabling consequences) are demonstrably possible. This affirmation does not depend solely or even largely upon technological progress but on the profound effect of social change and policy on the process and consequences of ageing. Drawing on U.S. experience he notes that the most costly care is confined to three sub-groups, "those institutionalised in nursing homes (5%), those in the last year of life (about 5%) and those still in the community because they are severely disabled, poor and/or alone (about 1.5-2%). About 88% of the elderly population in the United States are not notably high users of health and public welfare services". He points out that gerontology and geriatrics, in confronting the challenges of ageing have made an enormous advance by demonstrating that "some of the most serious problems in later life are less the biological problems of ageing and more the political problems of achieving consensus about the future of ageing we wish to construct. Health care that is adequate for older adults may prove to benefit everyone".

## Conclusions

We began this chapter by presenting two contrasting scenarios about the future consequences of an ageing population. We have briefly reviewed the evidence marshalled by our contributors across a range of relevant issues. They are properly sceptical about the possibility of firm predictions of into the future based on extrapolation from past experience and there are many issues on

which data is too scarce or fragile to even evaluate the past, let alone predict the future. Nevertheless certain general conclusions may be possible:

1. Many of the early predictions of dire consequences were exaggerated, either because they were founded on stereotypical perceptions of "the elderly" carried over from a less fortunate past, because they equated an ageing society with a population of old and possibly old-old persons or because their predictions took no account of compensating movements and balances.
2. Whereas immediate reactions were often based on mechanical extrapolations, subsequent research in each of the relevant areas - the economy and the work-force, family relationships and structures, health and cognitive functioning - has brought with it greater understanding of the processes of population ageing. Part of this work confirms earlier predictions, part reveals mistaken assumptions and part reveals alternative possibilities not previously considered. The net result is a shift away from the more pessimistic perspectives of Scenario 1 towards a more optimistic Scenario 2.
3. Part at least of the outcome can be shaped by social and economic policy rather than blind demographic and market forces. This is particularly relevant to labour market policy, education and training in the work-force and in later life and to health and social support systems.

Our re-appraisal does not go so far as that of Laslett in his vision of the Third Age as a unique opportunity for personal and social fulfilment, but it has moved us hesitantly in that direction.

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## The Costs and Benefits of Population Ageing

### Abstract

There is widespread agreement that the ageing of the populations of the industrialized countries, which is now under way and which looks set to continue well into the next century, will be costly. The recent OECD (Organisation for Economic Cooperation and Development) report on population ageing summed up the consensus by noting that "countries will face growing fiscal burdens as expenditures increase and the working age population shrinks or remains constant in size" (OECD 1988a).

There is no consensus, however, about what the price of population ageing will be, who will pay, and whether there will be any compensating benefits. What items should be included on the cost/benefit balance sheet of population ageing, and which should be written in red and which in black, are still issues for serious speculation. In consequence, most discussion of the cost of population ageing focuses on the costs that will be incurred by public pension and welfare systems. These costs are obviously important, but they make up only part of the overall account. In this paper I will first suggest that we need to consider a range of other potential costs associated with population ageing. Then I will go on to evaluate the scale and incidence of these costs, before turning to consider the potential social benefits of population ageing. Any assessment of costs and benefits is necessarily

contingent on future social and economic developments, and the concluding section will identify the opportunities for policy innovation opened up by the ageing of the developed nations.

### Defining the costs of ageing

Most discussion of the costs of population ageing has dwelt on the cost of projected public pension, health and welfare provision for the population over 65, which is the most common pension entitlement age in the developed economies. These public costs are undoubtedly important because of both their current scale and their projected growth, but an over-concentration on public sector provision can produce a very limited and limiting concept of costs, for at least four distinct reasons:

1. There are potential public costs that arise from private responses to both individual and population ageing. It has been established that the average age of production in developed countries is below the average age of consumption - in other words: resources are transferred from the young to the old (Ermisch 1989). It is the projected scale of this transfer through public welfare and pension systems in the future that has motivated much of the current concern about intergenerational inequity. However, changes to public transfer systems need not substantially alter the scale of the transfer, since private transfer systems can be just as effective. A deliberate and predictable reduction in the scale of public transfers towards older people in the next two or three decades, will increase the incentive for people now in middle age to accumulate more long-term assets. This will enhance the already obvious trend for the newly retired to be wealthier than preceding cohorts of retirees, and will result in a shift in the age distribution of asset ownership in

industrial societies.

Little consideration has been given to the question of whether or to what extent changes in the age distribution of asset ownership will affect either the net saving rate or the risk preference of investors. However, demographically-induced shifts in saving and investment patterns have the potential to influence the long-term rate of economic growth, so it is clear that public costs of population ageing may derive from private financial decisions.

2. The public costs are not confined to expenditure on pension and welfare provision. Population ageing affects both the proportion of the population that is of prime working age, and the average age of this working population. Some thirty years ago in Britain, the Royal Commission on Population (1949) asserted that an older population is likely to be less dynamic, less innovative and less productive than a younger one. If this is true to any degree, then population ageing will have a detrimental impact on the long-term growth potential of any economy. This is clearly a public cost, but one which is not articulated through specific tax or benefit structures.
3. There are likely to be large private costs in population ageing, borne by an increasing number of carers providing non-marketed services to elderly people. Although the public costs of welfare services can be curtailed by limiting entitlements, needs are not affected by these administrative manoeuvres. Some people may be forced into a role as carer because of the absence of any alternative support for an infirm elderly person whilst others may positively choose to assume the role. But whether it is the sentiments of devotion and compassion or desperation and compulsion which drive the carer, there is a cost to the carer in terms of time and income foregone. Even

altruism has its opportunity cost.

4. Finally, any comprehensive analysis of the costs of population ageing should take into account the costs to elderly people themselves. Much of the literature on population ageing presents the expanding cohorts of elderly people as beneficiaries, drawing heavily on welfare transfers from poorer younger generations. However, if concern about the economic cost of ageing prompts any sort of policy response which curtails the welfare entitlements and income of retired people, then clearly these groups will bear some of the overall cost.

Any analysis of the costs of population ageing that concentrates exclusively on public pension and welfare costs will, therefore, present a partial and biased account. With this in mind, the next section of the paper will attempt to present an evaluation of both the scale and the incidence of the wide range of potential costs that will arise from the demographic restructuring of the next thirty or forty years.

### Assessing the costs of ageing

#### *Demographic projections*

The first step in this assessment must be to develop some appropriate population projections. Two distinct sets of projections have been published by the International Monetary Fund (IMF) and the Organisation for Economic Cooperation and Development (OECD). The OECD projections assume that current levels of fertility will prevail in all countries until 1995, after which there will be a gradual convergence to a total fertility rate in all countries of 2.1 by 2050, and they further assume that life expectancy at birth will increase by 2 years for each sex between 1983 and 2030 and thereafter will remain constant (OECD 1988a). The IMF projections instead take the different national

demographic projections for the Group of 7 countries, which all anticipate an increase in domestic fertility rates of between 8% and 16% from the low levels experienced in 1980. Mortality rates are generally expected to improve more rapidly than in the OECD projections except in the case of France (Heller et al. 1986). The resulting population projections are given in table 1.

These two sets of projections of the size of the elderly population are reasonably consistent, generally differing by 10% or less. It should be noted, however, that the numbers are particularly sensitive to the mortality assumptions about which there is considerable uncertainty. The IMF projection for the U.S., for instance, assumes an annual improvement of 0.9% in mortality, although the actual annual rate experienced in the 1970s was 1.7%. If future medical advances allow a major increase in life expectancy at later ages, then the impact on the number of older people will be dramatic. According to the OECD, a gain of ten years in life expectancy at age 60 between 2000 and 2030 would increase the proportion of the U.K. population over 65 in 2040 from 20.4% (the median projection) to 26.4%, with the proportion over 80 rising from 5.1% to 10.3%. It is obvious that mortality improvements of this magnitude would substantially increase the cost of public pension and welfare provision if the entitlements of these public systems do not

change and if age-specific levels of morbidity and disability remain constant. If, however, health status at older ages also improves substantially, then public health and welfare costs would rise less rapidly. The large degree of uncertainty attached to all projections of the morbidity and mortality of older people (see papers by Maddox and by Ford, this volume) must render the underlying demographic projections liable to a substantial margin of error, so all assessments of future costs must be treated with some degree of scepticism.

#### *Public costs of public provision*

Even if we use only the median fertility and mortality projections, there is still great scope for disagreement about the cost of population ageing for public pension, health and welfare systems. Pension costs, for instance, are unlikely in the future to be determined simply by demographic developments. In the U.K., the expansion of the elderly population and slight decline in the working-age population by the third decade of the next century is expected to change the ratio of National Insurance contributors to pensioners from 2.3:1 to 1.6:1 (*Population, Pension Costs and Pensioners' Income* 1984), while the share of pension expenditure in national income will rise from 7.7% to 10.6% (OECD 1988b). If average real pension benefits remain

Table 1: Index of number of pensioners\*

	1980	2000 IMF	OECD	2010 IMF	OECD	2025 IMF	OECD
Canada	100	142	130	169	196	272	300
France	100	118	116	128	125	147	158
W. Germany	100	112	106	128	120	138	126
Italy	100	123	113	132	125	148	140
Japan	100	178	181	226	224	238	236
U.K.	100	103	100	109	101	130	125
U.S.	100	136	125	153	139	230	207

\* Note: IMF projections are based on the number of people of pensionable age, OECD projections are based on the number aged 65 and above.

unaltered, the U.K. would need an average annual compound growth in real earnings per worker of 0.5% to finance additional pension expenditure; the comparable figure for the U.S. is 0.9%, for West Germany 1.2% (OECD 1988a). This may seem a small sacrifice of future income growth on the part of workers in order to pay for the growing number of pensioners. But it cannot be assumed that pensioners will be content with a pension level that remains constant in real terms if average real earnings are rising. If the ratio of pension expenditure to national income is kept constant, then in the third and fourth decades of the next century the U.K. would need real national income per worker to grow at 1.2% per annum to cope with the demographic pressure.

Even this figure may be an underestimate of future costs because we know that in the recent past social expenditures in the industrialised countries have generally grown at a faster rate than national income. In the U.K., the income elasticity of social expenditure was 2.2 for the period 1960-75 and 1.8 for the years 1975-81 (Heller et al. 1986). Since the potential electoral power of older people will increase as their numbers grow, so they may be able to exert political influence to maintain a high income elasticity for those elements of social expenditure directed towards older age groups. The extent of the potential can be seen by looking at the demographic projections: in the U.K. today people over 50 constitute 41% of the electorate, but by 2025 they will hold the balance of electoral power.

Similar uncertainty exists over projections of the public health care and welfare costs of population ageing. Children and elderly people are the major consumers of health and personal social services and to some extent the rise in the number of older people will be compensated for by a decline in the number of children. The trade-off, however, is not a simple matter of counting heads. In the U.K., children aged 0-4 on average cost the hospital and community health service twice as much per annum as does an adult

aged 16-64, but people aged 65-74 cost almost four times as much as a working-age adult and people aged 75 and over cost over nine times as much (Johnson and Falkingham 1988). Population ageing will inevitably increase public health and welfare costs, although public expenditure on education is expected to fall. The IMF has calculated that in the U.K., the percentage of government medical care expenditure directed to the elderly population over 60 will rise from 42.1% in 1980 to 49.4% in 2025 (Heller et al. 1986). Such estimates depend crucially upon assumptions about the rate of growth of real per capita health expenditure. If this expenditure is fixed at its 1980 level in real terms, the demographic restructuring will require a growth of real earnings per worker of 0.34% per annum in the U.K. to finance the extra expenditure. But if the per capita health expenditure grows at the real rate experienced in the decade 1975-84, real earnings per worker would need to grow at 1.63% per annum (OECD 1988a).

While there is uncertainty about the scale of future increases in public pension, health and welfare liabilities, there is little doubt about who will pay. In Britain, as in almost all the industrialised countries, publicly provided benefits and services are funded on a "pay-as-you-go" basis in which the current year's payments are funded from the current year's contributions. Despite the common use of the term "social insurance" to describe these public systems, in fact they have little in common with commercial insurance practices in which current contributions are used to build up a reserve fund from which future liabilities will be paid.

Public systems do not have to be unfunded; in the United States the Social Security amendments of 1977 and 1983 abandoned pure pay-as-you-go financing and this should lead to the accumulation of a social security surplus of \$2 trillion (1988 prices) by 2030 (Aaron et al. 1989). But there has been no comprehensive movement among OECD countries away from an unfunded system, and this lack of funding can

cause problems when the age structure of the population changes rapidly. Keyfitz (1985) has shown that a sharp decline in fertility will have a substantial effect on the expected rates of return different generations will receive from an unfunded social security system. A larger number of pensioners in the future will increase the cost of social security to future generations of workers even though their anticipated benefits will remain constant. Hagemann and Nicoletti (1989) have estimated the ratio of expected lifetime benefits to lifetime contributions for men and women born at different dates in several OECD countries (see table 2) assuming pay-as-you-go financing.

In the table, a ratio greater than 1.0 indicates that the present value of anticipated benefits is greater than the present value of contributions. It is clear that the rate of return is better for women than for men (largely because women live longer, but partly because they receive pensions at a lower age than men) and that the rate of return for more recently born cohorts tends to be lower than for older cohorts. The positive returns for Japanese males born up to 1965 are a consequence both of the immaturity of the Japanese pension system and of the relatively late onset of fertility decline. The slightly U-shaped pattern for U.S. males is a consequence of the social security reforms which have improved slightly the expected rates of return for more recently-born cohorts (though they remain significantly negative). The declining returns in the West German system for the more

recently-born cohorts are probably representative of the broader West European experience.

These simulations, contingent as they are upon a number of important assumptions about future contribution and growth rates, do indicate that for the "transitional generations" born in the second half of the twentieth century, welfare states involve very significant costs. These welfare costs, rather like the future environmental cost of today's pollution, challenge conventional assumptions about social equity, which assert that it is wrong to make future generations pay for decisions to which they were not party. David Thomson (1989) has suggested that "what societies must and will find themselves discussing soon is why the young adults of today can be expected to play the part assigned to them by history, that of willing funders of a lifetime welfare state which they themselves will never inhabit. Upon a resolution of this hinge all questions concerning the elderly."

It is undoubtedly true that, in the absence of major reform of pay-as-you-go social insurance systems, the financial burden of a growing number of older people in an ageing world will fall onto the possibly unwilling shoulders of working-age adults. Altering pension formulae, retirement ages and indexing arrangements can all reduce these costs, but this will not alter the underlying arrangement whereby today's workers support today's pensioners. Whether the cost will be trivial relative to future growth rates of national income or whether it will be

Table 2: Social Security benefit/cost ratios

Year of birth	U.S.		Japan		W. Ger	
	M	F	M	F	M	F
1970	0.63	0.88	0.96	1.21	0.76	1.02
1965	0.62	0.89	1.10	1.42	0.83	1.14
1960	0.61	0.87	1.26	1.62	0.85	1.18
1955	0.60	0.86	1.46	1.89	0.84	1.17
1950	0.60	0.86	1.73	2.24	0.85	1.18
1945	0.61	0.88	2.04	2.66	0.86	1.19

oppressive, depends as much on macro-economic developments as it does on the specifics of social security reform. Political pressures also have a role to play; even small differences in the projected income elasticity of social expenditure can have a substantial impact on long-run costs. When we consider the incidence rather than the size of social security costs, however, we can be much more certain about which generations will receive a negative return from their enforced participation in the social insurance system. It is clear who will pay, the only question is how much.

### *Public costs of private provision*

The apparently unfair nature of this compulsory intergenerational transfer has prompted a search for a more equitable way of providing for the social costs of population ageing, and a popular solution seems to be fully funded private pensions. The privatisation of pensions, health care and welfare services appears to ensure that intergenerational transfers are minimised. Each individual would accumulate a personal fund during working life which s/he could draw on during sickness or in retirement. If individuals or families wished to transfer resources across generations through gifts and bequests they would be free to do so, but they would not be forced to do so as at present. Furthermore, the increase in national saving rates that would result from the shift to funded private pensions would raise the rate of economic growth so that by the third decade of the next century when the population aged over 65 reaches its peak, the GNP would be substantially higher than would be the case under pay-as-you-go financing. The economy would better be able to afford old age, and the burden of cost would no longer rest on the shoulders of the young.

There are, however, some obvious objections to the privatisation of pensions and social security, such as the difficulty of

achieving the redistributive goals of social insurance and of providing the security against inflation that exists with state schemes. Furthermore, the ability of funded private provision to prevent the inequity associated with compulsory intergenerational transfers may be severely limited for several reasons. First, it takes many years for a fully-funded scheme to mature, so even if it were introduced tomorrow for all new cohorts of workers, it would not eliminate the existing problems created by relatively large cohorts today aged over 45 who already have substantial social security entitlements.

Second, private savings will not increase the growth rate of the economy if they are invested in government stock. An investment in government stock is an investment in the future capacity of workers to pay taxes in order to honour the government debt: this is functionally equivalent to people relying on future workers to pay taxes that are redistributed through an unfunded state pension scheme. A move from pay-as-you-go pensions to private saving invested in government stock (issued, for instance, to finance a budget deficit) therefore has no impact at all on the future fiscal cost of supporting an ageing population or on the level of intergenerational transfers.

If the accumulated assets are invested in the domestic economy, then growth rates will be enhanced. However, there are grounds for believing that domestic investment opportunities may not be taken up. Over fifty years ago, during the period of inter-war concern about population stagnation in Britain, J.M. Keynes (1937) suggested that a declining population might suffer from low levels of domestic investment, because the capital-deepening investment opportunities available (increasing the per capita stock of capital) tend to have lower rates of return than the capital-widening investments possible in countries with expanding populations (Ermisch and Joshi 1987). Since many less-developed countries will, over the next thirty years, experience substantial growth in their working populations and

considerable falls in their overall dependency ratios (because of declining fertility), wage costs in these countries will be low and rates of return on investments are likely to be high. High returns from overseas investments may sustain consumption potential in the more developed economies, but a low level of domestic investment could create problems of unemployment. Again the interests of rich retired *rentiers* would be in conflict with those of young poor unemployed workers.

There is a further problem with a heavy investment of pension funds in overseas assets. The simultaneous ageing of all western populations around 2020, when the "baby-boomers" move into retirement, will force western pension funds to capitalise on their assets at the same time in order to honour their pension contracts. With all asset holders trying to sell, the capital value of assets will fall, and the funds may find that their liabilities are greater than their assets. Private pension funds have led a charmed life over the last thirty years; because they have been expanding, the number of contributors (and hence the value of the reserve funds) has increased far faster than the number of beneficiaries (and the value of pension payments). It has been easy to honour pension promises despite some substantial changes in asset values and inflation rates because of the relative youth of pension scheme members. But when the private pension schemes mature in the second and third decades of the next century, when the value of pension payments exceeds the value of current contributions, relatively small changes in asset values could make the funds actuarially insolvent. If asset values decline, the only solution is to increase contribution rates - again it would be the young workers who would have to pay more for the underfunded pensioners.

Even if all these possibilities are discounted, and the growth of private funded pension schemes does provide a positive stimulus to domestic investment, it is conceivable that the overall level of domestic investment may still fall. This is because,

according to the life-cycle theory of savings, older people tend to dissave, and therefore an increase in the proportion of elderly people in any economy will, *ceteris paribus*, reduce the net saving rate. IMF simulations indicate that demographic change alone could reduce private savings by between 5 and 12 percent of the GNP for the group of 7 countries between 1980 and 2025 (Heller 1989). If true, this would again mean that younger workers would suffer by being deprived of the level of investment (and growth) enjoyed by their forebears. This conclusion has, however, been challenged by Aaron et al. (1989), who find for the United States that savings rates for retired people are little below those for people aged 45-64, and are clearly above those for the 25-44 age group.

On balance it can be seen that a shift from pay-as-you-go public pension and welfare provision to funded private provision will not automatically remove or prevent the intergenerational transfers from young to old that appear to be an inevitable consequence of population ageing within our existing welfare systems. Aaron et al. argue that it would be best to convert public social security systems from pay-as-you-go financing to full funding, since this would preserve the liberal redistributive aspects of social security and stimulate investment and so boost growth rates. They do not, however, explain how a public social security fund could be kept distinct from other elements of public finance and free from political interference for half a century. The political pressures to raid the fund in order to boost current pensions may be irresistible when those already drawing or soon-to-draw pensions make up the majority of the electorate.

#### *Work-force costs*

A further cost of population ageing derives not from the impact of pension and welfare financing on tax, saving and growth rates, but

from the impact of demographic change on the size and performance of the labour force. Since World War II, all the industrialised countries have experienced positive, though declining, population growth rates. This population growth has ensured that labour markets have been continually restocked with young, recently-trained workers. However, the below-replacement fertility rates of the 1970s and 1980s, which are not expected to increase substantially in the immediate future, suggest that most developed countries will have negative population growth rates by the third or fourth decade of the next century.

A declining population will affect the labour market through both a change in the number of potential workers and a change in the age structure of the work-force. Since most developed countries will not see a decline in total population for perhaps thirty years, it will be changes in the age structure that will have immediate economic effects. Over the last twenty-five years the labour force participation rates for older men have fallen markedly in all developed countries. In 1965 the participation rate for men aged 55-64 in the U.K. was 92.7%, but by 1985 it had fallen to 66.4%. Similar patterns are to be found in all the countries of Western Europe and North America, with the decline at first affecting those over 60 but by 1980 coming to bear on men aged 55-59 (Guillemard 1989; and papers by Rein and by Kohli, this volume). Even if there is no further extension of this trend towards early retirement and age-specific participation rates remain at their current levels, shifts in the age structure of the U.K. population will lead to a decline in the available work-force. By 2025 the size of the 20-34 population is projected to be 7% less than its 1985 level, whereas the 55-64 and the 65+ age groups will both be almost one third larger than in 1985 (OPCS 1987).

Quite what the economic cost of this ageing of the workforce will be is a matter for conjecture. As mentioned above, the Royal Commission on Population in 1949 thought that an ageing population would

suffer from a less dynamic outlook and reduced economic growth, although it might equally be argued that an older workforce would be more experienced and that this would increase labour productivity. Even if it is true in a static setting that older workers are more experienced, long-term growth might be jeopardised if older workers prove to be significantly less able or willing than young workers to adapt to new technologies and work practices (on the learning abilities of older people, see Rabbit, this volume). At present, older workers are less mobile between jobs and locations than are younger workers, and this may in the future present a growing restriction on labour market flexibility.

Any age-structure related inflexibility in the work-force would tend to raise labour costs relative to those in countries with younger populations, and further wage pressure is likely to derive from a more general labour shortage in the industrial economies in the future. If this wage pressure outstrips labour productivity growth, the industrial countries will lose their competitive edge in world markets (McNicol 1987). Labour productivity growth can be sustained only if there is an adequate level of investment in physical and human capital, and this investment is itself threatened by the future cost of financing pensions and welfare benefits.

This interrelationship between labour productivity growth and investment, and therefore between the age structure of the workforce and the funding of retirement pensions, makes it very difficult to determine whether the ageing of the workforce will exacerbate the other costs associated with population ageing. In particular, it is impossible to know who will fare best from this demographic restructuring in the workplace. A decline in the teenage and young adult population should greatly improve employment prospects for this age group relative to conditions experienced over the last decade, and labour shortages may also make it much easier for workers of

pensionable age to resist the pressure from employers and unions to retire, a pressure which has undoubtedly grown since the early 1970s (Johnson 1989; see also Sorensen, this volume).

In order to compensate for shortages of younger workers, it seems likely that employers will need to revise current personnel practices which provide incentives for early retirement, and any such move, coinciding with the overall increase in the numbers of older workers, may produce severe barriers to vertical mobility for younger workers as promotion opportunities decline (Keyfitz 1973). This will almost certainly be the case in those organisations (the majority of large companies in the U.K.) which operate final salary pension schemes, since these provide a very strong incentive for older employees to support age-related promotion and remuneration. Unless employers restructure their personnel and pension policies, younger workers will increasingly find promotion ladders blocked because of the ageing of large cohorts of older workers (a scenario already familiar to university teachers); intergenerational tension will result, with younger workers feeling they have to work twice as hard as their predecessors in order to justify the same preferment.

### *The cost of informal care*

Aside from the financial and employment costs of population ageing, there is the cost of providing care for the frail elderly. This needs to be considered independently of the financial burden of public social service support because a great deal of this care is provided informally. It is a non-marketed service and so does not feature in national income accounts or government expenditure statistics, but it is a real service and it is provided at a real cost to the carers in terms of foregone recreation or employment opportunities.

In an analysis of the 1980 *General*

*Household Survey* in Britain, Gilbert et al. (1989) found that the incidence of severe disability rises sharply with age. Less than 5% of people aged 65-69, but 11% of those aged 75-79 and 41% of those aged 85 and over were severely disabled. Many others had more moderate levels of disability that required some assistance with tasks such as shopping or climbing stairs. Despite the fact that state expenditure in the U.K. on personal social services (the majority of which is directed to older people) stood at £3.84 billion in 1987 (*Annual Abstract of Statistics* 1989), it can nonetheless be said that "the state's contribution of resources to elderly households through the provision of support services is, for most services, not substantial" (Gilbert et al. 1989). This is because the bulk of care is provided informally; a recent attempt by the Family Policy Studies Centre to cost the totality of informal care provided in Britain (which does, of course, include care for groups other than the frail elderly) produced a figure of between £15.6 and £24 billion (*Family Policy* 1989).

These figures are derived from *General Household Survey* data on informal carers which indicates that in Britain in 1985 about 6 million people were providing informal care, or about one adult in seven. Of those receiving care, 15% were aged 85 and over, 30% were between 75 and 84 and a further 23% were between 65 and 74, and the predominant cause of dependency was physical disability (*Informal Carers* 1988). When these proportions are linked with projections of the size of the elderly population shown in table 3, some crude calculations can be made which suggest that, if rates of age-specific disability and levels of formal care provision remain unaltered, the number of people providing informal care for the frail elderly is likely to rise from around 4.5 million today to 7 million by 2031.

The current pattern is for these carers predominantly to be drawn from the 45-64 age group, and if this pattern is sustained in the future we will see this age group bearing a threefold burden - of high taxes to pay the

Table 3: Index of number of elderly people in the U.K.

Age range	1985	2001	2021	2031
65-74	100	97	122	138
75-84	100	110	118	137
85+	100	171	195	218

pensions of the already retired, of pressure to postpone retirement in order to prevent labour force shrinkage, and of conflicting pressure to provide care for an increasingly aged retired population. It is not obvious that working-age adults will be either able or willing to sustain this cost.

#### *Costs borne by older people*

A final cost of population ageing may come to bear on elderly people themselves. This may seem a surprising suggestion given the preceding discussion which sees older people as the (unplanned) beneficiaries of a process of intergenerational transfers which is an automatic consequence of rapid population ageing in modern societies. But if tax, employment, pension and care policies are adjusted to counter the distributive effects of population ageing, and if these countervailing moves are effective, then it will be older people themselves who will have to bear the costs of not having their expectations fulfilled. If pension values or retirement ages are abruptly altered by legislative action, the young can adjust their saving and employment plans to take account of these temporally remote changes to the rules of the modern welfare contract, but people in their 50s and 60s will have little scope for adjusting lifetime economic trajectories rooted in decisions taken several decades earlier.

#### **The benefits of population ageing**

This multiplicity of costs associated with the

dynamic process of population ageing has tended to crowd out any discussion of potential social benefits that may derive from this same process. There is well-established literature about high costs and the likelihood of intergenerational conflict (Preston 1984; Longman 1987; Johnson et al. 1989); can or should this be tempered by a more optimistic view? Gains will come to some distinct social groups in several separate but interrelated ways:

1. *Economic*: One consequence of the high economic growth rates and large positive rates of return on both public and private saving enjoyed throughout most of their working life by people now aged over 50, has been to shift the age profile of asset ownership upwards. The pattern of economic flows that has been typical of industrial societies - of working-age children supporting their aged parents - is now being reversed. In a number of countries, France and New Zealand for instance, the average income of pensioner-age households is now greater than the average for all households. In France, in the mid 1970s, newly-retired households continued to receive financial support from their children, but by the mid 1980s it was the children who were the dependents (Cribier 1989). This rapid improvement in the economic standing of newly-retired households (which has been much more pronounced than the financial gains enjoyed by *all* retired households) is giving older people considerable economic power as consumers. Businesses have been slow to recognise this change -

the image of old people as poor people is deeply entrenched in our social attitudes - but they are now responding to the market potential offered by high-spending "woopies" (well-off older people). The combination of expanding numbers and rising wealth among the over-50 population will obviously increase the expected and the achieved average living standard for this age group.

Improvements in the average living standards can, of course, conceal stagnation or even decline for certain groups of older people. The elderly are no more socially or economically homogeneous than any other broad age group in the population, and age, gender and past labour market career are all important correlates of living standards in later life. If in the future, private savings and occupational pensions become a more important element of income in old age and social insurance payments decline in relative value, then those with interrupted employment histories and low lifetime earnings are likely to miss out on general improvements in the living standards of the elderly. Nevertheless, the general trend is likely to be one of increasing economic resources for the population aged 50 and above.

2. *Social:* This increase in purchasing power will certainly affect the social status of older people as a whole. Retired people have typically been excluded from the main mechanisms for acquiring social status in modern societies by being marginalised in both the processes of production and consumption (Phillipson 1982; Walker 1980). In our increasingly consumerist society, where status is closely related not to what you do but to what you buy, this rise in the purchasing power of older people is likely not only to improve their living standards, but also to create a new and positive image of old age as a time of opportunity rather than a period of social dependency.

3. *Political:* Social status will also be enhanced by the increase in the potential political power of people over 50 who will comprise the majority of the electorate in most West European countries by the second decade of the next century. A credible threat to mobilise the "grey" vote against a government may limit the scope for social security reform, but it may also be used to preserve or enhance pensioner income. So far no European country has witnessed any mobilisation of pensioner interests equal to that achieved in the U.S. by the Gray Panthers and the American Association of Retired Persons, and it will certainly not be easy for a generational alliance to overcome the traditional political cleavages of class, religion and race. But it seems unlikely that the baby-boomers, the vocal "me" generation of the 60s and 70s, will lapse into self-effacing submissiveness as they approach retirement.

It is difficult, if not impossible, to weigh these benefits for older people that will derive from the process of population ageing in industrial societies against the costs for younger cohorts. This is particularly the case because broad intergenerational transfers that operate at the macro-social level, may be countered by inter-personal transfers flowing in the opposite direction within family units. Welfare economics remains mute when faced by these complex inter-personal utility comparisons, and moral philosophers differ on whether we should be seeking justice between age groups or between birth cohorts (Daniels 1988); they differ as well, of course, on what they mean by justice. It can be argued, for instance, that since most people in developed countries now live well into their eighth decade, an improvement in the living conditions of the elderly will improve the welfare of *all* age groups, because everyone's expectations of the quality of life in old age will be raised. Problems would arise only if the immediate costs of tax payments made by younger cohorts

outweighed the benefits they derived from knowing their own old age would be financially secure. In practice, however, it will probably be left to politicians to determine how the balance on the scales of costs and benefits for different groups in society should be set, and so it is worth giving some brief consideration in the concluding section to the opportunities for policy innovation opened up by the ageing of the population.

### *Policy developments*

As the 1988 OECD report on *Ageing Populations* made clear, the transition to an older age structure in the welfare democracies will impose substantial costs on taxpayers over the next three or four decades. Although the scale of the costs depends on many future economic and social developments, it seems probable that in countries such as West Germany and Japan, where the age structure of the population is changing rapidly, the public costs will be high. Whether they will be unbearable, undermining the social consensus on which tax-funded social insurance systems are based, must remain a matter for speculation. Although there has been much talk, particularly in the U.S.A., of intergenerational warfare, there has so far been little evidence that younger people will fight their elders. Perhaps they will accept the costs associated with population ageing as the chance occurrence of history, as other cohorts have accepted the costs of wars, revolutions and famines.

If it is decided, however, that the public costs of population ageing must be curtailed, then a range of policy measures suggests itself. Raising retirement and pension entitlement ages, reducing the real value of state pensions, rationing health care and welfare services by age, are all possibilities. It must be recognised, however, that if the costs of population ageing are considered in the broad context suggested by this paper rather than simply as an element of public

expenditure, then some policy initiatives will be self-negating. Attempts to shift the cost of care for the frail elderly onto unpaid carers will reduce public expenditure by simply converting what was hitherto a general tax burden into an individual burden. Not only might this be considered unfair, but it may also be highly inefficient if it substantially reduces the labour supply of the population aged 45-64 who provide most informal care. Similarly, a switch from public to private pensions will ease the burden on the public purse, but the private pension industry may face equally difficult transfer problems by 2025 when assets are being realized on a large scale in order to honour pension contracts.

Fiddling with state pension entitlements is an accounting response to what is a very real problem: a decline in the size of the available labour force in the western economies. Furthermore, it is an accounting response that may have harmful consequences for those elderly people who do not have large assets, private pensions or caring relatives - and despite the rhetoric about high-spending "woopies", we should bear in mind that there are, and will continue to be, many relatively poor older people who depend on the state for support. It is this group which will suffer most from moves such as that introduced in Britain in 1979 to index the old age pension to increases in prices rather than incomes. If public social expenditure is to be severely curtailed, then those who are both old and poor might fare better from an entirely means-tested but generous poverty-relief programme rather than a universal but inadequate old age pension.

Policies to cope with the real as opposed to the accounting problems of population ageing would need to focus on the labour supply. Three different but complementary approaches are possible. First, efforts could be made to raise the birth rate from the very low levels now experienced in some developed countries. Although pro-natalist policies are generally thought to be of only marginal effectiveness, the recent rise of the

fertility rate in Sweden to 2.0 in 1988 gives an indication of what might be achieved if both governments and employers committed themselves to providing full child-support facilities and extensive leave entitlements for working women (in Sweden the entitlements are available to men and women, but are taken overwhelmingly by women). If serious moves were made in all countries to provide large financial and service incentives to parents, in recognition that childrearing is a costly exercise, but one that has direct public benefits (the production of the next generation of workers), then the most immediate beneficiaries of population ageing could be parents with infants and young children. At present, however, there are few signs that other countries are willing to follow the Swedish example.

Second, concerted efforts should be made to improve the quality of labour in the developed countries to compensate for a reduction in numbers. Third World countries will be flush with labour over the next two or three decades as the large birth cohorts of the 1960s and 1970s mature. It will be increasingly difficult for expensive labour in countries with declining populations to compete on price, so the training and retraining of this scarce labour force to ensure a high level of skill will be essential. Again this means that the benefits could equally touch the young as much as the old. For most people education and training is packed into the first two decades of life, with the implicit assumption that thereafter new skills will be acquired and old ones updated through "learning-by-doing." As the pace of technological change accelerates, so this assumption becomes increasingly outmoded. To ensure that workers in their 40s, 50s and 60s can gain maximum satisfaction from their work and give maximum productivity, continued and repeated training and retraining of all workers throughout their career span will be necessary.

Third, older people could be encouraged to continue to participate in the productive economy beyond current retirement ages. A

reversal of the trend towards early retirement, and the establishment of new patterns of work beyond 60 or 65 would be required. European countries could follow the American model and introduce legislation to prohibit age discrimination in employment, but the effectiveness of such measures would be limited unless employers were fully to embrace new working practices. Perhaps what is needed is a new concept of the productive life-course, in which gradual entry to employment (tempered by full and part-time education and training) is matched by a process of gradual (but later) withdrawal into active retirement, instead of the abrupt termination that is characteristic of current retirement practices.

At present, neither governments nor employers seem to have given serious thought to ways of dealing with these future labour force issues, because the problems of population ageing, when considered at all, are so often couched in terms of the size of future public expenditure. And in most countries these future public expenditure problems will not be severe until well into the next century, so there is little political capital to be gained by facing up to them now. Given the propensity of national governments to tend towards irresponsibility in their long-term planning in order to satisfy short-term electoral goals, perhaps within the European Community we should look to the Commission to develop a long-term strategy to respond to both the potential costs and the potential benefits of inexorable demographic change.

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## Part II



## **Changing Age Structures and the Mediating Effects of Culture**

### **Abstract**

Demographic change occurs in the context of a culture. It is culture which interprets and gives meaning to age groups. Culture sets the boundaries which define age group membership and calibrates a social clock. Meaning to that life stage is also given form by culture. Cultural meanings of age are examined in the seven Project A.G.E. communities: two in the South African nation of Botswana, two in Ireland, two in North America (United States), and in four neighbourhoods in Hong Kong. Comparisons of the indicators of age and the conceptualisation of the life course within these seven communities are discussed. It is apparent that age has increased salience for communities in industrialised nation states. The markers of age reflect the rationalisation of national-level institutions and the penetration of these institutions into community life. Implications of the cultural construction of age and changing age structures for industrialised societies are discussed.

### **Changing age structures and the mediating effects of culture**

Culture is an inextricable part of the human experience. Through language we encode experience, organise it, give it meaning and communicate with others. The net effect is a

cognitively rationalised world. Cognitive maps interpret the material, the social and the supernatural world. A part of the cognitive map of any culture includes age. Every society consists of a population which is differentially mature (children, adults, older people). Cultural markers and their organisation give cultural definition to the life course. Industrialisation has triggered profound demographic change resulting in a population explosion and ageing populations. The industrial political economy has also altered the social construction of the life course. What are the linkages of this distinctive life course with its social and demographic context?

In this paper we will explore three related questions. First, to what extent are these cultural definitions sensitive to demographic change? For instance, will increasing numbers of older people also increase the differentiation in the definition of the last portions of the life course? Will the absence of a cohort, because of disease or migration, redefine the life course? Secondly, how do the institutions through which people experience their lives shape the definition of the life course? Since nations differ and within nations we find class, racial, ethnic and regional divergence, we find multiple definitions of the course of life. Thirdly, how does this variation shape our understanding of age?

For the industrialised societies of Europe and North America, cultural perceptions of age appear to be responsive to change. Following the Great Depression of the 1930s, the longer-term demographic effects of industrialisation became apparent. Through medical advances initiated in the 19th century, mortality decreased and average longevity increased. Changing reward structures decreased the average family size and fertility declined. The net results are ageing societies (Myers 1986) and a projected "emergency" of old age extending into the early half of the 21st century. In meeting the increasing challenge of ageing, societies mobilised resources in the form of social

security benefits, health care benefits and social services for their ageing members. Another reaction to these changing age structures has been the creation of a culture of ageing. The scientific branch of this culture is the multidisciplinary field of gerontology. The practical arms of this culture are the health care professionals and the social service practitioners specialising in services for elderly people. Because ageing is defined as a problem in these societies, it has become a political issue. Political responses to growing numbers of older people and their needs have produced a "political economy of ageing" (Estes 1979; Minkler and Estes 1984).

Linkages between the life course and institutional structures are a major contribution of the life span perspective in psychology, sociology and anthropology. Conceptually the life course and its dynamics are well formulated (Hagestad and Neugarten 1985). However, variability has not been an especially strong point of these models. A primary reason for this is that the conceptual and empirical work comes from one societal type: the developed industrialised nation state. In spite of the recognition that the life course is different by gender, race, ethnicity and social class, systematic investigation of these variations is in its infancy. Qualitative exploration of the life course is essential within nations, across nations, and especially beyond the industrialised world.

In this paper, to examine the linkages between age structures and culture, we use the broadest possible comparisons. First, we examine the comparative studies of age systems and their implications for our conceptualisation of the life course as a researchable unit. Secondly, we examine results from a project that qualitatively explores the social construction of the life course in seven communities around the world. The emphasis is on the cultural markers serving as indicators for social maturation. Finally, we will consider the implications of this data on the mediating effects of culture on changing age structures

and social institutions and we will also consider the implications of social definitions and uses of age for social policy.

### Comparative studies of age systems

As any new area of investigation, gerontology had to define its subject matter. One obvious answer is: our topic is old age, the elderly, the aged. However, common sense answers often produce scientific problems. First, defining these boundaries of old age became increasingly problematic. Is the threshold to old age a chronological boundary such as 65 years? Is it a more informal boundary marked by social and functional transitions? Secondly, the properties of this category presented difficulties. It soon became evident that there was no uniform category of *the aged* or *the elderly*. This period of life can encompass thirty to even forty percent of the life span. Consequently older adults are among the most heterogeneous segments of the population. Furthermore, when asking people about their old age, they denied feeling anything different and instead saw their lives organised by the persistence of themes (Kauffman 1986). Finally, it became apparent that we cannot segregate the later portions of life from earlier life stages. Resolutions to these issues led to the conclusion that age is a demographic variable. Socially and culturally, our unit of analysis is not age, but is the life course.

In conceptualising the life course, the comparative method was most valuable. By examining the 3000 + cultures known to world ethnography, we have an excellent laboratory to study age structures in extremely diverse circumstances. A number of societies where age is an explicit principle of group formation proved to be of extraordinary interest. These age set societies or age class systems (Bernardi 1985), provided the initial models through which we came to understand the sociological processes associated with age structures.

Among the most thoroughly studied are

societies in Eastern Africa including such peoples as the Nuer, the Nyakusa, the Boran, the Samburu and the Masai. In southern Africa the famous Zulu army regiments were recruited and mobilised by age sets. Subsequently, societies with formal age class systems have been documented in Australia, Lowland South America and in societies on the Great Plains of North America. As is expected with the nearly world-wide occurrence of these societies, variability is tremendous. The rules for group membership are not always based on age, but sometimes on generation and even on negotiations in transferring group property to the next age class. It is also difficult to reduce the reasons for the formalisation of age groups to a singular function, although conflict reduction or management seems to be a fairly common theme. In spite of variability, the common features of these societies are: (1) age or an age-linked principle formalises social groups; (2) recruitment of members of these groups is by social age; (3) the resulting groups are age homogenous and represent a life stage within the life course; and (4) these groups are male organisations.

Although rooted in tribal societies, the explicitness of age and the age-graded organisation of the life course offered models. Through these we began to understand the workings of age and culture in industrialised contexts. The age stratification model of Matilda White Riley and her associates (1972) sees cohorts entering and passing through a role structure allocated by age. Age stratification is modifiable by the cohorts and by their historical experiences. Likewise, the pioneering work of Neugarten and her students on age norms effectively utilised the concept of age-grading. Using data from the Midwestern United States (Kansas City and Chicago), they demonstrated that there was considerable agreement on the timing of such events as marriage, first child, grandparenthood, first job, or retirement (Neugarten, Moore and Lowie 1965; Neugarten and Moore 1968). With life events

subject to age norms, the life course is graded into age stages or life stages.

How age, society and time work together conceptually is integrated in the life course. As an etic<sup>1</sup> unit of study, the life course has a number of elements which give it definition.

1. Time is central to the life course. Humans enter time and society at or before birth; mature into adults and do something in time; and then withdraw in death. Time however is more than passage of years or seasons. There are at least three kinds of time: life time, historical time and social time (Neugarten and Danan 1973). Like all temporal processes, they operate simultaneously and hence are difficult to analytically disentangle from one another. Life time (age and biological maturation) and historical time (major social system events) conditions life courses of cohorts entering and passing through a specific society. Social time (age norms and age statuses) further structures lives through normative expectations about life stages and allocation of roles by age/cohort.
2. Intervals between entry and exit, have cultural definitions (social time). People learn what their futures are like; what they should do; and when they should do it. Their perceptions of the life course see the path or pathways through time and society. These pathways have parameters giving them structure and meaning.

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<sup>1</sup> "Etic" is a concept which contrasts with "emic". The difference is one of perspective. Etic emphasizes the observer's perspective and in this case, the scientific culture of gerontology. Emic emphasizes the native point of view by using native categories and criteria natives use in decision-making.

3. The passage through time involves transitions as milestones are passed. These are turning points signalling passage through the life course. Transitions calibrate the social clock.
4. Social time does not pass as a continuum. Instead, it is punctuated into larger segments of time identified as life stages or age grades. Transitions such as marriage, children, work or retirement mark the thresholds to these stages.

Empirical work on the life course continues, especially on transitions and on populations in the industrialized societies of Europe and North America. Comparative work is in its infancy with the exception of Project A.G.E.

#### **Project A.G.E.**

Project A.G.E. is a cross-cultural research project which takes a team approach to cross-cultural data collection and analysis. As a team project, the co-directors (Fry and Keith) formulated and coordinated the research design. Principle investigators worked in specific communities around the world adapting that research design in culturally sensitive ways to the local culture. Project members met on a regular basis to discuss research design and problems of analysis and the project co-directors visited each community while the research was in process. In 1982 the project began in North America in Hong Kong. By 1986, a second phase of data collection was initiated in Ireland in Botswana.

As its major goal, the project sought to investigate how different kinds of communities shape the well-being of their older members. In shaping old age, the life course is a unit in need of definition within each of the research communities. What are the markers (transitions) noting progression through the life course? What are the age grades? Do we find consensus? What are

people doing in different life stages? By doing an ethnography of age, we understand the consequences of other community features for old age.

Our units of analysis are natural communities. Seven communities were selected because of the diversity across these settings. Table 1 outlines the differences across the seven communities. They are not representative of the respective nations, but indeed are shaped by national level policies and national social structure. The communities are on four continents (Asia, North America, Western Europe, and Africa). They have differing economies ranging from an international port of trade to cattle herding and a combination of foraging and experimentation with farming in a desert habitat. They represent different settlement patterns with urban apartments and public housing at one extreme to cattle posts or small scattered villages around permanent water at the other extreme. Change is ubiquitous, but different in each community. This ranges from near instantaneous response to world markets, to suburbanisation, to out-migration, deindustrialisation, and to being subject to European colonisation.

Demographic patterns also contrast. Local level demography does not always reflect national level trends since local populations are but a small part of the larger unit *and* are subject to specific social and ecological processes. The age structures of these communities reflect a combination of industrialisation, migration patterns, and diseases which alter fertility. Hong Kong has seen in-migration from the People's Republic of China and tremendous out-migration as the young are sent elsewhere in search of employment and wealth. Combined with high fertility, the net effect is still a maturing population. The North American community of Swarthmore experiences population turnover as the young go elsewhere to launch their professional careers. Other professionals working in Philadelphia take their place. Within this mobility, older adults who have aged in the community, are often forced to

Table 1:  
Project Age: Communities and Characteristics

Project Age: Communities and Characteristics							
Community	Researcher	Location	Population	% Older Adults	Demographic Features	Settlement Pattern	Economy
Hong Kong	Charlotte Ikels Case Western Reserve University	Asia Southeastern Coastal City	5 Million +	10% 60 yrs.+	High Population Mobility Out-migration of young	Urban Apartments Housing Estates	Int'l. Port of Trade Industrial
Swarthmore	Jennie Keith Swarthmore College	North America Northeastern USA 20 min. south of Philadelphia	5950	25% 60+ (excluding college students)	High Population Mobility	Suburban Single Family Dwellings; Few Apts.	Service Commuting to jobs in Philadelphia
Momence	Christine Fry Loyola University	North America Midwestern USA 1 hr + south of Chicago	3400 in town 4000 in 72 sq miles around town	17% 60 yrs +	Stability of population Some Out- migration of Young	Small Town Single Family Dwellings (Geographically Bounded)	Agribusiness Light Industry Service Commuting to Chicago; 19% Unemployment
Blessington	Jeanette Dickerson Putnam Indiana University Indianapolis	Western Europe Ireland, County Wicklow 18 mi. south of Dublin	1322 in town 678 in Townlands	10% 65 yrs +	Recent In- migration of Young	Small Town Single Family & Council Housing; Small & Large Farms & Recreation	Service Light Industry Farming Commuting to Dublin 7% Unemployment
Clifden	Anthony P. Glascock Drexel University	Western Europe Ireland, County Galway 50 mi. west of Galway in the Conne- mara	805 in Town 851 in Townlands	16% 65 yrs. +	High Out- Migration of Young Population decline by 15% since 1960	Town & Townlands; S. F. Dwellings Scattered Homesteads (Isolated)	Farming, Fishing, Shopkeeping Tourism (50% of workers) 37% unemployment
Herero	Henry C. Harpending Penn. State University	Southern Africa Botswana North and west near Namibia in the Kalahari	5000 +/- (seasonal fluctuation)	17% 60 yrs. +	Cohorts missing or smaller than expected because of disease-linked infertility	Disp. Compounds Scattered and isolated homesteads; A few isolated villages	Pastoralism Cattle Herding and sm. animals Some gardening No steady wage labor
Ikung	Patricia Draper Penn. State University	Southern Africa Botswana North and west near Namibia in the Kalahari	780	13% 60 yrs. +	Older adults to move to Namibia to get a dole Young males leave to train for army	Small Villages Located around permanent water about 30 people (very isolated)	Small-scaled gardening, stock raising & foraging Herding for Herero Crafts No steady wage

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Jennie Keith, Ph.D., Swarthmore College

leave the community to live with children or in a retirement facility once they can no longer maintain an independent life style. Mومence sees more continuity and "growing old in place," but many of the young who can get the requisite education leave the community to seek opportunities in Chicago or beyond. For Ireland migration is the theme. In Blessington, we find a combination of out-migration counterbalanced by the "blow-ins" from Dublin seeking a non-urban life style. They continue commuting to work in the urban centre which is less than an hour away. Clifden, on the other hand, has seen the out-migration of its young to the United Kingdom and America, leaving behind older adults and a declining population. In the more isolated Kalahari of Northwestern Botswana, out-migration is at a steady trickle, but other factors come into play. Among the Herero, pathological sterility has resulted in infertility which has reduced the presence of an entire cohort from the demographic profile. Significant numbers of people are over 60, but the people in their late middle age are missing or are rare because they were never born. The Dobe! Kung have not experienced this infertility, but in some villages the young adult males are missing because they are out tracking for the South African Army.

### **Cultural indicators of life stages**

In each community, our initial questions were: What makes people old? How is social time constructed? How is social time calibrated? What are the cultural markers people need to make judgments about differing degrees of social maturity? To get at these markers we use ethnosemantic strategies. The goal is to use native categories and native definitions and native boundaries for those categories (emics). What we wanted to avoid, was the superimposition of the researcher's categories onto the culture of each community (ethics). A variety of techniques can accomplish this which are

adaptable to specific settings (Fry 1986). The most direct is to ask key informants about the divisions in the life course that they see and then to probe about differences and similarities. In North America we were able to use a variety of the question-and-answer-game analogous to the "20 Questions" parlour game (Spradley 1979). Informants tell us by their questions what they needed to know to guess a man's or woman's age. Games did not work elsewhere, either being viewed as silly or identities of the person whose age was being guessed proved more important than age. Other strategies involved using people of different known ages, either from a census or from ethnographic observations. Age-relevant characteristics were abstracted, and then the line of inquiry turned to how these features were predictive of age or were not indicative of age. Regardless of how the markers of age were derived, they are anchored in key informant's judgments.

A longer-term goal of this exploration was to arrive at an instrument we call the "age game" to be used with a larger sample within each community. These age markers were used as descriptors for "social personae" representing believable men and women of differing ages. Thus more work with key informants resulted in knowing how to combine these markers to describe culturally appropriate personae. In no site was this an easy task, lasting well into the 4th month of fieldwork. In some places it was more difficult. For instance, Pat Draper, in trying to deal with illiteracy among the !Kung tried to arrive at a graphic medium that would allow her !Kung respondents to handle the personae while playing the age game. This added another level of complexity to the task. Not only did she have to identify the age markers, but she had them graphically represented in pictures (icons) drawn by a !Kung artist. Informants had to evaluate these for meaning before work could begin on constructing personae. Also there are the practical problems with duplicating the drawings when the nearest Xerox is 2 days away and may or may not be working when

you get there.

In comparing the markers of age across seven communities, we find some similarity in the criteria signifying age or life stage as well as marked differences. Data for this comparison comes from the descriptors used to define the social personae which were eventually used in the age game sorting task in each site. These descriptors are statuses which were concluded to be the most age salient by both informants and researcher in the respective communities. Although the descriptors are community-specific and expressed in four different languages, they can be grouped into comparable sets and then grouped into major themes.

1. *Domestic Status*: These criteria are indicative of kinship statuses and living arrangements. Included in this group are marital status, the status of kin (children, grandchildren, great-grandchildren, and parents) and household composition and housing arrangements.
2. *Non-Domestic Status*: This set is indicative of work status or subsistence activities, education, community activities and migration themes.
3. *Physical Status (self and others)*: This cluster includes functional or physical abilities and involvement in caring for another (spouse or parent) or being cared for by a child.

In generalising about the markers of age, we focus on three issues. The first is the degree of differentiation reflected in the criteria. Secondly, several of the themes are site-specific and reflect issues of local relevance. Thirdly, the variation across sites is striking and is patterned.

*Differentiation*. Social differentiation within each of the seven communities is reflected in the criteria used to distinguish life stages. When simply listing the descriptors, the !Kung use the fewest (28) which is exactly

what we would expect. In an egalitarian, small-scale and isolated society, there is very little to differentiate individuals. On the other hand, urban Hong Kong does not have the most differentiated criteria (34 total). In fact, it has a few more than the !Kung, but less than any other community. What we may be seeing here is that the neighbourhoods in Hong Kong are in no sense a face-to-face community. The age markers may be the minimum to differentiate the life course with emphasis on family and work. All other sites use more descriptors and increase linearly as scale and size increase (50 for Herero and 66 for Swarthmore). This is what we expected as a product of increasing societal complexity and communities where social fields are known, but not necessarily in their entirety.

*Site-Specific Criteria*. Some criteria are used across all sites: marital status, children's status, grandchildren's status, household composition, housing arrangements and work. Other criteria are site-specific, being used in only a few sites. For instance, migration is a theme which is relevant only in Ireland, which nationally has had a tremendous exodus since the 19th century. Community activity is referenced only in the suburban site and the small towns in the United States and Ireland. It is especially differentiated in Momence where there are community-wide organisations which are age graded. Status of parents is a criterion most differentiated in Swarthmore and Clifden, but also is present among the Herero. Residential arrangements of parents and their work or life status, are indicative of life stage responsibilities for their adult children.

On the other hand, other criteria are absent in some sites. Great-grandchildren are referenced in all sites, except the African sites. In Africa great-grandchildren are still very rare and hence, their presence would indicate substantial age, but absence does not denote age because so few people have them. The same is true of education. In the isolated areas of Africa, education beyond the primary grades, can only be obtained in

**Table 2:**  
**The Markers of Age: Similarities and Differences Across Communities**

**The Markers of Age: Similarities and Differences Across Communities**

<b>Criteria</b>	<b>Most Prevalent Similarities</b>	<b>Community Differences</b>	<b>Calibrating the Social Clock</b>
<b>Marital Status:</b>	Single, Divorced, Married, Widowed	<ul style="list-style-type: none"> <li>• U.S. Communities: Have remarriage</li> <li>• Botswana Communities: Have polygyny Herero: number of wives, junior/senior wife, widow remarriage</li> <li>• Divorce not referenced for Herero, Blessington, Hong Kong</li> </ul>	<p>Marital status in and of itself, is not predictive of age other than serving as a threshold. However, it is predictive of other things such as household composition and children.</p> <p>Plural marriages and remarriage introduce complexities and make marital status less predictive of other things.</p>
<b>Children:</b>	Presence/Absence of, Level in School, Marriage of, Employment of	<ul style="list-style-type: none"> <li>• Botswana Communities: Children's status described as small, young, older or grown. Herero reference the school in Xangua (primary school).</li> <li>• Hong Kong, U.S., Ireland: Children's level in school referenced.</li> <li>• Clifden: Migration of is referenced.</li> <li>• Employment status not referenced in !Kung and U.S. Communities</li> </ul>	<p>Where there is a universal educational system, the legal age norms are a very exact calibrator of the social clock. This combined with truncated reproduction (early 20's), is a reasonably exact predictor of a person's age.</p> <p>Size, work status, marital status, and migration status are indicators of maturity of children and approximate age of parent.</p>
<b>Grandchildren &amp; Great-grandchildren:</b>	Presence/Absence of, Level in School, Marriage of	<ul style="list-style-type: none"> <li>• Botswana &amp; Clifden: No reference to school or to marriage of grandchildren.</li> <li>• Botswana: No reference made to great-grandchildren</li> </ul>	<p>Similar to children's status as a predictor of age, but less precise because grandchildren are dependent of the reproductive careers of children</p>
<b>Household Composition:</b>	Alone, With Parents, With Roommates/Siblings, With Spouse, With Children	<ul style="list-style-type: none"> <li>• Botswana: Alone not referenced</li> </ul>	<p>Indicative of progression through the domestic cycle</p>
<b>Work Activity:</b>	Wage Labor Employment, Career Ladders, Self Employment, Retirement/Pensions	<ul style="list-style-type: none"> <li>• Wage Labor referenced only in Hong Kong, U.S. &amp; Ireland.</li> <li>• Botswana subsistence activities only                             <ul style="list-style-type: none"> <li>—!Kung: hunting, gathering, gardening, cattle, goats, crafts</li> <li>—Herero: cattle-how many and where they come from</li> </ul> </li> <li>• Botswana &amp; Hong Kong: retirement and pensions not present</li> </ul>	<p>Age norms on labor force participation and especially career ladders (middle class Swarthmore) are indicative of age.</p> <p>Subsistence activities (!Kung) are reflective of physical capacity which is correlated with age.</p> <p>Retirement and pensionable ages set legal norms for the threshold to old age.</p>

regional centres. Completion of higher levels is rare and hence, does not indicate age differences. As we expect, community differences are seen in the criteria differentiating their residents by life stage.

*Variation Across-Sites.* In considering across-site variation, we turn to the descriptors themselves and the way they contrast to indicate life stages. Four domains receive considerable differentiation within all seven communities. These are the domestic aspects of marital status, status of children and grandchildren and living arrangements as well as the non-domestic status of work activities. Table 2 presents the ways in which these are similar across most of the sites as well as the ways in which there are notable site differences. Also noted are the ways in which these statuses calibrate the social clock.

*Marital Status.* Perhaps marital status is the most comparable across sites (single, married, widowed, divorced - etc.). Our exception is the Herero who practice polygyny. Here for males having senior and junior wives is indicative of increased age, but for women being a junior or senior wife is not an age marker. For the other criteria, we find significant differences reflecting the institutional structure of those communities and the penetration of national institutions into community life. As a calibrator of the social clock, marital status may serve as a threshold to other statuses, namely to reproductive careers and the domestic cycle as seen in housing arrangements. An exception is the Herero where a majority of reproduction is pre- and extra-marital.

*Status of Descending Kin.* Status of children and grandchildren are criteria used in all sites and are among the most differentiated sets of descriptors. In all communities located in industrial nations, most of the descriptions of children and grandchildren are based on level in school using the full range from primary school to college or post-secondary school. Then, references focus on work and marriage

of these descendants. Educational status is most elaborated in Hong Kong, Swarthmore, Momence and Blessington and less so in Clifden. In these communities, universal education and completion of secondary education is the norm and it is not unusual to have offspring go on to higher education. Thus, offspring and their offspring are finely age-graded by the educational system which uses chronological age for recruitment. Consequently, children and grandchildren's status become a very precise calibrator of the life course.

In contrast, for our African communities, the status of children's and grandchildren have almost no reference to education and for the !Kung no reference to work. Only with the Herero who do send children to the local school at Xangua, do we find school even mentioned. Otherwise in these two communities, children are referenced as young, small, older, grown or the number of children (few, 1, 2, 3, 5, 8, or many). In the absence of universal education, the size, maturity and number of children do provide an indication of life stage, but it is by no means as precise as level in school.

*Work Activities.* Likewise, work activities are markedly different, again reflecting the penetration of a wage labour, market economy into community life. In Ireland, the United States and Hong Kong, most of the references are to jobs and different kinds of jobs (professionals, local businesses, or jobs within commuting distance or even being unemployed). In affluent Swarthmore, career ladders age grade work activities while in Momence, age-grading is apparent in a shift from commuting to establishing a small business around age 40. Only in Blessington, and in the two U.S. communities do we find a work status of "retired." In Hong Kong, one just leaves the work-force. However, in both Irish sites, one "collects the pension" at age 65.

In the Kalahari, there is no steady wage labour. There are no jobs and no age norms associated with them. Instead, the emphasis is

on subsistence. For the Herero this means cattle. How many are in a herd? Where did they come from? .... Gifts? .... Purchase? For the !Kung the markers are hunting, gathering, gardening, herding and making craft items to sell to the European woman who visits the area periodically. Younger !Kung men may work for the Herero as cowboys, but they are not compensated in cash.

By far the most precise calibrator of the social clock is universal education. First one's social maturity is gauged by passage through primary, secondary and then higher education. Then the children's and to a lesser extent grandchildren's passage through the grades as they prepare for adulthood indirectly ages the parent/grandparent. The reason is that these grades are directly linked to chronological age. Even, where divorce, remarriage and second families extend the reproductive cycle, the educational status of the first family and the oldest child serves as the predictor. This, combined with knowledge about career age norms (e.g. "start first real job around age 23" or "quit working for someone else by age 40") enables a fairly good approximation of chronological age and very good placement in life stages. Finally, the status of retired defines the threshold to the oldest age grades with a very precise definition rooted in chronology.

### **Changing age structures and culture**

Culture mediates changing age structures, but it is not a clear cut lead or lag relationship. Culture neither shapes nor responds to changing demographic pyramids, but modifies the relationship. In other words, culture is an interpretative buffer to changing demography. In all communities, experience with people of differing ages shapes the perceptions of those younger and those older than a particular individual. These perceptions culturally evaluate the beginning and the end of the life course as well as all divisions in between.

Demography can sharpen or blurr age differences, especially within families. Where

fertility is high and families are large, birthing continues until the late 30s or early 40s. In North America it was only in this century that the average age for birth of the last child declines to the late 20s (in 1950 it was 29 for men and 26 for women - Fischer 1978). In big families where reproduction extends across 20 years, generational differences are not sharply bounded. On the other hand, in small families, with shorter reproductive periods, generations become distinct.

Beyond family circles, very few people are cognizant of the demographic structure of their community. In asking about different age groups, if the question is perceived to be a demographic one, then the investigator is referred to the official census (a better source of information). The alternative is to return the question to the investigator because they have been busy collecting the census and hence are in a better position to know the answer. For the majority, statements like, "When I returned to town yesterday, all I saw were old people" are rare indeed. Elected officials, representatives of government agencies, social service providers and advocates for different segments of the population, in contrast, are likely to know and use these statistics in their work or advancing their position. Knowledge about the age structures of each community is a mix of how the facts and figures from governmental sources have been used locally (media, local officials and providers, and local issues) and how people of different ages are perceived.

The linkages between culture and the age structure of society are best revealed in the institutional structure of that society and the way in which age is defined and used. Industrial states have very distinctive national-level social institutions which use age in certain ways to define participation. Our contention is that age, a distinctive formulation of the life course, and old age are constructs specific to industrial societies.

A major question in social and historical research has focused on what has happened as a result of the "great transformation" or

the industrial revolution? How are contemporary European societies different from their feudal antecedents? What produced the differences between the developed world and the Third and even the Fourth world? These questions are not the subject of this paper, but we can ask what happened to the life course in the context of these changes. Historians have noted the transformation of the life course in industrialized societies (Kett 1983). First childhood became differentiated as a distinctive life stage (Aires 1962).

Adolescence too has emerged as a period of life with the transitions being readjusted through time (Model, Furstenberg and Strong 1978; Hogan 1981). Likewise, old age has become a separate period (Haber 1983). Consciousness of age increased, especially in the 20th century (Chudacoff 1989). Sociological forces shaping this historical trend are to be found in the institutional structures of these societies (Kohli 1986; Mayer and Muller 1986; Meyer 1986). They are virtually the same forces we have found in the differences across the seven communities in Project A.G.E.. Briefly, industrial societies became dominated by political and economic institutions. For the life course, work-force participation, careers and achievement become major themes because they are major dimensions of lives, opportunities and the reward structures of these societies.

Culturally age is transformed into an explicit dimension of social organisation. Age becomes something which is measurable chronologically. Bureaucratically organised societies use explicit and rational criteria in structuring institutions. Chronological age is an essential dimension of the economic and political institutions of industrial states. Calendars, enabling the measurement of age, have been around ever since the urban revolution in Mesopotamia and elsewhere in the ancient world. On the other hand, present calendars do more than order the seasons and taxes. Fiscal years, tax years and birth years are defined by them. Taxes and

accounting are rather obvious needs of economics, but why do birthdays become so important? States, in monitoring their populations periodically take a census. Counting is important, but of greater importance are other features. First, age defines the boundaries of adulthood and eligibility for full participation. Secondly, age/gender profiles are important indicators of trends forecasting institutional change and policy priorities in state planning. Finally, dependency ratios also alert the state to potential need and entitlements to reduce distress for those who are on either side of social maturity (the very young and the old).

On the other hand, just because vital statistics are kept, doesn't mean that birthdays, are an explicit part of one's identity. The Herero name each year and know the year in which they were born. This, however, does not translate chronologically. At best Herero men and women recognise relative age through their birth years - who is senior or junior. People in industrialised states need to know their ages since many of their linkages to the state are defined in terms of age. Birth certificates are not only needed to prove citizenship, but to claim age-linked privileges and entitlements. Participation in the labour force is defined by age. Child labour laws have set the lower age limit and social security benefits have defined the upper limits chronologically. Other privileges have minimum age thresholds legally defined - e.g. education, voting, driving, drinking, marriage, military service - etc.. In spite of laws which prohibit age discrimination in the work place, the boundaries of participation are defined by age.

In the remoteness of the Western Kalahari, there are very few state institutions. There is only one primary school, the dispenser (health services), an occasional veterinarian, and virtually no wage labour. Birth does not take place in a hospital where its happening is recorded on a certificate. Herero know their birth year, but not age. !Kung do not know their ages, nor is it

necessary. Children help their parents out in domestic and subsistence tasks. As they get bigger, they increase their help in collecting bush foods hunting, herding or gardening. There are no careers, only reputations. Men hunt, garden or they herd cattle. Reputations are based on individual characteristics, kin, physical strength and skill. Even Herero cattle which are potentially an expandable form of wealth, are too volatile a resource upon which to base a career in which increased wealth is indicative of seniority. Poison weed may wipe out a herd in one week and in the next month one may inherit another herd from his deceased brother. In old age there is no retirement and no pension. Also very few people drive. For !Kung children, completion of the primary grades is rare. All that is needed is relative age - older or younger. In sum there are few obligations or privileges linked to age beyond the family circle.

Data from Western Ireland also substantiate the connection between the state, the work-force and age. In Clifden the markers of age are not that remarkably different than in Blessington or the other Project A.G.E. communities in the U.S. and Hong Kong, although they do reflect community-specific circumstances. However, when asking people to use these characteristics to tell us more about the life course, we were surprised<sup>1</sup>. Over half of the people asked, could not do it. The reason is that they did not need age to characterize other people and for them the attributes did not reflect chronological age or life stage. Those who had difficulty were people born in Clifden and remained there, people who were older, people with less education and people who were unemployed (Draper and

Glascock, forthcoming). With less education and minimal participation in wage labour and in state institutions, age becomes increasingly irrelevant. Also in a social field where everyone is known in their entirety, age is not needed as a bureaucratic short-cut to life stage. Age is irrelevant because other information is known and is more important in locating a person on the social map. On the other hand, those who used age to generalise and classify others were people born elsewhere, educated, and employed in wage labour. Unlike Botswana, however, everyone in Clifden knows their age. A very important age is 65 when one is pensionable.

Under what circumstances is culture likely to facilitate the recognition that age structures are changing? The implications of our comparative work is that it is industrialised societies where we have (1) the ability to measure chronological age, (2) rationalised labour forces, (3) universal education, (4) legal age norms on marriage, voting, driving and other privileges, and (5) explicit age criteria for withdrawal from the work-force and eligibility for a state pension or social security and medical benefits. In other words, in bureaucratically organised societies where rights and benefits are rationalised by age, we find age and the life course a major feature of social life. In communities where the state and the market economy have not penetrated the lives of their residents, age structures are not cognitively rationalised. Here the markers are less precise, more personalistic and functional abilities are more paramount.

### **Implications for an ageing society**

If age and the life course are cultural constructions of industrialised societies and we are defining ageing as a problem, then we should use our knowledge of how age is conceptualised to help us refine the problem. Is it simply a demographic issue where 15 - 25% of the population will be chronologically over the age of 65? If this is a

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<sup>1</sup> The task we asked them to do was to sort "social personae" presented on cards, described using the attributes of age, into groupings which represented different life stages or age grades.

problem, then these societies should be congratulated for their achievement in longevity. However, demographic facts in the context of the life course in these societies are indicative of the economic and political aspects of the problem. Thus, we should ask about the reward structures which shape the life course and the responsibilities of the state.

One of the consequences of the work-force and wage labour dominating the lives of people has been increased individuation and emphasis on achievement. As people embark upon their life course, in a very real sense it is a "waged life course" (Heyman 1990). The pull-factors into a waged life course are material culture (consumerism) along with a sense of identity and self worth. Effects of this new life course are increased mobility and willingness to go where the markets provide work and goods. Individuals committed to a life of wage labour, no longer wait for family inheritances and interdependency with parents in managing family wealth (usually the farm). Although maintaining a kindred, their loyalty is to a much smaller and immediate family. From the perspective of labour and the state, people are autonomous entities free from ties to family, community and ethnic groups. As autonomous entities, they have several rather obvious and basic functions. Demographically, they reproduce, thus contributing to the future of the species and populating and enculturating the nation. Economically, they are both producers and consumers. Age enters the picture primarily in rationalising the production side of economics.

Age is used to regulate the work-force participation of men and women and to encourage their withdrawal. First as children they participate in a finely graded educational institution to prepare for participation and what will become their work or career. As socially mature individuals they enter the work-force to achieve, work and earn money to consume. At retirement or the pensionable age, they withdraw into a life stage which

may last for over 30 years. Old age and the waged and staged life course must have positive functions for the industrial order. Most obviously, older workers, like the poor, are a residual and flexible part of the labour market. In times of labour shortages, they can be mobilised and when unemployment is high, they can be encouraged to retire (Phillipson 1982). Pension funds also mobilise capital for investment and dependency on the state for pensions reinforces the legitimacy of the state (Marshall 1981).

The socially immature are supported, nurtured and socialised by their parents. Who supports the post-mature who are no longer in the waged stages of the life course? Nation states have responded through public social security and pension plans. Because people are individualised, families are minimised and community and religious affiliations are all but forgotten in our formulation of the problem. Thus ageing is an economic problem with political solutions.

In this economic formulation, we should look at both sides of the coin: production and consumption. If older people are no longer participating in production, do they also withdraw from consumption? Obviously, they continue to consume - food, clothing, housing, transportation, energy and health care. In health care, older adults are the major consumers which raises yet another question. Who is to pay for this significant portion of the GNP? On the one hand, state health care plans, state subsidies and long-term care increase state budgets and demands on tax revenue. On the other hand, medicine is a service industry generating employment and service as well as technological productivity which generates capital and labour within the economy.

The flip side to the economic scenario is that people are not complete economic creatures and work-force robots. They are family members. They participate in religious organizations. They live in communities and contribute to those communities. Yet because their activities here are not evaluated by wages or cash, it doesn't count. If the

economic picture points to generational inequities on the part of the state, we should examine these non-monetary activities as well as the monetary nexus.

Families are the expected institution for generational transfers, monetary and otherwise (see: Hagestad this volume). The direction of these transfers is from older parents to their children. Monetary help and transfers in the form of gifts and loans are difficult to document. Non-monetary contributions of older adults cannot be taxed and hence, it is next to impossible to calculate. Yet, when we consider the amount of care that is invested in adult children, in grandchildren and in the support given to spouses and peers, it is difficult to call older adults unproductive (Herzog et al, 1989). If these hours of support invested in others were to be put into the paid labour formula, we would arrive at a very different conclusion about older people and the gross national product.

Age is an individual and family affair the world around. Old age is a mix of positives and negatives, but as health, functionality and material security decline, the negative looms larger. In industrialised political economies, age becomes a new dimension. It enters the political domain. Consequently, it is a political problem because of the way the political economy structures the life course of its citizens. Political problems require political solutions. As the citizens in these economies age, those nations must decide to what extent national budgets will contribute to the welfare of their older citizens in public pension funds and in health care programs.

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## Family Networks in an Ageing Society: Some Reflections and Explorations

### Abstract

Past work on population ageing and family life has emphasized dependency, disregarding the aged as a resource and neglecting the young. In this article, changes in the structure of Norwegian families over the last few decades are explored. Three key changes are identified: sibling groups have become smaller and more age-homogeneous, the age difference between parents and children has decreased, and three-generational structures have become increasingly "top heavy". In modern three-generational structures, considerable support flows from the old to the young.

### Population ageing and family life

There is a growing recognition that we live in an ageing society, and that population ageing presents a host of new challenges for individual life planning, social policy, and the functioning of human groups (Pifer and Bronte 1986). In no social group is the impact of demographic change more dramatic than in families. Yet, the connection between societal ageing and family patterns has received little systematic attention in social science.

In current discussions, population ageing is often automatically linked with problems of *dependence*. The social sciences have adopted the concept of the dependency ratio from

demography and given it meanings far beyond its original usage. An increasing number of individuals in the last quarter of life is often automatically linked to problems of dependency and burden. The same tendency can be observed in the discussion of the family and what Matras (1990) calls "micro-dependency." As decreasing family size and increasing longevity alter the population pyramid of family lineages, we find a voluminous literature on "caregiver burden," but very little exploration of the old as a resource".

This may in part be due to another trend in recent work on ageing and family life: a focus on the aged and a neglect of children. Nearly all discussions of how families are affected by population ageing limit themselves to old people. It is hard to find a single study which sheds light on how the kin networks of children and youth have been influenced by recent demographic change. In this chapter, the main emphasis is on children, not on the aged.

In order to systematically question the prevailing tendency to equate ageing with dependency in the family realm, it is necessary to develop new research strategies by which two key issues can be addressed: what is meant by "family," and what concepts and measures are needed in order to describe family structure? The basic position taken here is that in an ageing society, the household has limited utility as a unit of observation in the study of family life. While demographers have provided a number of indicators to measure population age and ageing, they have rarely addressed the ages and generational composition of the families. Census-takers have traditionally only recognized two units of observation: individual and household. Consequently, "family" has been linked to household, and most family statistics describe parents and dependent children living in the same household. Once the children have left the nest, they are no longer counted as a part of the family, even though their relationships with the parents may last for 50 more years.

We have no census information on adults and their parents, and no figures on the generational composition. It is clear that in order to say something about the ageing of families, we need to move beyond the limits of the household and delineate units of individuals who are still related to their parents, but who are typically not living in the same house with them.

#### **Anchors and asymmetries: the need for new strategies**

One reason why most current statistics on families are based on the household unit is that it provides boundaries for the family system. If the household is abandoned as the unit of observation, we are left with floating boundaries. How limits are set depends on the nature of our questions, but the limits have to be made clear.

In describing intergenerational networks, it is necessary to choose an *anchor* and then ask about family members below and above the anchor. This simple fact has been readily recognized by anthropologists, but typically neglected in the approach of other disciplines to families. What is needed is to create kinship charts similar to those used by anthropologists. Looking "up" along generational lines, it is necessary to separate between maternal and paternal lines; looking "down" descendants are traced in what has traditionally formed a pyramid pattern. A fundamental problem in intergenerational research is the fact that views from "the top" of family trees are different from perspectives from "the bottom." It is important to realize the asymmetries inherent in intergenerational relationships. Each of us has only one mother, but most mothers have more than one child. While grandchildren have only one paternal grandfather, he may have 25 grandchildren.

A variant of the asymmetry problem is found in the use of demographic information, such as fertility figures. These data are usually anchored in women from given birth

cohorts. As Preston (1976) has pointed out in a classic paper, information on the family size of women does not enable us to draw conclusions about the family size of children. For example, the proportion of women in a cohort who bore only one child cannot be translated into the proportion of children from a given cohort who grew up without siblings.

Problems of asymmetry and unspecified anchors have plagued much of recent social research on intergenerational relations. Most surveys of family proximity and contact have been anchored among the old. Not uncommonly, estimates of contact rates are then discussed as applicable to the next generation, their children. An example of such misinterpretation can be found with regard to Shanas' (1980) finding that 80% of elderly parents see at least one child weekly or more often. It is not uncommon to find authors who conclude that according to Shanas' surveys, the majority of middle-aged individuals see their parents weekly. The asymmetry problem also creates difficulties in studies of caregiving and its burdens. Very often, such studies are anchored in a population of frail elderly. If it is found that a substantial amount of care is provided by middle-aged offspring, we frequently conclude that the majority of the middle-aged are involved in such care.

As should be clear from this brief discussion, there is a pressing need to develop data on family units beyond household boundaries. Such data should be built around carefully selected anchors who represent a specified age-cohort range. In sampling, "all families" is not a meaningful population, but "all families of the defined anchors" are, and we can obtain a probability sample of anchors. In countries with national registries and personal identification numbers, there is the potential for creating data sets which comprise family units, independently of household, and following them over time (e.g. across census points). Norway is among the countries which offer such possibilities. A highly promising strategy

would be to combine demographic descriptions of family structures with in-depth survey research. In the surveys, one could examine the social and psychological correlates of various types of structures, such as relatively "top-heavy" (old) versus "bottom heavy" (young) families; two generation versus five generation structures.

This is the approach I have taken in recent work on Norwegian family patterns. Analyses of a large-scale "family file" built on census and registry information have been combined with a sample survey of individuals from one of the cohorts included in the large file.

### **Norwegian families, 1930s to 1980s**

In my research on family structure, I have chosen first-born children from different birth cohorts as the anchor. The birth of the first child marks the start of a nuclear family system. These anchors could also be conceptualised as cohorts of first-time mothers (independently of birth cohort). Three data sets have been utilised:

1. A "family file" including all first-born children from four birth cohorts: 1946, 1956, 1966 and 1976, totalling about 90,000 families (described below).
2. Information from the 1970 census, in which all married women were asked about all children born in the marriage. This information was restructured to be anchored in first-born children from four periods: the 1920s, the 1930s, the period 1946-1949, and the 1950s. Information from this census was used to provide basic data on families formed before World War II, when there were no person identification numbers.
3. A survey of approximately 800 members of the 1946 cohort when they were about 42 years of age (1988). The survey included questions on the current family

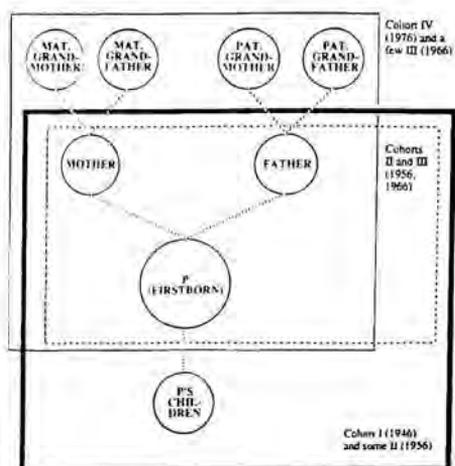
structure, health status of the respondents and their parents, and exchange of support across generations in the family.

Using these three sources, I briefly discuss three aspects of family structure: changing sibling groups, the age differences between parents and children, and the relative ages and numbers in three generations, with special emphasis on the position of grandparents.

### *The Norwegian family file*

Since the 1960s, all Norwegians have been assigned a personal identification number. At the time of birth, a child is assigned a number and entered in a national registry. In this registry, the numbers of the child's parents are also entered. By 1985, the Norwegian Central Bureau of Statistics, which carries out the census, had created a file with linked data from three census points: 1960, 1970 and 1980. In other words, for a given individual, the file contains information for a 20-year period. With the help of the Bureau, records for parents and children were linked over the same period. First-born children from four birth cohorts were identified: 1946, 1956, 1966 and 1976. These cohorts represent distinct areas in recent Norwegian history. Members of the first cohort spent their childhood years with limited material resources. They spent their youth in the 1960s, a decade of heightened political awareness and rapidly expanding educational opportunities. The 1956 cohort arrived at a time when the post-war recovery allowed more comforts of life than were experienced by the children of the 1940s. Their youth was spent in the context of an expanding economy. The 1966 cohort is still a part of the baby boom and its members have faced a labour market not able to absorb them. The last cohort, some of whom are the children of the oldest cohort (1946), was born in a period marked by a strong decline in fertility.

Fig. 1:  
Family members included in sub-files from four cohorts



For these cohorts, information on the family was obtained by moving "backwards" and "forwards" in census information and by checking the results against registry information. Members of the oldest cohort were 14 and living with their parents at the time of the 1960 census. By the 1980 census, most of these persons had children of their own. For the 1976 cohort, the parents' numbers were used to find them as children living at home in 1960 and to obtain information on the anchor's grandparents. All record linkages were performed at the Central Bureau of Statistics, and the final data file does not contain any identifying information. (The Bureau assigned new, random identification numbers.)

Fig. 1 shows the family members represented in the subfiles for each cohort. In all four, information is available for the anchors (first-born children, marked P) and their parents. In the 1946 cohort subfile (marked in bold solid line) P's children are also included. Subfiles for the two middle cohorts (1956 and 1966, marked with dotted line) contain a few individuals who had children by the early 1980s, but the majority of these records contain information on only two generations (P and parents). The

youngest cohort (1976, outlined with thin solid line) is the only one whose file includes information on grandparents. If the anchors' parents were living at home with their parents (P's grandparents) at the time of the 1960 census, this record linkage was possible.

The four subfiles contain basic background information on all family members included. For example, we know their educational attainment and occupation, and their geographic location at all census points. For members deceased between 1960 and 1986, we have the year of death.

### Changing family structures

Demographic change which leads to an ageing society also alters the contours of family groups and lives within them. Two key changes in family structure are addressed here: *increasing "verticalisation"* and a *shift from "bottom heavy" to "top-heavy" structures* (Bengtson et al. 1990; Hagestad 1989; Knipscheer 1987). Altered fertility patterns lead to an emptying of *intragenerational* relationships. The most extreme examples would be cases in which a one-child policy has been successful for two generations. Under this fertility scenario, the individual has no horizontal ties outside the marital relationship. Even when children do have siblings, the sibling group is smaller and more homogeneous than was the case earlier in this century. Several authors (e.g. Hareven 1989; Uhlenberg 1978) have argued that recent demographic change has led to a *homogenisation of childhood*, i.e., subsequent cohorts have grown up in increasingly similar family environments. Such discussions also include references to vertical, intergenerational ties. Authors point out that an increasing proportion of children are born to parents aged 25 to 35 (Eggebeen and Uhlenberg 1989), and a steadily growing number of them grow up with grandparents alive for the duration of their childhood. The increased availability of intergenerational relationships is part of what is described as a

process of *verticalisation* (Knipscheer 1987).

Reduced fertility and mortality lead to a dramatically altered balance between adults, especially older adults, and children in family groups. From a traditional lineage pyramid, with 20-30 grandchildren and, at best, two grandparents, there is a move toward "an inverted triangle" -- the pattern which results from two generations having only one child. If such fertility patterns are accompanied by modern mortality patterns, family lineages will frequently have more grandparents than grandchildren.

In early analyses of the Norwegian family material, I have begun to explore the extent to which the changes outlined above can be identified in families which were started over the last few decades.

*Horizontal ties: the shrinking sibling group.*

Over the last five-six decades, two interrelated changes have taken place with regard to children's sibling groups. First, the experience of growing up in large families has become statistically rare. Second, the distance between the first and last child has steadily declined. Analysis of the 1970 census information and the family file reveals a steady increase in the proportion of firstborns

who grew up in families of two or three children, with an average distance of 2-4 years between them.

As table 1 shows, among children born in the 1920s, nearly half ended up with four or more siblings. In contrast, the 1966 cohort has only 2% who grew up in families of five or more children. While two-thirds of the 1920s' first-borns had at least three siblings, the corresponding figure for the 1966 cohort is 11%. During the post-war era, families with 2-3 children have become the norm. In the 1966 cohort of first-borns, more than three-fourths had one or two siblings by the age of 14. In the 1976 cohort, this figure will most likely be over eighty percent.

A substantial proportion, one-third, of the 1920s first-borns were sixteen years or older when their last sibling was born. In the 1950s and 60s, that figure is under 5%. In these recent cohorts, the vast majority have less than ten years between them and their youngest sibling. In families with two children, the distance is four to five years; in sibling groups of three, eight to nine years. The shorter span between the first- and last-born child means that the siblings to an increasing degree can be said to have grown up "in the same family". While many youngest children early in this century only knew their parents with grey hair, today's siblings have experienced their parents in the early phase of adulthood, have had similar material resources available to them, and known the same "galleries of kin".

The greater age homogeneity of sibling groups has implications for adult life. Siblings will have long life-overlaps and are likely to grow old together. Throughout adulthood, they will tend to have a sense of being peers, who face key adult transitions at about the same time. Such peership may increase empathy and communication, but it also means that they face similar constraints and stresses. This, in turn, may limit their ability to serve as social supports for one another.

A note about "only" children is necessary. Since census information on family units cannot identify only children, it was not

Table 1:  
Number of siblings at age 14 among first-born children

	1920s*	1930s*	1946**	1956s**	1966**
0	4%	6%	28%	15%	12%
1	15%	19%	35%	35%	45%
2	19%	23%	22%	29%	32%
3	17%	19%	10%	14%	9%
4	45%	33%	5%	7%	2%
	100%	100%	100%	100%	100%

Sources:

\* Family File,

\*\* Data from 1970 Census

known until the family file was available that the Norwegian post-war cohorts had an unusually high proportion of first-borns who ended up with no siblings. As table 1 shows, more than one-fourth of the 1946 cohort grew up as only children. The reason for that becomes apparent when we examine age differences between parents and children. These "onlies" were typically postponed children; delayed because of a depression and a world war.

#### *Vertical ties: parents and children*

Examination of the age of mothers at the birth of the first child shows that in the 1946 and 1956 cohorts, only children had relatively old mothers. More than half of the number these women were over thirty when the child was born. In contrast, children who ended up with large families had relatively young mothers. Among those with three or more siblings, about 40% had mothers who were under 22 years of age at the time of the first-born's arrival.

In the four post-war cohorts, a remarkably stable proportion of mothers started the family between the ages of 22 and 30 (table 2). From 1946 to 1976, this figure stays between 52% and 56%. Where we see shifts is in the relative distribution of "early" and "late" mothers. During the four decades, a

Table 2:  
Age of mother at the birth of first-born child in four cohorts

	1946	1956	1966	1976
Under 22	14%	25%	39%	33%
22-25	28%	32%	37%	37%
26-29	27%	22%	15%	19%
30 and over	32%	21%	9%	11%
Total	101%	100%	100%	100%

Source: Family File

decreasing proportion of first-borns were born to mothers over 30 (from 32% in 1946 to 11% in 1976) and an increasing proportion had mothers under the age of 22 (from 14% in 1946 to 33% in 1976). Thus, in the four decades covered by the family file, it has become increasingly common for the families to get started before the mother had turned 30. By 1976, nearly nine out of ten first-borns had mothers under 30. Eggebeen and Uhlenberg (1989) show very similar trends in the United States during the period 1940-1980.

#### *The 1946 cohort at forty-two*

When members of the 1946 cohort of first-borns were contacted in 1988, 82% had at least one living parent. About 10% also had a living grandparent. Of the 792 respondents, about 10% were without children.

The respondents were asked where they would turn for various forms of help. Their answers reflect the centrality of the parent-child connection. Parents, especially mothers, are mentioned more than friends and more than siblings. Parents were seen as potential sources of financial help in a pinch, assistance with care for children in the case of illness, and advice and encouragement in the tasks of child rearing. A strong theme in these data is that parents are supportive players for adult children in their own role as parents. They are there in times of crisis, such as illness, unemployment, and divorce, and they serve as emotional boosters for their children's parenting. These findings are supported by a number of recent studies on both sides of the Atlantic (e.g. Cherlin and Furstenberg 1986; Heatherington and Camara 1984; Johnson 1988; Parke 1989).

Becoming a grandparent, especially a grandmother, has always been a transition which typically occurred in the middle years. The most significant change with regard to the grandparent role is its relationship to the parent role. By the time her first grandchild is born, a woman is typically not engaged in

day-to-day childrearing (Hagestad and Burton 1986). Thus, there is less competition between these two roles. Rather, grandparents are what Gutmann (1987) calls *emeritus parents*, who help provide a supportive framework for their adult children's functioning as parents. Thus, the key to understanding the functions of grandparents in modern families lies in the quality of ties between adults and their parents (Johnson 1988).

In considering the flow of resources and support between the generations, it is of course important to examine the relative number of old and young in the family. In some current work (Hagestad and Gautun 1990) we have explored three-generational structures, using the survey from the 1946 cohort. Starting with the ratio of grandparents to grandchildren, we defined the following three structures:

*Traditional:* .00 - .25 grandparent per grandchild;

*Transitional:* .26 - .99 grandparent per grandchild;

*Modern:* 1.00 or more grandparent per grandchild.

Among these families, 39 percent fall into the traditional "bottom-heavy" pattern of considerably more grandchildren than grandparents. Forty-three percent reveal a transitional pattern, with a grandparent-grandchild ratio of .26 to .99. Finally, 19 percent have a modern structure, with equal numbers of grandparents and grandchildren, or more grandparents than grandchildren.

The relative numbers of grandparents and grandchildren is a neglected aspect of family structure, but it would seem reasonable to expect that it has profound impact on the flow of support across generational lines. Using an index of "reservoir of support" from grandmothers (the respondent's mother), analysis of variance revealed significant differences between the three structural

types. Grandmothers in modern, "top-heavy" family structures were seen as the most helpful, while grandmothers in traditional, "bottom-heavy" structures were perceived as the least helpful.

### *The question of variability*

Both in sibling groups and in parent-child relationships, we may be witnessing decreasing variability on an intra- as well as an inter-family level. However, if we consider three generations or more, we find a great deal of heterogeneity (Bengtson, Rosenthal and Burton 1990). The age differences between grandparents and grandchildren reflect the fertility patterns of two generations, and reveal a wide variance. In the family file, nearly two-thirds of the 1976 cohort had all grandparents living in 1980. As would be expected, the youngest grandparent was the maternal grandmother and the most commonly found, while the oldest and least frequently encountered grandparent was the paternal grandfather. However, across grandparents, ages ranged from 30s to 90s.

It is also important to keep in mind the current discussion of "aged heterogeneity" in society at large (Dannefer and Sell 1988). A number of authors argue that with increasing age, we see a "fanning out," an increasing variability in available resources, health and functioning. A neglected aspect of variability in old age is the type of intergenerational structures individuals are embedded in.

A note about social and historical contexts is in order. Although this discussion builds on recent literature on intergenerational relations from both sides of the Atlantic, it may be wise to caution about forming generalisations across continents. An obvious factor to consider is size and distance, but several others are worth mentioning. One is the impact of welfare states, especially national health care plans. The lack of provisions for long-term care in the U.S. puts economic pressures on the aged which are much less evident in a country like Norway.

Such pressures may restrict the flow of financial resources from old to young. Canada would be an interesting case in three-way comparisons, since it combines the distance and scale with a fairly developed welfare state. Another important factor to keep in mind is World War II and its aftermath. I have already mentioned the phenomenon of postponed children. In many parts of Europe, severe housing shortages in the post-war era made extended households common. In the survey of the 1946 cohort, we found that nearly 40% had spent a part of their early childhood living in the same house as their grandparents. It would be reasonable to expect that such early experiences would affect subsequent orientations to kin ties.

### Summary and discussion

Using data on Norwegian families, this brief discussion has focused on some key changes in family structure produced by altered fertility and mortality patterns. It is argued that we witness horizontal constriction in family relations, and an increasing homogeneity in children's nuclear family contexts. However, a new vertical intergenerational complexity spells increasing heterogeneity and variability, both for old and young. An examination of three-generational structures challenges prevailing views of family ageing as linked to problems of burden and dependency. In the Norwegian families studied, family lineages with modern, "top-heavy" structures had the most support flowing *down* generational lines, from old to young. These data point to the importance of considering both macro (societal) and micro (family) levels in our discussions of intergenerational transfers and the complex issues of dependencies in an ageing population. A reconsideration of family functions is also in order. Modern vertical family structures are typically found in societies in which other key social structures, such as schools, the workplace and residential areas, are highly age-homogeneous. In

societies which erect structural barriers against contact and communication between members of different age groups, the family provides a critical antidote to such segregation. Interwoven lives, longstanding personal knowledge and long-term reciprocities, can help to soften age-related contrasts and chasms in society at large. It has been argued that modern family relations are characterised by ambiguity and ambivalence (Hess and Waring 1978; Rosenmayr 1986), with few culturally provided guidelines. There is another side to this lack of clarity: flexibility. The old notion of family as a highly specialised institution which only takes care of emotional needs in a highly bureaucratized urban society, is outmoded. What we are beginning to see is that the family is the *omnibus institution* which fills the gap left by other institutions. In policy discussions, it is important to ask how the strength and flexibility of the family can be maximised. Such deliberations should consider the old as significant social and psychological resources for the young. It is also imperative to move beyond limited static views of dependency to dynamic, multi-generational perspectives on complex patterns of interdependence. Both old and young would benefit from such broadened vistas.

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## Transmissions between Generations and the Life Course

### Abstract

This paper presents a theoretical approach focused on the interactions between life course and intergenerational relationships in the framework of the multigenerational family. The analysis of intergenerational relationships emphasizes the social mobility factor and the economic exchanges which structure the social trajectories of each generation. The assumption is that social transfers and solidarity between generations modify class destiny. Transfers should be considered not only in the "downward" direction from parent to child, but also in the "upward" direction from child to parent, which may be characterized by what could be called the "backward milieu dominance effect" from offspring to parents. This hypothesis is based on the results of longitudinal research which has shown the restructuring of social disparities during the transition to retirement. Moreover, considerations of private transfers within family solidarity bring a larger and more realistic vision of the solidarities and the balances between generations in society.

Auguste Comte stated that the pressure of one generation upon another is one of the most important phenomena in society. This statement is even more relevant in an ageing society in which that pressure increases drastically. In view of recent demographic change, it is vital to deepen our

understanding of new forms of intergenerational relationships and their coexistence, interaction and exchanges. Population ageing is expressed not only through a transformation of generational structure, but also through changes in the nature of generations themselves. Given the increased number of generations alive at the same time, the term "ageing society" appears to be synonymous with "multigenerational society". In effect, with life expectancy near 80 in modern societies, and considering 20 years to be the span of a generation, such societies count no less than 5 co-existing generations. The number of generations seldom reaches that level in the family but three-generation families are becoming the norm, and four-generation families are becoming more prevalent. A French survey on the transition to retirement has shown that one out of three 60-year-olds belongs to a four-generation family (Paillat et al. 1989).

It is well known that in earlier centuries in many European countries, the demographic composition of the family was more horizontal (i.e. with a large number of siblings) than vertical (i.e. extended in the genealogical dimension). This made the practice of family solidarity towards the elderly harder. The modern vertical family may thus encourage such solidarity (Blum & Le Bras 1985).

As generations multiply, their respective demographic distribution changes. In a modern rectangular age structure, the sizes of the different generations are more or less equivalent except for the oldest cohorts, in which high mortality rates are concentrated. The coexistence of adult generations of approximately the same size, an historically new phenomenon, changes the way in which they are replaced and has important consequences for their relationships. For example, a pyramidal age structure, more than a rectangular one, facilitates authoritarian relations because death regulates generation relief at every age and gerontocracy is exerted by a minority.

In the new demographic structure, the

second part of life is lengthening. Middle age is becoming a key period in the redefinition of intergenerational relationships, in much the same way that adolescence is. This process is particularly noticeable when adolescents and adults confront one another. The adolescents seek independence from the adults and force them to enter middle life and become conscious of their own ageing. In order to point out the analogy of processes occurring at the same time in these two generations, I have proposed to call middle life "maturescence" (Attias-Donfut 1988a), a word which parallels "adolescence". The term has the advantage of underlining the changes occurring during that stage of life, while maturity is a static word. During maturescence, the redefining of intergenerational relationships also occurs with the grandparent generation which is growing old and changing expectations, e.g. by asking for help. Being caught between two generations makes this middle stage of life such a critical one. During this stage new types of generations emerge, the result of permanent renegotiations.

An ageing society is not only a multigenerational society but is also characterised by the transforming of generations themselves and their redefinition through relations with others. Such transformations can be seen from a demographic and sociological point of view as well as from a psychological and symbolic one.

Having indicated these new conditions, we can examine the influence of intergenerational relationships upon the life course of generational members, i.e. how the generations shape one another. The present analysis concerns the family context, but the phenomena observed have implications for other social institutions as well as for society as a whole.

During recent years, much attention has been focused on changes in marital relationships, especially regarding the transformation of gender roles. In the various typologies set up to describe emerging family

patterns, the way the spouses relate is often the major criterion (Kellerhals 1987). The family unit is defined by reference to residential nuclear units, i.e. restricted to the couple and their young children.

The shift in research focus towards adult intergenerational relationships requires us to change family definitions. A similar recognition to that new only occurring in gender relationships is needed in intergenerational relationships. Moreover, those two kinds of relations have to be linked in a "gendered generation" (Attias-Donfut 1988b) approach. This subject is dealt with later on in this paper.

Intergenerational relations in the multigenerational family have been the subject of some significant research, although in a more limited sense than in other areas of family micro-sociology (see review of the question by Hagestad 1981). In much of this research, the family is seen as a social network or a type of small group to which the phenomena principles of group dynamics can be applied (Mangen et al. 1988).

Emphasis has been put on affect (Rosenmayr 1977), cohesion and consensus among family members; and on parenting styles (Hagestad 1984). Other research has centred on altered family structure resulting from changes in marriage, divorce, fertility, and life expectancy (Roussel 1989).

In most of this work, the economic dimension remains largely unexplored, which is also the case regarding the influence of social mobility on family relations. Studies of family exchanges deal more with emotional support or practical help than with economic exchange. It is therefore important to pay more attention to economic factors and to examine the array of affective, cultural, financial and material gifts: to consider the economic as well as the symbolic. Exchanges, direct or indirect, restricted or generalised (Levi-Strauss 1947) are intertwined. The subtle mechanisms of immediate and delayed reciprocities which are at work in the relations between generations have to be understood within a larger theoretical context

of gift and exchange. Family solidarity implies a necessary asymmetry given the chains of debt transmitted across generations (Buisson et al. 1989). That dynamic is at work for example in the help given by family members to the dependent elderly, the importance of which can now be evaluated: recent studies in France reveal that this support is about twice the size of institutional support (Gauthier & Colvez 1989; Bouget & Tartarin et al. 1990).

In my opinion, private transfers within family solidarity complete, balance and booster national solidarity. Understanding such transfers would bring about a broader and more realistic view of the generations in society as a whole. Current thinking in this field remains narrowly limited to the question of retirement pensions. It seems important to put that question in perspective, within a framework of a complex web of transfers: public and private, formal and informal, upward and downward.

Discussions of intergenerational transmission and transfers generally concentrate on "downward" transmissions, those from parents to offspring. The emphasis is on the socialisation of the young and parental influence on children's social trajectories. "Upward" transmissions, from offspring to parents, have rarely been considered. Nevertheless, there is little doubt that the social position of offspring influences that of the parents too, at least during the second half of the parents' life. Such transmissions would be similar to "reverse socialisation" (Allerbeck et al. 1979) and mutual influences.

Intergenerational transfers have consequences for social structure, influencing the circulation of goods, social transfers and basic social class structure.

These issues are touched on in the following three points: concomitant changes in gender and intergenerational relationship patterns, downward socio-economic transmissions from child to parent and upward socio-economic transmissions characterized by what could be called the "backward milieu dominance effect", from

offspring to parents.

### **Concomitant changes in gender and intergenerational relationship patterns**

In traditional societies, and, until the recent past, in modern societies, generation renewal and the social organisation which guarantees it has been a matter for men, since such renewal manages -and is managed by- the reproduction and distribution of power. The social mobility of a person is measured through the social status of his or her father. The social dependency of women on men - fathers or husbands- maintains them within an intra-family role, the mother's role, in which they embody the social image of a traditional female role.

Female lineage on the one hand and male lineage on the other order the renewal of generations through forms which also reproduce gender distinction and class structures as they are represented by men, the latter keeping social control over these changes.

Today, as the respective status of genders shifts, so too do their social images. This phenomenon is obvious in every field. In the working world, even if gender inequality has not yet been overcome, real progress can be observed. The number of female workers is steadily growing despite an rise in unemployment. This increasing female participation in the workforce is not a temporary phenomenon, but is the sign of a deep and irreversible tendency. One by one, the last bastions forbidden to women have fallen: the military, sports and, possibly soon, the church. Girls' access to various institutions of academic learning is increasing as well as their success in getting degrees. Family roles are also being modified as a result of birth control and the diminishing amount of time devoted to reproductive functions.

According to research findings, daughters of working mothers have stronger and more positive "woman images" than the daughters

of inactive mothers. Moreover, the former are more likely to pursue careers not specifically female in character (Hoffman 1986). The employment of the mother also results in a better sharing of domestic tasks with the father. In this way, the father's role in child socialisation is developing, symbolised by the term "new fathers". Increasing father participation in children's socialisation encourages independence and social achievement among girls as well as among boys, further contributing to the reduction of gender differences. Children's sexual development is no longer linked to social identifications which create drastic differences between genders and there is disconnexion of early sexual identifications and social gender identifications.

Adopting a "gendered generation" approach, we emphasise an interdependence between gender relationships and generational relationships and assume that the transformation in the respective status of male and female results in a transformation of intergenerational ties.

Women's increased access to every skill, every labour sector, every status may affect future intergenerational relationships as well as the future social class structure. Examples of such interconnections might be:

- Greater gender cooperation induces a greater intergenerational cooperation while competition between genders and competition between generations increases. Power relationships give rise to revolt or submission; at the same time, egalitarian relationships allow time more solidarity and more competition.
- Gender competition increases in every field: the academic, the professional and the private. That competition intensifies the pressure exerted by the new generation on the previous one still at work, leading to a rise in intergenerational competition.
- Patterns of social reproduction and social mobility are changing. Infant sexual

identifications are no longer necessarily coupled with social and status identifications linked to gender images whose social relevance has decreased. Thus, a girl or a boy can refer to the social location of either the mother or the father, which, in turn, could be a factor in multiplying social mobility chances.

According to these assumptions, gender transmissions disrupt the social reproduction pattern as it has been established in the traditional gender division. It already seems useful to explore in depth the findings in family microsociology with regard to male and female roles and relationships and to look for their effects on intergenerational relationships.

#### **Downward socio-economic transmissions**

The family cannot be seen conceived as a small group restricted to affective exchanges and disengaged from economic functions. And we are once again now beginning to understand the importance of intergenerational transfers. In France, three out of four households leave an inheritance after death. These transfers have been continually increasing during past decades (Gotman 1988). This trend is, to a great extent, due to the fact that salaried workers have had access to house-ownership. A longer life expectancy and above all a predictable one, encourages savings, and the age of access to ownership is now concentrated between the ages of 25 and 40. The means of transmission is changing too: the proportion of donations to inheritance is increasing, the former being often made between the ages of 45 and 55 (Masson 1985).

Savings are accumulated during the first half of life, then they are spent during the second half, revealing a tendency towards economic transfers during the second part of life. This tendency is encouraged by improvements in retirement pensions and has

been made even more necessary by youth unemployment. Forms of transfers vary from gifts of money to help in purchasing a house (Bonvalet 1988). On a more modest scale, other kinds of transmissions ought to be mentioned and considered, such as daily help, gifts, assistance with house furnishings, even cars.

These facts lead us to restate the respective contributions of successive generations to the national wealth. It is usual to emphasise increasing costs caused by the aged as a consequence of an ageing society. Such an analysis remains dominated and limited by the question of retirement schemes, i.e. by the only mechanisms of intergenerational transfers governed by national solidarity. Moreover, the latter is wrongly supposed to cancel and replace traditional solidarity within the family.

By disregarding interfamilial transfers, one neglects more informal and diffuse mechanisms which are of considerable importance. Cultural and financial accumulation as life expectancy increases result in more transfers to younger generations. These transfers continue after retirement and even after life itself, and represent important social and economic support from the old to the young. They represent a transfer in the opposite direction to that of national solidarity, but may indeed contribute to national and family solidarity. Thus a kind of accumulation cycle operates: the resources of the old are transferred to the young, who in turn contribute to societal transfers which benefit the old. This cycle should give us a new perspective on the "burden" that the elderly are supposed to be. Although the cycle of transfers reflects and possibly reinforces social inequalities, it nevertheless represents an important part of the intergenerational picture and should temper alarmist views of population ageing.

### **Upward transmissions**

Transmissions and transfers are generally

considered from parents to offspring, i.e. in a downward direction. Less attention has been given to the reverse. However, such exchanges take on a new importance in an aging society where family support to the elderly becomes increasingly necessary.

Studies of poverty have shown that underqualified young people stay longer in their parental home. The struggle against poverty leads to a strong economic solidarity in the family. Historically, in agrarian societies and nowadays in developing countries, children are seen as resources, because of their contributions to the household as manpower or sources of income. They also represent insurance for their parents' old age. The idea of offspring being sources of income has been replaced by the idea of children being sources of expenditure, characteristic for a consumer society. Descendants nevertheless represent resources for their parents, although this is not always obvious.

Various statements lead to the assumption that there are also relevant upward transmissions. These transmissions are a logical consequence of upward social mobility. It is well known that social mobility has noticeably increased during the course of the last decades (Bertaux 1977; Thelot 1982 1983). This evolution is, indeed, related to the profound structural changes occurring in developed societies, which have been particularly brutal in France (Erikson et al. 1979).

Each generation faces a social structure different from the previous one, including an altered professional sector. Employment in industry, for instance, has decreased, while service employment has increased. The result is a drop in social immobility. This does not mean that family origins are no longer important, but family influence exerts itself through patterns other than simple reproduction.

As a consequence, cases of status disparities between family generations become frequent. In some milieus, such as in the independent professions, they represent the majority. This is even clearer if one

considers three generations. Higher executives are more often grandchildren of workers or peasants than of higher executives; less than 10% are of the latter origin (Pohl & Soleilhavoup 1982). What has been the role of family exchanges in this mobility and what is, in turn, the influence of this mobility on intergenerational interactions?

Marriage also represents a factor in social mobility (de Singly 1987). When spouses are from different backgrounds, this affects parental relationships on both sides. Relationships with the parents of the spouse from a higher level are closer, whether it be the husband or the wife (Menahem 1988).

It is interesting to note that when elderly individuals live with adult offspring, the former have an income which is lower than the national average, while the latter have above average incomes (Canceill 1989). In such situations, it appears that a rise in offspring status benefits parents and brings improved living conditions.

These few examples point out the often neglected importance of social mobility in intergenerational relationships. The hypothesis that mobility benefits are often shared with other generations in the family seems quite plausible. Such a sharing could illustrate a phenomenon discussed by economists, the tendency towards a certain equalisation of consumption among family members. The second half of life is becoming longer and affords the opportunity of a second career. This also means that changes in career trajectories could take place. Consequently, another kind of mobility, one which occurs during the individual life course, becomes possible in society in general and entails movement through shifting patterns of income, possession of goods, social interactions and life styles.

Changes in social status can be tied to relations between generations by means of national solidarity, which is a form of institutionalised intergenerational solidarity. Such a hypothesis is supported by the fact that the transition to retirement restructures

social disparities as expressed in ways of life. This is a key finding from a longitudinal study conducted in France on two cohorts of retiring people (Attias-Donfut, Renaut, Rozenkier 1989; Attias-Donfut 1989). The cultural behaviour of different social categories tends to homogenise after retirement. It is as if the suspension of job-related constraints suppresses some of the concrete daily forces which shape a way of life, and which characterise different social categories. Do upward transfers between generations affect status changes? Is there a driving effect of the promotion of some members upon the whole family group? Studies of social mobility have shown that the background of social influence operates not only during the first stage of socialisation. For example, family background not only influences academic achievement, but professional career as well. Among those who succeeded in the French baccalaureate, the children of higher executives more often become higher executives themselves (46%) than, at the same level of education, the sons of lower executives (39%), the sons of craftsmen or tradespeople (30%) or the sons of employees or manual workers (25%), (Thelot 1985). Academic achievement is then a function of what has been called the "dominance effect" of the social origin (Boudon 1973).

Would not such a dominance effect work in reverse from successful offspring to parents whose social status would increase, through level of income, way of life, social relationships and symbolic references? Could some changes in social status come about during late maturity? Could parental investment in offspring bear social fruit in a kind of social and economic profit directly resulting from intergenerational relationships?

The analysis of the intertwining of life course and intergenerational transmissions may shed light on some aspects of the social determination game, by introducing a dynamic perspective and emphasising mutual influences between individual lives.

Social class sociology and, more generally, social inequality analyses are used to focus on patterns of reproduction. Emphasis is then put on social conditioning effects and the resulting habitus (Bourdieu 1979). The latter is defined as a system of durable predispositions, a product of the internalisation of objective conditions, which structure social practices. The habitus ensures the "social heredity of acquired characters", "the predecessors reproducing themselves in the successors" (Bourdieu 1974). It has become obvious that age and social class are not sufficient to predict life-styles throughout life. For example, retirement affords lower social classes new opportunities for leisure activities generally reserved for the middle and upper classes. Moreover, social transfers may restructure the life-standard disparities between different social categories, for example, bringing the independent professions nearer to the lower-paid workers in retirement.

Thus, it is interesting to introduce within social class theories reflections on the life course (Kohli 1986) and the changing intergenerational exchange-balances across phases of life. These factors are able to moderate the effects of the position in the production process upon class disparities and to help account for shifts in class destiny.

Upward and downward transfers are part of a complex family exchange network. Thus it is necessary to consider it in its entirety, i.e. not limited to one direction and not limited to two generations, but including the whole multigenerational family. In this way, we can evaluate social costs and costs shared by families. We must not only calculate the cost of a child or the cost of a dependant older person, but we must also consider possible benefits within a broad time perspective. Directeur des Recherches sur le Vieillessement Caisse Nationale d'Assurance Vieillesse

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## The Changing Structure of Living Arrangements and its Consequences for Social Networks and Social Support

### Abstract

Providing for the elderly is a challenge to modern societies, not only with regard to financial assistance and public services, but also regarding informal social support by social networks. The changing age-composition of the population is accompanied by a change of living arrangements. As it is pointed out by data from the *German Welfare Survey 1984*, different living arrangements imply different compositions of intra- and extra-household networks and special profiles of giving and receiving social support. There must be a balance of giving and receiving of social support between people and groups who offer such activities and those who ask for it in order to fulfil needs and to avoid dissatisfaction. Despite a desire to take care of needy and elderly people, one cannot fail to notice an increasing shortage of social support for elderly people because of their growing proportion and the concentration on a few special living arrangements. On the other hand, the potential of social support offered by elderly people will grow presumably.

### The significance of the problem

All modern societies are facing a changing age structure with a quite dramatically increasing proportion of elderly people. In the case of the F.R.G. (Fed. Republic of

Germany) for example, the proportion of people older than 60 grew from 16.8% in 1961 to 20.8% in 1987. The proportion of very elderly persons, defined as being older than 80, increased at an even greater rate. It increased from 1.6% in 1961 to 3.8% in 1987. This tendency, presently in abeyance, will resume in the future.

This process of population ageing is mainly interpreted as being a burden on the whole of society, and it is often discussed as a problem of providing for the elderly in terms of financial assets, social insurance and public services. In this regard, the elderly are seen as a non-productive part of the population, as receivers of benefits delivered by other groups in society. The crucial questions here concern the capacities and limits of the market and the state as the referring allocation systems.

The emphasis of our paper is not on these formal supply systems, but on the challenges and opportunities for the social network and the *informal* support system. That is, the relationships to relatives, friends and neighbours inside and outside the household. As for the formal institutions, we have to include the question of capacities and limits. In this case, the prevailing image of the elderly is also that of a more passive part of the population which has to be cared for, but there are also dimensions where elderly people play a significant part in giving social support.

One main aspect which has to be taken into account in respect of challenges and opportunities for social support in the future is, beside the growing numbers of elderly people, their differing living arrangements. The so-called "elderly" comprise, for example, 65-year-old, healthy and active people as well as frail people who are perhaps 90 years old, living as couples or as singles, having children or not. Among the single-living persons, we find many more women than men and many more widowed than unmarried and divorced persons. One has to be aware of a plurality of living arrangements when discussing opportunities and challenges in an ageing

society because it comprises essential preconditions for the giving and the receiving of informal social support.

### Conceptual approach and data base

The concepts of social support and of social networks offer operational means to understand informal help as a basic component of a society's welfare. *Social support* is a comprehensive term which includes different kinds of welfare-related activities, such as task-oriented services, material help, information exchange and the mediation of various cognitive and emotional kinds of support (Mitchell, Trickett 1980; Shumaker; Brownell 1984). In this article we will focus mainly on task-oriented services and on emotional support. Social support occurs within *social networks* which are constituted by all social relationships an individual has with kin, friends, neighbours, and other acquaintances. Though not all social relations are supportive, the positive contributions of social networks to individual health and well-being allow us to speak of them as an important welfare allocation system. It is supposed that *reciprocity* in its various forms can be conceived as the main mechanism guiding the exchange of informal support (Gouldner 1960; Wentowski 1981).

In the following we will analyze social support with respect to exchanges between people in the prevailing *living arrangements* of different life-cycle stages. These living arrangements are defined in the way that they comprise people of a homogenous age, and similarly with regard to their household composition, childrens age and personal status. This categorisation allows an illustrative perspective on the informal preconditions of exchange support which is more detailed and adequate than a mere consideration of different age groups. This concept, relying on cross-sectional data, should, however, not be mistaken for a biographical method which studies individual or cohort, specific changes over the life

course (Cobb 1979). We have no data of this kind and so our perspective is focused on simultaneously living people at different stages of their life in different structural settings.

Three groups of elderly persons, here defined as being sixty years and older, are distinguished:

- the largest category are elderly married persons living together either without other persons (13% of all adults in our survey) or with relatives other than their children (additional 0.6%);
- the second group are elderly widowed persons (8.4%). They are mostly female (87% of them) and living alone (78%, the remainder with their children and other relatives);
- the smallest group are elderly married persons living together with their children. These are partly extended families of three generations but they comprise not more than 2.5% of all adults or 10% of the elderly. Living in old age means mainly living as a couple or as a single widowed person.

More differentiated distinctions are hardly possible because of too few cases. We will show that this typology accounts for some interesting differences regarding household performance, social networks, and the social support of elderly persons. These three groups of the elderly will be compared with the other groups at different stages of the life cycle, "unmarried young persons" and the "married not-old". Unmarried young persons, aged from 18 to 29 years, are split into three categories:

- unmarried living with their parents (10.5%)
- unmarried living alone (2%);
- unmarried living with a partner (3.7%); (27% of this last group are older than 30 years).

One result contrary to common belief is that

the large majority of unmarried young people still lives with their parents.

According to the presence of children and their age, four categories of married non-old adults are distinguished:

- married adults without children in their household (12.8%). These are adults who either never had children, who had them in the past or who may still have children.
- married adults with small children (10%);
- married adults with school children (16.2%);
- married adults with grown-up children (8.5%).

If people had children of different ages, they were classified according to the youngest child.

Besides these categories which are in accordance with an average life cycle, we consider two further groups which are still somewhat exceptional:

- unmarried adults living without a partner and older than thirty years (3.9%);
- divorced people (3.8%).

These living arrangements already partly represent subsystems of the whole social network of an individual. The household is in general the primary unit of resource allocation (Glatzer 1984; Strohmeier 1983; Morgan 1978). If a household consists of a single person as is often the case among the elderly, then the question is whether the social network outside it can offer complete support (Diewald 1989).

Our data sources are the so-called *Welfare Surveys* available from 1978, 1980, and 1984. They were developed at the University of Mannheim by W. Zapf, W. Glatzer, and H.H. Noll, and they are designed to measure objective living conditions as well as subjective perceptions and evaluations. Questions about household production, social networks, and social support were a special part of the 1984

questionnaire.

The *Welfare Surveys* are samples of all individuals of German nationality living in the F.R.G. and West-Berlin, having reached the age of 18, and living in a private household. The sample size is 2067 usable interviews in 1984. According to official statistics from the German Central Statistical Office, the distribution of socio-demographic variables within the samples fit rather well to the population. The original data set had been adjusted by using weights for individuals and households.

### **The household as centre of the support network**

A household can be conceived as a substructure within the whole social network of a person which is highly correlated with the social institutions of marriage (or cohabitation) and family. Partly due to this overlap, and partly due to the mere effect of living together and with a considerable need for internal coordination, some authors see the household as a distinct major source of social support.

The amount of social support which can be provided from inside the household differs, of course, very strongly according to different living arrangements. Consequently the needs of an ageing population for social support are closely connected with different living arrangements. We will consider three areas of household-based support: domestic work (housework and repairs), nursing care and emotional support.

Some kinds of typical housework are normally done (90% or more) by household members: shopping, preparing meals, cleaning rooms and washing. These tasks are only rarely delegated to the social network outside the household or to the labour market. Most remarkable is the variation in self-support between the three living arrangements of elderly people. We find a steady decrease in self-support from the elderly living with their children through

**Table 1:**  
**Performance of different tasks inside the household, F.R.G. 1984**

Percentage of households where household members<sup>a)</sup> usually do the following tasks

	Cleaning rooms %	Cleaning windows %	Washing sheets %	Repairing the water-tap %	Wall-papering %	Handicapped person(s) inside the household %
<u>The unmarried young (aged 18-29)</u>						
Young, unmarried, living with their parents	97	95	98	77	80	8
Young, unmarried, living single	96	83	72	53	69	0
Young, unmarried, living with their partner	96	90	88	81	3	7
<u>The married non-old (aged 20-59)</u>						
Married, without children	98	95	93	72	75	6
Married, with little children	98	95	97	84	82	2
Married, with school children	97	95	95	81	80	9
Married, with adult children	99	98	100	76	68	5
<u>The elderly (aged 60 and more)</u>						
Old age, married, living with their children	100	98	98	75	64	12
Old age, married, living without their children	92	86	90	51	41	23
Old age, widowed	89	78	78	23	26	14
<u>Special stages</u>						
Unmarried and older than 30	96	89	81	49	51	9
Divorced, all ages	94	81	82	50	57	8
Other	95	88	83	57	66	10
<u>Total</u>	96	91	92	66	66	9
<u>eta<sup>b)</sup></u>	.15	.21	.25	.37	.38	.21

a) other possibilities: relatives, friends/acquaintances, neighbours, market supply

b) eta is a correlation coefficient with values between 0 and 1

elderly couples to the widowed who live mostly alone. The former have the highest rate of self-support, the latter the lowest. Young persons living alone and the divorced also seem to lack the resources to manage on their own. And like the older households they profit from being members of the extended family by getting help from relatives, or they call on labour market services. Compared to relatives, neighbours and friends play only a minor role. Repair work needed now and then in every household is normally done by about two thirds of all households. Here we find a more marked variation in self-support between different life-cycle stages than in everyday housework. The direction of differences is the same and is most striking between the three living arrangements of elderly persons. To a higher degree than in everyday housework, the widowed have by far the lowest rate of self-support. This is due to the fact that most widowed persons are females living alone who are still able to do

their housework but are not skilled do-it-yourself workers. Apart from self-support, labour market supply is more common than help from relatives, friends or neighbours.

The picture of a strikingly lower-support performance in the elderly population regarding domestic work gets a counterweight when examining the question of who cares for handicapped people. Altogether, handicapped people and other people needing care are provided for at least as often in families and private households as in nursing homes. In the *Welfare Survey 1984*, 7% of the interviewed said that they had close relatives in a nursing home whereas in 9% of the households, at least one person needed continuous care. This does happen only in households of extended families. Elderly couples also demonstrate the ability of small households to take over a considerable amount of care for handicapped spouses. On the other hand, they also

demonstrate capacity limits. Households caring for handicapped persons have a lower performance of domestic work. Limits to available time and energy for a single household are supposed to cause the negative correlation between these two kinds of support.

### **Network and support relations outside the own household**

#### *Social contacts with kin, friends, and neighbours*

Nearly all people have at least one close relative beside the members of their own household; the figure is 90% for all respondents in the *German Welfare Survey*. This percentage is quite stable across the different living arrangements except for the older widowed and unmarried persons for whom the figure is 85%. Regular visits with kin take place mostly between children and parents. The unmarried and divorced older persons are the population groups which have the least contact with kin.

Most people have at least one "close friend" and even more have "neighbours with whom they get on well"; the figures for Germany are 73% for having a close friend and 83% for good neighbours. With respect to both kinds of contact we find fairly strong differences between older and younger people. Younger persons are much more likely to have friends, and older persons have the highest percentage of visits with good neighbours.

An explanation for this result may be that growing old implies the loss of friends by death who cannot be replaced by new acquaintances. We cannot say how far neighbours are a sufficient substitute for lost friends, but they are a certain solution adapted to lower physical resources and reduced mobility. Among the elderly, the widowed have the highest frequency of visits with neighbours and compared to the other elderly, they have the most contacts with

friends; this seems to be some compensation for lacking contacts within their own household. But these contacts cannot prevent this group (together with single old persons) from having by far the highest percentage of people feeling lonely, about half of them report strong feelings of loneliness, and this is eight times as many as the elderly who are married and still living with their children.

#### *Accessibility and request for social support*

There can be two reasons why somebody's social support is very small: there is not enough access to social support or there is enough access but the social support is not requested. Though the outcome is the same the social problem is very different. To investigate this question, the *Welfare Survey* questionnaire asked if the respondent knew someone who could give him help in doing different tasks. These tasks were e.g. the repair of a TV/radio set, wall papering, tailorwork and legal advice. This is a selection from a longer list of tasks which are not included here because the results from the shortened list are corroborated by the full results. 57% of all adults in the F.R.G. know someone who would help them with wall-papering and 31% have used such help in the last twelve months. This is a utilisation ratio of nearly 50% which seems to be high. Nearly the same utilization ratio is found for other tasks, though the accessibility of help is much smaller. Only one third of the respondents know people who would help them to repair a TV/radio set, do tailorwork or give them legal advice. Most elderly people have less access to such resources but they sometimes make higher than average use of them. In the end they get rather less task-oriented support than average people. The highest amount of access to, as well as use of, support is found among the youngest people. All in all, older persons are not separated from network resources, but they are integrated on a somewhat lower level.

Subjective evaluations of the received

network support can indicate feelings of deprivation among the old people. These evaluations are not related to particular task-oriented assistance, but refer to the total amount of support received.

9% of all respondents say that they get too little help from relatives, and the differences between the living arrangements are small. Young persons in particular miss some help from their relatives, as do widowed older persons. Similarly help from neighbours is often missed by young people and the elderly widowed. 6% (mostly widowed) think that support from friends is not enough. The greater efforts of widowed people to maintain social contacts compared with other elderly do not provide enough support.

On the other hand, some people say that they get too much help from relatives, friends and neighbours. Several reasons can be assumed: an unwanted obligation to reciprocate, the social control which is exercised by giving support, or the threat to privacy. So 2% to 3% of the whole population say that their social support is too much. But this is not a special problem of older people.

The groups who want more support are not only those who have not received much support. Those who most frequently received extra-household support were the elderly widowed, families with little children, the young life cycle stages and unmarried older persons. So the most needy life-cycle groups do get the most frequent support, but there still remains a gap between the need for support and support actually received.

### *The performance of social support*

We will now consider who provides social support. One cannot expect elderly people to give the same kind and amount of support as younger ones. This may be partly due to restricted physical abilities, partly to antiquated technical knowledge, and partly to various degrees of disengagement.

On these assumptions, all three categories of the elderly give help to less frequently relatives, friends and neighbours than the average of the population. In this respect the three categories of the elderly are very similar except in respect of help to relatives which is, of course, given more often by couples and widowed people than by old people in an extended family. Other groups which give below average help to network members are unmarried persons older than thirty years, divorced people and families with school children, presumably for different reasons. On the other hand, the most important support potential exists in the mid-life stages and among the young ones. At this stage married people younger than 60 years and living with adult children give the most help.

The young unmarried give the greatest amount of support to persons outside the household. They are the only group helping friends even more than relatives. In social contacts, relatives replace friends as the most important support group when people get married.

A smaller amount of social support is given by older persons to those outside their household. This is particularly true of activities performed by younger persons such as car repair, gardening, apartment renovation, moving, and construction work. This seems to confirm the hypothesis of a restricted ability and outdated technical knowledge on the part of older persons.

Help from the elderly is generally below average with two remarkable and important exceptions: caring for the children of relatives and helping with the personal problems of relatives. These tasks requiring diverse abilities may offer scope for the life experience of the elderly. They may also have enough free time to help. We have no data about financial aid which seems to be another helping area of the elderly (Leitner 1976). These three support categories are the main ways in which the elderly can reciprocate services received from younger persons.

**Table 2:**  
Performance of social support, F.R.G. 1984

	Help to relatives <sup>a)</sup> %	Help to (friends <sup>a)</sup> %	Help to neighbours <sup>a)</sup> %	Care for children of <sup>b)</sup> relatives %	Personal support for <sup>b)</sup> relatives %	Nobody supported <sup>b)</sup> %
<u>The unmarried young ones (aged 18-29)</u>						
Young, unmarried, living with their parents	21	32	17	17	13	11
Young, unmarried, living single	34	39	9	14	28	13
Young, unmarried, living with their partner	22	34	7	24	30	7
<u>The married non-old (aged 20-59)</u>						
Married, without children	22	17	15	22	22	27
Married, with little children	24	17	15	19	22	19
Married, with school children	16	15	11	10	16	26
Married, with adult children	26	23	22	9	17	38
<u>The elderly (aged 60 and more)</u>						
Old age, married, living with their children	7	8	9	12	26	53
Old age, married, living without their children	13	9	9	22	16	49
Old age, widowed	14	9	9	19	14	59
<u>Special stages</u>						
Unmarried and older than 30	11	18	8	13	24	28
Divorced, all ages	12	18	10	16	18	27
Other	20	24	14	13	26	19
<b>Total</b>	19	18	13	17	19	30
<b>eta</b>	.13	.21	.13	.13	.12	.32

a) presently given support, without payment  
b) in the last two years

More than half of the old people in each category said that they had not supported anybody at all. This is by far the highest percentage among all life cycle stages. The young life-cycle stages are at the other extreme in having a very low percentage of respondents who did not support anybody outside the own household.

### Limits to support exchange

We found considerable amounts of social support provided and received within informal networks, but we also discovered remarkable differences between younger and older persons and between their living arrangements.

Spouses and parents-and-children proved to be, in general, the most important sources of network social support. This is especially true for the elderly. So the first significant question concerning the support supply for elderly people is how many are married or

cohabitante. Spouses are the main caregivers to handicapped elderly persons rather than children and formal institutions. Couples still maintain a considerable ability to supply support inside their household compared to other elderly persons. Problems of perceived loneliness are mostly connected with the loss or lack of a spouse who does not seem to be replaceable by other members of the social network. Therefore, the percentage of married people among the elderly is an important - perhaps even *the* most important indicator of the ability of the elderly to support themselves.

In Germany, 57% of the population over 65 are married. This is rather above the level of other comparable countries like Denmark, Great Britain, or the United States. Due to the longer life expectancy of women, old men mostly live with their wives, whereas women often have to go through a life phase of living on their own. Another important source of social support is the children of the elderly. But according to the 1984 *Welfare Survey*,

14% of the elderly have no children, and, moreover, not all parents have regular social contact with their children. Relationships with close friends do not seem to compensate for these deficiencies.

The argument that old people suffer more from health impairments and are therefore less able to support themselves or to give social support to others is relevant, though this may change. An indicator for the physical condition of a person is the routine use of medication. With this indicator, we found a very wide variation between the different household compositions of young and old: it varied from 6% of the young still living with their parents up to 72% of the widowed. Apart from the fact that the variation of physical abilities is high among the elderly population at large, the risk of frailty greatly concerns the very old. The norm of reciprocity (see below) is a factor limiting, but also enabling, the exchange of social support.

The positive correlation which we found between giving and receiving social support is a hint of the validity of a norm of direct reciprocity: giving has to be returned in the same time period. This seems to be incompatible with the imbalances of people giving and receiving at various life-cycle stages. The widowed demonstrate most clearly that only few give and relatively many receive support. These findings could be explained by the coexistence of the norm of direct reciprocity with two further norms: a norm of "delayed reciprocity" and a norm of solidarity. The norm of delayed reciprocity means that the elderly especially have accumulated credit in a kind of "support bank" so that the support received from their children can be conceived as a return for former support given from parents to children (Antonucci, Jackson 1986). The norm of solidarity means that the elderly can get social support for their needs without regard to the exchange they can offer.

Social support by solidarity is presumably restricted to really basic needs and depends on feelings of equity and fairness. It can be

assumed from our data that the ability of the elderly to maintain support relationships following the principle of direct reciprocity is restricted by several factors. As they grow older, contributing to the self-support of the household gets more difficult, and this is especially true for households with handicapped people. Therefore, many of the elderly are dependent on the principle of "delayed" reciprocity which functions mainly in parent-child relationships. It is not surprising then that the elderly without children, and especially divorced and unmarried persons, report the highest degree of support deficiencies of all respondents.

### **Prospective outlook**

According to our data, the younger and middle-age groups contribute more to inter-household support than the older ones. We should bear in mind that the picture may be different if the emphasis is on life-long exchange. But a problem is created if population ageing continues to increase, as it actually does in the case of very old persons. If the elderly want as much support as before, then the younger ones have to intensify their efforts. If the younger age-groups continue to give the same amount of support as before, then old persons, due to their larger numbers, will have less support than before. This demographic change provokes a tension within the informal social support system which will require some adaptive innovations.

The lack of social support for elderly people will be accompanied by an increasing supply of special support activities which are typically offered by elderly people. It remains to be seen if sufficient demand develops for this. Another accompanying phenomenon is the reduced number of children in future society (Galler 1990). It is sometimes argued that the burdens of elderly people and of their children can be balanced. But there is a question of whether a substitution of different kinds of social support is taking place or

whether uncoordinated balancing of needs and resources is developing.

The tension in the social support system is reinforced by additional demographic changes in the social structure of the elderly population: in the future the elderly population will increasingly include people who had never married, divorced people, and more people with few or no children (Hoffmann-Nowotny 1987; Deutscher Bundestag 1986). These are exactly the groups which have already been proven to be the population with the highest risk of social isolation and serious support deficiencies.

Nevertheless, we do not assume that the ageing society of the future will be a society mainly characterized by social isolation and feelings of loneliness. A division seems more probable between a majority of rather well-integrated and well-supplied groups on the one hand and a considerable minority of people without stable kin integration on the other. A major challenge for them will be a better substitution of kin networks by other patterns of social integration and community support.

The task of completing and/or substituting the informal social support system is mainly ascribed to the welfare state, even more by the elderly than by the general population. Asked in the 1984 *Welfare Survey* who should be mainly responsible for the care of old people, more than half of the old couples and widowed persons said that this should be the state. This figure is significantly above the average of the whole population and it indicates that old people especially claim a public responsibility for themselves. The remainder of the population preferred intermediary groups/institutions or private supply. The coordination of the different sources of social support provides an important challenge for future social policies.

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## Part III



## Retirement, Individual Performance and Labour Market Structures

### Abstract

This paper discusses the relationship between the labour market structure occupied by an individual and the process of retirement. Labour market structures are characterised by their employment relations and the resulting (implicit) employment contracts. Employment contracts determine how individual performance will be linked to wages and other job rewards and they may specify the conditions governing the termination of the employment relationship. These features of the employment contract are important for the retirement process. They will determine the costs and benefits of retirement by creating the link between age-related changes in the performance of the individual and the benefits obtained from work. The contract may further determine under which conditions retirement is forced upon the individual. Three types of employment contracts are considered:

1. employment contracts for single tasks, the scenario assumed in standard neo-classical labour economics;
2. employment contracts for single jobs, typical of much industrial production work; and
3. employment contracts for careers, typical of internal labour markets. These three types are shown to have quite different consequences for the retirement process as they determine how the timing of

retirement is related to individual performance, to the availability of public pensions, to the creation of private pensions, and to the existence of mandatory retirement.

### Introduction

Perhaps the most important concern when considering the consequences of the changing age distribution in Western societies is the impact of these changes on the overall level of economic and social welfare in society and on the distribution of welfare among age groups. A popular worry is the possibility that a growing number of economically dependent elderly will become a major burden for a declining number of young. The likely changes in the age distribution seem easy to predict - more older people and fewer younger people - because changes in the age distributions can be projected without much uncertainty over a substantial period of time. However, demographic change alone does not determine the social and economic consequences of a changing age distribution. The rates of work-force participation for different age groups are crucially important. These rates presumably account for most of the variation in the balance between economically dependent and independent population groups, assuming that being out of work remains the main determinant of individual economic dependency.

Projecting future trends in age specific work-force participation rates is less straightforward than projecting future age distributions. It is well known that the work-force participation rates of the elderly have changed markedly in many countries in the last decades; in most countries they have declined. It is less well understood why they have changed. There is agreement among researchers of these processes that the rates of work-force participation respond to availability of pensions (and hence to public policy about pensions), but the rates presumably also respond to a host of other

institutional and economic forces such as the organisation of classes and the labour market, the performance of the economy, and so on (e.g. Guillemard 1982). The exact manner in which participation rates respond to these forces is not well known. Nevertheless, if we are to make useful projections of the consequences of the ageing society we need to understand the mechanism responsible for the variation in rates of work-force participation of older people.

Work-force participation rates are evidently closely related to retirement rates when the focus is on the elderly. In fact, a simple definition of retirement would be that it is the process of entering a state of not working and not looking for work - this is the definition of being out of the work-force (unemployment, in contrast, is not working and looking for work). However, in the retirement literature, definitions of retirement usually are more involved, e.g. retirement is "withdrawal from one's business or occupation .. usually accompanied by a pension" (Atchley 1982). Such definitions suggest something different from simply leaving the work-force. With the broader definition of retirement someone could retire from his or her usual line of work, but remain in the work-force in a new occupation. Also, it would be possible for an older person to leave the work-force temporarily (for example because of a spell of illness) and not retire in the sense of deciding to withdraw from one's occupation. These types of events correspond to what most would allow to be included in the concept of retirement. They suggest that rather than simply equating work-force non-participation and retirement, retirement should more broadly be construed as an age related decline in a person's involvement with his or her usual line of work.

The more involved definitions lead to more ambiguity. Nevertheless, a theory of retirement that would account for changes in work-force participation in old age, needs a conception of retirement that refers to something broader than being out of the

work-force at a point in time. The desired concept should allow for retirement being a gradual process for some, involving a gradual reduction in the amount worked, and should include processes where retirement from one's usual line of work is followed by entry into a new occupation.

Theories of the retirement process should explain why people leave their usual line of work and why they often, thenceforth, will look no longer for this type of work. It is a commonplace observation that some retire because they feel they are better off not being involved in paid work, or being less involved. Retirement is then the outcome of an individual choice. The choice presumably is the outcome of a comparison of the benefits available when not working or working fewer hours than before (in the form of pensions and the pleasure of leisure), to those benefits received when the individual maintains his or her current level and type of work (in the form of wages, social status and enjoyment of work). When retirement is the result of such an individual choice, people would change the initial decision, if changes in the welfare in and out of work revert the initial comparison.

Retirement based on comparisons of individual welfare in and out of work is not the only type of retirement. Not everyone retires because they want to retire. Some retire because they have to. They may be unable to work because of poor health or they may have been forced to retire because of a mandatory retirement requirement. When the retirement is forced upon the individual in this manner, it is evidently not a result of a single individual's choice based on a calculation of benefits from working and not working. Some other actor will be involved in making an assessment of the person's ability to work or enforcing a mandatory retirement requirement. Thus the process is more complicated and contingent. Further, if the retiree feels he would be better off in the work-force than remaining in involuntary retirement, the return to work usually has to be to a different line of work

than the one retired from. This new line of work will presumably often result in a change in social and economic welfare.

When retirement is voluntary, comparisons of rewards from working to benefits available when not working triggers the retirement decision. The rewards obtained from work are specified in some type of employment contract (that may be implicit) both with respect to level of pay and other benefits and with respect to how these benefits depend on individual effort and performance. When retirement is voluntary, the employment contract therefore will be crucial for the process. When retirement is not voluntary, the employment contract is again decisive. It will contain the mandatory retirement requirement in force, if any, and the employment contract may specify the minimum standards of performance that would force retirement because of lack of ability to work.

The employment relationship, as specified in an employment contract, is then crucially important to the retirement process and in turn for work-force participation rates among the elderly. It is of course not the only thing that matters. Benefits available when not working (or working less) provide the other main component in the decisions that result in retirement. These benefits are presented by the system of pensions and other support in a society. The organization of pension and welfare institutions depend on a number of social and political forces and may be only weakly related to the composition of the labour market that determines the distribution of employment relations. Clearly, to predict future trends in the retirement process one has to understand both components of the retirement decision. However, while important work has been done on the design of pension systems (Myles 1984), little attention has been focused on the role of employment relations in the retirement process.

The main task of the paper is to specify in which ways the employment relationship influences the retirement process. It will be

argued that the employment relation is crucial for the timing of retirement, for the relation between individual performance and retirement, and for the degree to which retirement is voluntary. Further, the nature of the employment contract will be argued to be a crucial predictor of whether the individual will look for work again, i.e. the degree to which retiring from one's usual line of work becomes permanent withdrawal from the work-force.

The distribution of employment contracts in the labour market of a society produces a mix of retirement processes for that society. These processes in turn determine work-force participation rates among the elderly. Future work-force participation rates therefore reflect the future distribution of employment contracts. Changes in the distribution of employment contracts in turn are produced by changes in the labour market as occupations and industries grow and decline. Thus the economic and social consequences of an ageing society are directly dependent on the future structure of the labour market.

I will develop the main theme of this chapter - the relation between the employment contract and the retirement process - in the next section. Before this is done, it may be useful to note a limitation of the argument. The focus on the link between the employment relationship and the retirement process suggests retirement is a process for the employed only. If the work-force in a society has a high proportion of persons not involved in an employment relationship, as would be the case in an agrarian society, the discussion of this chapter would be of little use for understanding the involvement of the elderly with work.

Clearly the large majority of the population in modern industrial society is employed. Further, the usual conception of retirement is indeed associated with leaving the employed part of the work-force. The self-employed may retire too by withdrawing from a line of work, but they have no employers and no employment contracts. Stepping down from work is therefore a

decision to cease active involvement with a piece of property. The property may be sold, transferred to heirs, eliminated in a business failure, or the management of the property may have been delegated to others.

Regardless of the reason, the decision to cease active involvement in work is a change in the relation between the self-employed and his or her property. Clearly such a change is brought about by a very different mechanism than those that account for withdrawal from an employment relationship. Consequently, the retirement process is structured very differently for the self-employed.

In fact, it can be argued that historically, the very idea of retirement is closely linked to the emergence of labour markets and the modern employment contract in modern industrial society. There were, in former time withdrawals from work that appear to be forms of retirement in the modern sense. Indeed, retirement contracts specifying the benefits to be received in retirement for a peasant or artisan and his spouse were common in many parts of Europe. However, the social construction of these retirements in former times was quite different from the modern retirement process. The withdrawal from active involvement with a piece of property was ordinarily part of an intergenerational property transfer. A major consideration governing the timing of retirement was the need to maintain the link between a family and a piece of property (Sørensen 1988). Stepping down shortens the time until a new heir can take over and therefore increases the likelihood the link will be preserved. The retirement contract thus is likely to come into being where preserving the link between family and property is a concern (where some type of unigeniture is attempted) and may be especially likely where this link can be threatened, for example because of a legal requirement of divisibility (as became common in the 19th century), or where demographic problems made the availability of heirs an issue (for example after the Black Death). Retirement did not exist where there was no property

(for the poor or the clergy) or where the need to induce an heir to take over would not be a concern (for kings). In any event the considerations governing retirements in these instances (never very common) were very different from modern retirement where the concerns for the intergenerational transfer of property usually plays no role<sup>1</sup>.

### **Employment relations and labour market processes**

The analysis of the relation between employment relationships and the nature of retirement processes seems not to have been an important concern in the sociological literature on retirement. There are a few contributions from economics, particularly Lazear (1979) is directly concerned with the issues discussed here. Employment relations and employment contracts are, on the other hand, one way in which to characterise labour markets. There is, both in sociology and economics, a large literature on labour markets emphasising employment processes and earnings determination in different segments of the labour market. This literature is of general relevance for the analysis of retirement processes.

Much of the relevant labour market literature can be seen as an attempt to

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<sup>1</sup> It is interesting to note that considerations of preserving the social status of the family across generations now involve the early and middle part of the life course. This phase is crucial for the socialisation of children and the resulting transfer of human and cultural capital. Transfer of physical property on the other hand involves the end of the life course. In this manner retirement has lost its relevance for maintaining status and social position across generations. Elders have less to give children in modern times and the retirement process has little impact on their descendants.

improve on, or revise, the standard or orthodox neoclassical economic theory of labour market processes with its strong and presumably quite unrealistic assumptions about the nature of labour markets. It is an observation frequently made that both the theoretical power and the empirical inadequacy of standard theory derive from the application of standard price theory to labour market processes. This application assumes that labour is a commodity like any other good. Sellers and buyers of ordinary goods engage in a multitude of single transactions in markets characterised by a large number of sellers and buyers and perfect information. They are assumed to have perfect information and maximise their utilities. Supply and demand schedules establish prices for the commodities that in equilibrium clear the market.

With labour as the commodity, the single transactions presumably are about the execution of well-defined single tasks and the prices established form wages. Employment contracts then are like sale contracts.

Labour markets with these properties seem rare, though there are situations that approximate to them: for example, the daily auctions for work that exist or have existed for dock workers. The empirical inadequacy of the basic assumptions of the standard theory is well known and there is a huge literature on the economics and sociology of labour markets that attempts to provide more realistic scenarios for their description and understanding. This literature includes numerous attempts, in recent years, also by neoclassical economists, to generate theories of the basic processes that make more realistic assumptions about the nature of labour markets. Major approaches include work abandoning the assumption of perfect information; approaches abandoning the assumption of maximising behaviour and pointing to the importance of norms, customs and political processes; and, approaches abandoning the assumptions of employment contracts being like sales contracts.

The modification of the assumption of

employment contracts being like sale contracts for single tasks is of main interest here. Empirically, it is a commonplace observation that employment relationships tend to be established not for single well-defined tasks, but for jobs where tasks are not well-specified in advance. Rather than specifying tasks in advance, the employee grants the employer the right or authority to direct his or her activities. Also, the expected length of the employment relationship in jobs is typically not specified in advance. It is of major relevance for the resulting labour market process whether the employer or the employee typically has the initiative in terminating the employment relationship. Employment relations where the employee has little job security may be said to be open, since jobs are freely available to outsiders. Open employment relationships will generate labour market processes that approximate to those derived from the assumption of employment relationships being like sales contracts. When, in contrast, the worker typically has high job security, employment relations may be said to be closed to outsiders. Closed employment relations generate quite different labour market processes from open employment relations. In particular, they pose an incentive problem. One solution to this problem is to establish promotion systems. This means that employment contracts will be made to cover a sequence of jobs, or a career.

It can be shown (e.g. Sørensen 1983) that the degree of openness of employment relationships governs the level and distribution of wages and job rewards, the typical pattern of career trajectories, and the typical patterns of job shift and employment shift, including unemployment. For retirement processes, the main argument to be presented is that the nature of the employment relationships influence this process in two ways. First, the employment relationship and the resulting employment contract determine how closely variation in individual performance over time is reflected in the wage rates received in the job. The

more open the employment relationship, the more closely performance variation will be related to the wage rate, because the more likely it is that the link between performance and wage rate can be enforced. This in turn will control how ageing will influence the benefits received from work. Second, the less closely performance variations are linked to earnings, the more likely it will be that retirement will be forced upon the employee. There are a number of variations around this main relationship. These variations will occupy much of the discussion to follow.

I shall first review the consequences for the retirement process of the scenario of contracting for specific tasks assumed in standard economic theory. Next, I discuss the retirement implications of the scenario where the employment relationship is established for a job. Finally, I consider the implications of the scenario created by contracts for a set of jobs over time, or a career.

### **Task specific employment contracts**

The exchanges established in markets for commodities are exchanges of money for single specific goods with well-known properties. As already noted, transactions presumably are for single tasks when the purchase of labour by firms is of this nature. One can imagine a number of workers bidding for payments for performing these tasks while a number of firms are offering payments for the performance of tasks. When an agreement is reached, the task is performed and the worker will look for another task (not necessarily with the same firm) while the firm will offer another task to the labour market. Firms will be in competitive equilibrium when the price for a task (that constitutes a wage to the worker) equals the increase in the value of the product produced by performing the task, or the marginal product.

When workers are employed only for the execution of specific tasks, market competition will generate wage rates that will

inform about the ability of workers to execute the task and their preference for the task. Workers may be willing to accept a lower wage for a task that is particularly pleasant according to Adam Smith's principle of compensating differentials, and firms may be forced to pay a higher wage for tasks that are considered unpleasant. Firms may also wish to engage in preferences for particular types of workers (males, whites) where these preferences are not related to workers' productivity, but they would have to pay these workers more than the market wage, and these discriminating firms therefore should be driven out by competition from firms that do not discriminate. Aside from compensating differentials and short term discrimination, the main source of variation in wage rates should be the productivity of the worker.

Productivity is a question at least of physical strength and/or intellectual ability. The degree to which individual variations in these capacities are reflected in wage rates depends on the requirements of tasks. Other things equal, if only variation in physical and intellectual functioning is relevant, we should expect career trajectories that are quite flat. If physical strength is a main requirement, careers should peak in young middle age and then decline. There is disagreement about the amount of age dependency in cognitive abilities, but agreement that some decline in intellectual fluidity affecting the ability to perform new tasks might come about. This also would produce a declining career with age. This suggestion of overall flat careers that are declining after young middle age can be quite misleading, because productivity is presumably not only a question of variation in physical and intellectual functioning. It is also a question of the skills of the worker.

Human capital theory suggests differences in productivity cause skill differentials that are the results of training in schools and in jobs. With the scenario of task specific employment contracts, such training should be general, that is, not tied to a specific task or set of tasks with a single employer (Becker

1964).<sup>2</sup> The cost of general training is borne by the worker. In equilibrium, differentials caused by skills therefore exactly compensate for training costs. The result is equal accumulated life time earnings for everyone, except for the variation due to compensating differentials, ability and other resources that affect training costs (like family background).

Human capital theory allows specific predictions about the shape of the career. Since investment in skills should be undertaken in the early years (when training costs are smaller and the period over which the returns are received longer), careers predicted from human capital theory show rapid growth in the early years as the amount of training declines and the returns of the higher productivity is obtained. Career trajectories should be flat in the middle years and decline in older years as performance declines. The amount of curvature depends on the amount of investment in human capital. The less investment, the flatter the careers. The main patterns predicted from human capital are observed. However, this does not necessarily mean that the labour market structure assumed in the neoclassical economic theory exists everywhere. The same predictions about the shape of career patterns can be derived from quite different assumptions, implying closed employment relationships (Sørensen 1977).

For retirement processes, this scenario allows quite straightforward predictions. Market competition generates individual wage rates that reflect individual productivity. Employers do not worry about measuring and predicting individual performance because wage rates provide all the needed

information about performance. To the extent that performance declines with age, wage rates decline, but in the neoclassical scenario, there will always be employment available (minimum-wage laws may of course here interfere). Thus the retirement decision is a simple choice of the worker based on a comparison of the current wage rate and other rewards obtained from work with the income and other benefits obtainable outside of the work-force. The latter benefits should be largely a question of the availability of public pensions, private savings, and the value placed on leisure. With employment contracts for single tasks there, of course, are no incentives for employers to create employment-related private pension systems and the like.

The timing of retirement in this scenario then is a question of the wage rates for the particular individual at specific ages and the availability of public pensions and other benefits outside of the work-force at these same ages. Individual differences in wage rates will produce variation in retirement ages. For example, with higher levels of education, retirement should be later, all things being equal. Furthermore, retirement is likely to be a gradual process. Workers optimising their total welfare should adjust their labour supply to the relation between the wage rates they can obtain and the benefits available from not working. This gradual reduction in labour supply will be reinforced by age-graded availability of public pensions.

Sociologists of the labour market have often modified the neoclassical scenario by suggesting that labour markets are segmented by barriers to labour mobility. These barriers prevent the equalisation of demand differences in the labour market so that similar individual endowments produce unequal wage rates. If such segmentation indeed is produced by persistent demand differences without changes in the predominant employment relationships, the basic mechanism of the retirement process should remain the same. However, in addition to

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<sup>2</sup> The contrast is to specific training relevant for a single job or firm. Specific training is a main source for the emergence of closed employment relations for jobs or careers and therefore should not be of major importance in the scenario assumed here.

skill differences, the timing of retirement should also be differentiated by labour market segments. It is important here to note that labour market segmentation concepts are not very plausible, when these concepts are derived from maintaining the neoclassical scenario within segments created by barriers to mobility. If they were, the paper could end here. The next sections suggest a different source of labour market structuring, that is, the formation of employment relationships of a quite different nature in certain parts of the labour market. These employment relationships have implications for the retirement process that are quite different from those derived here.

### Employment contracts for jobs

The scenario just outlined assumes full information about well defined single tasks. If tasks are less well defined and/or interconnected with other tasks, firms would prefer to be able to direct the activities of workers so that new tasks can be dealt with as they emerge, without new contracting and activities can be coordinated in the execution of specific tasks. This can be obtained by employing workers for a longer duration and establishing an employment contract where the employer in return for a schedule of payments is granted authority over the activities of the worker for a period of time (Simon 1957). The result is the employment contract commonly conceived of outside neoclassical economics. The introduction of authority is a fundamental idea already in Marx: when selling his labour power, the worker also sells his control over his own activities. This establishes the social relations of production that create classes.

The employment relationship in this scenario is typically of longer duration than employment for single tasks. As noted above, the expectations about when and how the employment relationship can be terminated are important for the resulting labour market processes. It is useful to consider a

continuum defined by who typically has the initiative in terminating the contract. At one end of this continuum, the employer will dismiss the worker whenever a better worker is available for the job (one willing to work for a lower pay or more productive at the given pay). This of course assumes the employer knows that a different worker can do the job better and that there are no significant costs involved in dismissing the incumbent. The employment relationship can then be said to be completely open to outsiders. At the other end of the continuum, the worker will only be dismissed in exceptional circumstances so that the initiative for ending the employment relationship is with the employee. The employment relationships can then be said to be closed to outsiders<sup>3</sup>.

There is considerable literature on the causes of closed employment relationships. One main cause, already suggested by Becker (1964) in his formulation of human capital theory, is specific on-the-job training. Such training, in contrast to general on-the-job training, will not be transferable to other jobs and firms. Therefore, training costs must be covered by the firm. This means the firm has an investment in the worker and an incentive to keep the worker in order to capture the returns on the investment. A different explanation is suggested by transaction costs (Williamson 1975): when work is difficult to monitor or provides opportunities for malfeasance, job security may be used to elicit loyalty toward the firm. Finally, unions and government regulations may create closed employment that prevents the employer from dismissing employees at will.

Closed employment relationships create positions in the social structure of a more permanent nature. This then poses the problem for the firm of matching individuals

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<sup>3</sup> The distinction between closed and open derives from Weber (1968). Its application to employment relationships is elaborated in Sørensen (1977, 1983).

to these positions who will meet the requirements of the position, and the problem of creating a reward schedule that will enable the firm to adjust wage rates to the productivity of the employee when the threat of dismissal and hence the ability to replace the employee is weakened. For the latter problem, the exercise of authority is obviously a solution since authority relations are an inherent part of the employment relationship. However, the exercise of authority has costs, at least the cost of wages to supervisors. Further, when the employment relationship is not completely open, the full exercise of authority is weakened by the lower threat of dismissal.

With a completely open employment relationship, the situation is much like the scenario discussed above for contracts for single tasks. On the other hand, the solution to the problem of adjusting wages to productivity when employment relations are (almost) completely closed is likely to involve the establishment of promotion ladders and hence employment contracts that cover sequences of jobs. This situation will be discussed in the next section. I shall here discuss the situation of closed employment relationships established for single jobs that are jobs not organised in a promotion schedule within the firm. Thus, the focus here is on jobs that will tend to produce quite flat careers in terms of job titles and occupational status. The career trajectory with respect to earnings need not be flat. An important career implication of closed positions is that workers only need to move to another job, when a better job is available, implying a growth pattern similar to the one predicted by human capital theory peaking in middle age (Sørensen 1977). However, if the worker can keep his job, wages should not decline in old age in the manner implied by the direct dependence of wages on performance in the scenario assumed in human capital theory. These job structures are typical of many semi-skilled and skilled blue-collar occupations<sup>4</sup>, and also of lower white-collar work. They form what have been called the lower

tier of the primary labour market (Piore 1975).

As noted, there are two problems created by closed employment relationships. First, the problem of matching workers to positions; second, the problem of adjusting wage rate to productivity. A straightforward and well known solution to both problems is to make wages directly dependent on output in the form of piece-rates. If this works, employers need not worry about performance or who they hire, only about setting the piece-rates so that they minimise labour costs. We are then back in the situation of competitive labour markets. There are many variants of such systems. A particularly interesting one is payment in the form of commissions on the direct sale of output used with sales workers and other agents. In the extreme form, when the worker has no claims on pay other than through sales, the employment relationship is qualitatively quite different from the types considered here since there is no or only a very weak authority relationship to the employer. This situation may be described as one where the worker "rents" the job from a firm. Real estate sales is a type of work with this organisation. Certain professions and academic employment in the top universities also have some similarities to this system (Sørensen 1989a).

It is well known that piece-rate systems often do not work as intended. When production systems create interdependencies among the activities of workers and/or when output is not easily monitored, output dependent systems may be difficult to establish. Even when they are feasible, uncontrollable variation in output may make

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<sup>4</sup> Althausser and Kalleberg (1981) have suggested the term "Occupational Internal Labour Markets" for closed employment of skilled workers. However, the term is perhaps a bit confusing since the concept of internal labour markets has become closely associated with the idea of promotion systems.

such systems unattractive to risk-averse workers, who for that reason will demand a fixed base pay to insure against such risk. So-called rank-order tournaments (Lazear and Rosen 1981), where workers are paid not according to their absolute level of output but according to their performance relative to others in the work group will "control", variation in output due to uncertainty. However, tournaments may empirically be responsible only for a small variation in wages and appear to be most common with promotion systems, to be discussed in the next section. In any event, it is a classic sociological research finding (Mayo 1949) that workers will establish production norms that reduce variation in output and hence, equalize pay for a group of workers. This means that individual performance variation will be difficult to detect and the firm needs to pay more attention to whom they hire than in pure piece-rate systems.

In pure piece-rate systems, pay reflects performance. A recently popular theory of compensation argues that performance may instead reflect pay. This is the so-called "efficiency wage theory" (e.g. Akerlof and Yellen 1986). The main argument is that firms will pay above-market wages in order to be able to recruit superior workers and in order to create an incentive for high performance. The reason above-market wages create incentives for high performance is usually argued to be the threat of unemployment. Indeed the theory was first formulated to explain the persistence of unemployment and wage rigidity, that always have been a puzzle to neoclassical theory (Solow 1979). An alternative explanation, suggested by Akerlof (1982) and inspired by research by Homans (1954), is reference group theory. Workers produce more than required by the firm as a "gift" in return for above-market wages. A similar argument has been proposed by Burawoy (1979) relying on Marxist theory. Both these sociological explanations again suggest that productivity will be managed by group norms and that individual variation therefore is "hidden" by

the group production norms. Further, the existence of labour queues created by above-market wages, makes access to jobs dependent on relative rank in terms of predicted productivity. These features of jobs, where the link between a market wage and productivity cannot be enforced as in completely open employment relationships, have important consequences for the retirement process.

Consider first the consequences of labour queues. Unless pure piece-rates are effective, the firm will rank candidates for vacancies in closed jobs according to their predicted productivity. They will base hiring on whatever characteristics of the candidates are believed to be predictive of future productivity. Age, race, gender and education are all examples of highly visible characteristics of job candidates that employers may believe have predictive value. The result is the likely creation of "statistical discrimination", where perceived productivity of the group to which an individual belongs, will be decisive for the hiring decision. Such discrimination would not persist in open employment, where market competition will eliminate firms that engage in discrimination. If firms in the closed sector believe age is related to performance, older workers will be ranked lower than other workers with otherwise similar characteristics in queues for vacancies. In addition, when closed employment is created by specific on-the-job training, old age will be a further disadvantage since employers will expect that there is less time to recuperate training costs. In sum, old age is a particular disadvantage for getting access to vacancies in closed jobs.

The problem for older workers of getting access to vacancies in closed jobs is particularly important for older workers who lose their jobs in the closed sector, because they will only be able to regain their above-market wage and find employment for their skills by finding another job similar to the one they have lost. According to the economic version of efficiency wage theory, the threat of unemployment is the incentive

for higher performance. One should then expect older workers to work especially hard, making their dismissal especially unlikely. This prediction appears in contradiction to the sociological explanation for efficiency wages in terms of reference group behaviour, because the latter explanation implies that individual performance variation is "hidden" by group norms making individual dismissals unlikely. Also, by the very nature of closed employment, dismissals should be rare; the incentive problem would not exist to begin with, if employment relationships were not closed. In any event, few unemployed state they have been dismissed, most that they quit their previous jobs or were laid off.

Quits resulting in unemployment tend to be associated with the open employment sector; lay-offs are typical of the primary sector jobs involved with closed employment (Sørensen 1987). A lay-off means the worker has the right to return to the job, should the job be reinstated. Lay-offs allow a firm dependent on the specific skills of its work-force to maintain this work-force in economic downturns. Lay-offs tend to involve a whole production unit and therefore usually will be independent of the performance of specific individuals, hence, older workers are not necessarily more likely to be laid off. However, recall may not occur and older workers are then especially hard hit as the existence of labour queues prevent them from getting jobs equal to the ones they lost. Unemployment for this reason is likely to result in retirement of older workers. The retirement process is involuntary, set in motion by an external shock to the firm employing the worker, and is unrelated to the productivity of the older worker.

In closed employment, even when retirement is not triggered by unemployment, the retirement process is likely to be quite different from the process generated by open employment relations. Retirement in open employment is a matter of individual choice, made by comparing the wages and other rewards obtained in the labour markets to the expected welfare outside of the labour

market. This simple scheme is modified in closed jobs by several factors.

In closed employment wage rates will be less strongly dependent on individual performance, except with pure piece-rate systems, for the reasons discussed above. In particular, there is no reason to expect a declining wage rate with age caused by an age-related decline in productivity. Further, the comparison of wages to public pensions is less likely to trigger a retirement decision. Closed jobs are likely to pay above-market wages and public pensions are usually linked to the competitive wage rate. Further, jobs in the closed sector are good jobs in which the worker may have made considerable investment. This makes the comparison of work and retirement even less likely to generate a retirement decision. There are strong incentives to stay on the job until an external shock to the job, producing unemployment, or to the person, in the form of ill health, forces retirement.

While the availability of public pensions may be seen as unlikely to trigger retirement from closed employment jobs, there of course may be private pensions. In fact, the very job structures that generate closed employment are often also likely to generate private pension schemes. This is because the same forces that create job security, will also make it likely that the firm will create pensions schemes and other benefits to maintain its work-force. This is especially so when closed employment is caused by specific on-the-job training (and the need to have trained workers available to perform the training). Private pensions perform a double function. They bind the worker to the firm and create the needed added incentive to retire. However, again it is not the actual performance of the older worker in relation to the availability of the pension that triggers the retirement, but the age-grading of the pension availability alone.

The existence of firm-sponsored private pension schemes should depend on the amount invested by firms in the human capital of their work force. When closed

employment does not have specific on-the-job training as a main source, private pension schemes should be less likely. Thus, there should be substantial variability in the existence of private pension schemes sponsored by firms. Unions may be sources of closed employment as well as of pension schemes. This may be especially likely for craft unions where workers are less tied to firms. Finally, the state may modify and regulate pensions and in fact, as has been the case in many European countries, may create added incentives for retirement in an attempt to increase the number of vacancies in closed employment jobs to reduce unemployment for younger workers.

Instead of using incentives, firms may of course force retirement from closed jobs by mandatory retirement schemes, where age-graded exits from the jobs are part of the employment contract. This is evidently an effective manner in which to trigger retirement from closed jobs, if retirement is desirable for the firm. Again, then the retirement will be age-graded in a manner that is unrelated to the actual productivity of the worker.

Both pensions and mandatory retirement create retirement in a manner that tends to be unrelated to the actual productivity of the worker in closed jobs. Losing productive workers, because of pure age-grading, is not necessarily in the interest of the firm. Thus, there is likely to be considerable variation among firms and industries in the retirement process depending on the amount of investment made in workers, on the degree to which performance can be monitored, and on the involvement of unions and government regulations. Straightforward predictions about the specific mechanisms involved in the retirement process are therefore more difficult to arrive at in job structures where there is closed employment for single jobs. The situation is less ambiguous when employment contracts cover whole careers, as I will show below.

Retirement from closed jobs differs in one other main respect from retirement from

open employment. Jobs in closed employment tend to be indivisible entities so that a gradual reduction in the labour supply is not feasible. Thus, retirement from closed employment tends to be less gradual and more abrupt than from open employment systems and less likely to be followed by a re-entry into the work-force, at least not a re-entry into the closed sector.

Three main conclusions follow from this. First, retirement from closed jobs is more likely than is the case in open employment to be triggered by external events to the firm (or the job), causing involuntary unemployment, or to the person in the form of ill health. Second, when it is not triggered by such external shocks, retirement is likely to be highly graded according to biological age because of pension and/or mandatory retirement rules and unrelated to the actual individual performance of the individual. Third, retirement is likely to be an abrupt event and not a gradual reduction in labour supply as in open employment systems, and retirement is unlikely to be reversible unless the older worker seeks employment in the open employment sector where job queues do not prevent employment.

### **Employment contracts for careers**

The incentive problem created by closed employment relationships has an important solution that deserves to be treated separately, because of its distinct consequences for retirement processes. This solution is the establishment of employment contracts for sequences of jobs that form career trajectories. It is a common and old idea among sociologists (Weber 1968, Stinchcombe 1974) that promotion schemes can be important for generating effort. The mechanism is clearly expressed in the idea of a rank-order tournament (e.g. Lazear and Rosen 1981). A set of candidates compete for a single promotion and the candidate ranked highest will receive the promotion. The ranking is presumably done in terms of

actual or expected productivity, but it is not the absolute level of productivity that is being rewarded by the promotion, it is the performance relative to the performance of other candidates for promotions. With these tournaments, the effort of person A therefore acts as an incentive to person B in the contest for career outcomes. If A works hard, B has an incentive to also work hard in order to maintain his or her chances for a promotion. These motivational consequences of promotions may be seen as a main reason for establishing employment contracts with the expectation that the employment relationship will cover a longer stretch of the career trajectory. Such employment relationships generate internal labour markets.

There are other than motivational reasons for establishing employment contracts for sequences of jobs. Internal labour markets may also result from training arrangements involving the rotation of employees among jobs. It is also a common idea that job hierarchies emerge as a result of the organisation of chains of command in a system of authority. Promotion systems remain the natural solution to the incentive problem created by closed employment. Firms with internal labour markets for the allocation of employees to jobs therefore usually have much more elaborate job structures than implied by chains of command and training arrangements.

The consequences for retirement processes of internal labour market structures derive from the use of promotions as motivational devices. To show this, it is useful to consider how the motivational consequences of promotions come about. The link between effort and promotion is presumably generated by the expected size of the gain realised in a promotion. This expected gain is a function of two quantities:

1. the increase in wage and other rewards produced by the promotion, and
2. the rate of promotion.

The increase in wage implies an upward

sloping career trajectory. This has an important implication for the relation between the productivity of the employee, his or her age, and the wage rate received. If, because of on-the-job training and experience, there is an increase in productivity throughout the career, wage rate and productivity may move in unison.

However, the slope of the age gradient in productivity (as measured by the slope in the competitive wage) has no necessary relation to the slope in actual wages that reflect a promotion scheme. In fact, the slope of productivity could be zero and promotions would still be effective as motivational devices. To the extent that the age slope is lower than the actual slope in wages, older workers will be paid more than their productivity would justify in a different job structure. If firms attempt to equalise total wages paid over the career to the overall productivity of the worker, as they should if they maximise profits, younger workers will be paid less than their productivity would justify elsewhere. This may well be the typical situation. Firms may therefore reduce total labour costs by employing a overall younger work-force. The gain realised by employing a younger work-force will depend on the amount of training and other augmentations in human capital taking place over the typical career trajectory in the firm.

The rate of promotion is determined by the distribution of jobs and of incumbents according to seniority. The firm can and presumably does make promotions more frequent by creating more job levels. Further, it may avoid filling vacancies from the outside. Vacancies filled from the outside change the "fairness" of the contest and create the probability that A will obtain the promotion dependent on the unknown characteristics of candidates outside of the firm, thus removing the interdependency among the candidates that creates the incentive for effort. Internal labour markets therefore often only recruit at the bottom level for jobs that are "entry portals" to the firm (Doeringer and Piore 1971). This of

course reinforces the closed nature of employment relationships in internal labour markets.

The relation between rate of promotion and effort is not linear. A very high rate of promotion presumably elicits little effort since the prize of promotion then will be quite independent of individual performance. A very low rate of promotion will also produce little incentive for effort. This lack of effect comes about in two ways. First, a very low rate of promotion may make workers decide not to participate in the tournament, since the expected gain from doing so will not equal the disutility of displaying more than minimal effort. Second, very low rates of promotion increase the ability of workers to engage in collective manipulation of effort because it maintains a stable group of candidates. Workers have an incentive to engage in such collective manipulation, because the same outcome, in terms of individual promotion chances, will come about if all workers display high effort and if all workers display little effort. The situation can be described as a prisoner dilemma game (see Sørensen 1989b, for details) where the likelihood of defecting so that everyone will work hard depends on the ability of the group of candidates to enforce the norms about effort. Firms can reduce the likelihood of such collective manipulation by increasing the rate of turn-over among the candidates. This means increasing the rate of promotion through the creation of more job levels and by increasing the rate at which vacancies appear at the various levels.

A firm's ability to create and manipulate promotion schemes depends on its size. Larger firms have more flexibility and greater ability to manipulate promotion schemes in order to achieve a desired rate of promotion. But, the size will always be finite. For a given size, the rate of vacancies in the system will be governed by the length of tenure in the end positions of the promotion ladders of the firm. Retirements set in motion chains of vacancies in the system producing opportunities for promotion at lower levels.

The length of these chains depends on the length of the promotion ladders. Hence, the promotion rate at different levels will be governed by the length of the promotion ladder and by the rate of retirement.

It follows from these considerations that firms providing employment contracts covering whole career trajectories have strong incentives to control retirement rates. The retirement rate will influence the relationship between the overall productivity of the firm's work-force and the total wage bill. The lower the age gradient in productivity, in relation to the age gradient in wages created by the promotion ladders of the firm, the higher the retirement rate. The classic example is the military where youth is presumably a productive asset and where, therefore, very early retirements are enforced. Further, the retirement rate governs the rate of promotions, as retirements set in motion vacancy chains in the system. The concern of the firm is to avoid too high and too low promotion rates. The rate of growth of the firm is important. The problem for expanding firms is probably to avoid too high promotion rates. This may be achieved by lowering retirement rates by keeping workers longer. In stable or contracting firms, the problem typically will be one of needing to increase promotion rates. This may be achieved by increasing rates of retirement, thus producing earlier retirement.

The consequences of this for the retirement process are quite straightforward. In contrast to open employment systems, retirement in internal labour markets is governed by organisational considerations. The main methods to manipulate retirement in such employment systems are private pensions and mandatory retirement. The latter may seem the simplest method. However, rules about mandatory retirement will be formulated by those in the top of the firm presumably most affected by these rules. Mandatory retirement rules will therefore tend to be universal and inflexible, and difficult to adjust to the organisational needs of the firm. Private pension systems are more

flexible, and may be supplemented by special bonuses for early or late retirement, as dictated by the need to achieve an optimal promotion schedule.

As with the retirement process generated by closed jobs, retirements from internal labour markets will tend to be unrelated to individual characteristics other than biological age, except for major health events. Also, retirement will be an abrupt event rather than a gradual disengagement from the labour market. External shocks to the employing firm are less likely to be involved in retirement, simply because firms with internal labour markets and elaborate promotion schedules will be large firms, less vulnerable to these external shocks. Should unemployment nevertheless occur in internal labour market firms, it will of course have even more drastic consequences for the chances of reemployment in other internal labour markets, with jobs providing similar benefits to those lost. This is a simple consequence of the tendency of the internal labour market to recruit new employees only at the bottom level.

There is an important difference between retirement from closed jobs and retirement from internal labour markets. Career trajectories in internal labour markets tend to be steep, while in closed jobs they tend to be flat. Firms employing workers in closed jobs have an incentive to keep productive workers as long as possible, since the relation between their productivity and their wage need not change. In internal labour markets the relationship between productivity and wage is less likely to remain unchanged, as promotion ladders force the wage gradient upward independently of the age gradient in productivity. Hence, internal labour market firms are more likely to realise increasing profits by increasing rates of retirement.

## Conclusion

Much sociological research on retirement has been focused on individual level analysis of

the transition into retirement, emphasising the role of characteristics of respondents, such as health and pension eligibility for this transition. This research typically ignores labour market structures in which the individual is involved. It follows from the discussion presented here, that ignoring these structures may produce a misleading picture of the retirement process. Thus, the relevance of individual earnings and of labour market events, such as a spell of unemployment on the retirement process, should strongly depend on where the individual was employed. Only in completely open employment will the retirement process be a simple matter of individual choice, based on comparing current returns from work with the expected welfare to be obtained outside of the work-force. In closed job structures, retirement is less likely to be a smooth gradual disengagement from the work-force, and the event is more likely to be triggered by external shocks to the firm or the person, or by the organisational needs of the firm.

Other sociological research has emphasised the relevance of macro-sociological variables for the retirement process, in particular the design of pension systems, other aspects of public policy, and demographic variables. Such research seeks to explain variation among nations in timing and distribution of retirement by these macro-social and policy variables. However, nations differ in more respects than pension policies and basic population composition. There are marked differences in the distribution of the various types of job structures discussed here. They are caused by differences in industrial composition, in labour market institutions and in labour market policies (governing for example the openness of employment relationships). Ignoring the role of job structures in macro-sociological research on retirement may, as in the individual level analysis, produce quite misleading inferences about the structure of the retirement process. Thus, the retirement consequences of the rate of unemployment for a country, will depend on the composition

of the labour market in terms of job structures. High unemployment may trigger much early retirement in countries where closed employment tends to predominate, while having little impact where employment relations are more open.

The consequences of an ageing society thus significantly depends on the nature of the labour market in a society, in particular the mix of employment relationships. The full analysis of these consequences is complex also because the labour market may respond to the changes in the age distribution and the resulting changes in the employment of the elderly. These complex interrelationships are an important topic for research.

The qualitative differences in retirement processes caused by job structures are dramatic. At one end, in job structures conforming to the neoclassical scenario of open employment relations, we have a smooth and gradual disengagement from the labour market completely governed by individual needs and capacities. At the other, we have the abrupt and complete transition out of work, unrelated to individual needs and capacities and dictated by the need of firms to optimise their promotion schedules in internal labour market structures. These differences should have important psychological consequences for the individual in terms of identity and self-esteem. Individuals moving out of open employment structures move to a world of retirement that, in terms of what determines stratification outcomes, is very similar to the one they left. In contrast, individuals moving out of closed employment move to a world completely different from the one they left, since the society of retirement is a world without social positions and therefore without the basic sources of self-respect and status.

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## Labour Market Perspectives and Activity Patterns of the Elderly in an Ageing Society

### Abstract

The definition of an "ageing society" is based upon the existence of a cut-off point between being a member and not being a member of the work-force. It would thus seem that the problems associated with an ageing society could be solved by simply raising - or even better: abolishing - this cut-off point. But in reality, the age of exit from the work-force during the past two decades has dropped considerably. This paper documents this trend and explains it by referring to the interests of the key actors. It shows that early of retirement from work is the result of a cooperative "effort" of companies, unions and the older workers themselves, with the state either actively creating institutional pathways for acceptable forms of early exit, or at least letting the other actors use existing social security schemes for that purpose. With the exception of Sweden, partial or flexible forms of retirement have not met with success, and with the exception of the U.S., there has been little interest in abolishing mandatory retirement. While early exit is a popular solution for coping with (some of) the over-supply of labour, it is questionable on other grounds. But whether it will be possible to reverse it depends closely on the evolution of the labour market.

### The problem

It is obvious that the very definition of an "ageing society" is based upon the existence of a cut-off point between being a member and not being a member of the work-force. The degree of population ageing is routinely defined as the proportion of those over a given chronological age, usually 65 or 60. This has of course less to do with biological processes, that might be indexed by these age limits, than with the basic change in social participation - for most males but increasingly also for females - that is coupled to them: the transition from work to retirement.

It would thus seem that the problems associated with an ageing society could be solved by simply moving - or even better, abolishing - this cut-off point. Moving it would change the proportions of age groups and the dependency ratios. Moving it to a higher age would do away with most economic problems of population ageing - such as financing retirement. Abolishing it would seem to allow for "flexible life scheduling" (Best 1980), and thus to finally bring us the "empire of freedom" in which we could oscillate at liberty between activity and leisure - if not from morning to noon and evening, at least during our lifetime.

But reality has chosen a different path. The cut-off point has not disappeared, and it has moved in a highly surprising and even paradoxical way. Over the last decades, while life expectancy has increased, the mean age of exit from the work-force has dropped considerably. The result is a lengthening of retirement that has led to increasing alarm over the viability of what is metaphorically called the "generational contract". It is also a major challenge to life course theory. Why is the present life course regime, with its rather strict tripartition into a period of preparation, one of "activity" and one of retirement, so pervasive and resistant to change, in spite of the recent demographic evolution and in spite of all the good reasons that would seem to run against it?

To answer this question, it is necessary to

examine more closely how the life course is socially constructed. The term "social construction" refers to two dimensions: (1) that the life course is not simply a given but the result of a process of construction, and (2) that this process is a social process. The first dimension is important in avoiding the "naturalist fallacy", i.e. in refuting the idea that the life course is nothing more than a codification of the natural rhythm of life. The second dimension is important in avoiding the "subjectivist fallacy", i.e. in refuting overly optimistic assumptions about the responsiveness of life course programs to individual preferences and action. It also cautions us with respect to their responsiveness to any intentional manipulation, even that of aggregate actors such as the state. In fact, many people - even many social scientists - erroneously assume that because a phenomenon is a social construction, it can easily be reconstructed. This error is an expression of the materialism embodied in the venerable distinction between "basis" and "superstructure" (today, one would rather speak of "hardware" and "software"). The concept of "social definition" lends itself to the same error. Thus, Samuel Preston (1987), in analyzing the negative consequences of population ageing, writes: "One of the most straightforward responses is to redefine the socially relevant ages. We can reduce the slope of the transfer possibilities curve as much as we want by raising the age at which one is entitled to social security." The question is to what actors Preston's "we" refers. In fact, all of us may individually want to change the age limit, but this does not necessarily produce the desired change - there is a problem of aggregation. And if the "we" refers to the state, the subject of public social policy, there is another surprise: it turns out to be not so straightforward even for social policy to effectively change the age limit of retirement. What is required is to clarify how the process operates and by what and whom it is controlled, in other words, where the locus of construction is.

In this paper, I will first present some

descriptive evidence of the trend towards early exit from work (section 2), and then examine possible explanations - how it has been constructed (3). Specific attention has to be given to the issue of softening the cut-off point through flexible or partial retirement, including transitions from formal work into other activities (4). Finally, some thoughts about the future evolution of the trend are in order (5).

### **Changes in the retirement process: the emergence of early exit from work<sup>1</sup>**

The historical record shows that retirement is by no means a "natural" part of life. It is on the contrary a social construction - a construction, however, which is linked to some rather fundamental features of modern capitalist societies, and thus not easily overthrown.

Retirement is a fairly new phenomenon. It was only a century ago that old age began to emerge as a phase which is defined by retiring from the work-force. For an account of this process, we need to examine the evolution of work-force participation. The data on work-force participation in the first half of this century (or even earlier) are not very good: because of different definitions and age brackets, they are not easily suitable for a comparison across countries, and even for single countries, they are available only in rough age-breakdowns which moreover have sometimes been changed over time. Nevertheless, these data allow some broad conclusions.

The data for France, Germany, Sweden,

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<sup>1</sup> The material in this section is based on a comparative study of early exit from work in Europe and the U.S. (Kohli; Rein; Guillemard; Van Gunsteren, 1991), and specifically, on the chapter that documents the work-force participation trend (Jacobs; Kohli; Rein 1991a).

the U.K., and the U.S.A. are shown in table 1. For all of these countries, we can see that from the beginning of the century until about 1970, retirement among men has become much more prevalent, and the age of exit has increasingly clustered around 65. Work-force

participation of men over 65 has dropped from 65.6% (France, 1901), 47.4% (Germany, 1925), 62.1% (Sweden, 1910), 56.8% (U.K., 1911), and 68.4% (U.S.A., 1900) to around 20% in 1970 (about 25% in Sweden and the U.S.). In the same period, work-force

Table 1:  
Long-term development of work-force participation rates

FRANCE						Women					
	50-54	55-59	60-64	65-69	65+		50-54	55-59	60-64	65-69	65+
1896	/	86.4	—	/	66.6	1896	/	32.2	—	/	24.9
1906	91.8	—	85.1	78.0	/	1906	50.4	—	44.4	37.8	/
1911	93.5	89.2	83.4	/	65.6	1911	51.0	48.3	43.4	/	27.7
1921	95.1	91.7	85.7	78.6	/	1921	54.0	51.6	47.0	41.0	/
1926	94.2	89.2	82.4	73.8	/	1926	47.8	44.8	39.9	33.5	/
1936	91.0	83.2	74.0	65.4	/	1936	46.1	42.2	36.4	29.0	/
1946	93.1	85.4	76.3	66.5	/	1946	50.2	46.1	40.1	31.3	/
1954	94.0	82.0	69.6	49.3	/	1954	46.8	42.0	33.5	20.2	/
1962	93.0	83.5	67.9	36.5	/	1962	45.3	41.5	31.9	16.9	/
1970	/	82.9	68.0	/	19.5	1970	/	46.0	34.3	/	8.6
1985	/	67.8	30.8	/	5.3	1985	/	42.8	18.9	/	2.2

GERMANY						Women					
	50-54	55-59	60-64	65-69	65+		50-54	55-59	60-64	65-69	65+
1882	91.5	—	79.3	—	/	1882	24.9	—	22.2	—	/
1907	90.4	—	71.2	—	/	1907	36.6	—	30.1	—	/
1925	92.4	—	79.7	/	47.4	1925	37.3	—	31.9	/	17.6
1933	86.9	—	67.0	/	29.7	1933	34.8	—	27.0	/	13.1
1939	89.7	—	71.4	/	29.5	1939	36.9	—	28.0	/	14.0
1950	93.4	87.4	73.0	/	26.8	1950	33.9	29.4	21.2	/	9.7
1961	93.9	88.9	73.0	/	22.9	1961	37.8	32.5	21.1	/	8.4
1970	/	88.4	71.8	/	17.2	1970	/	36.4	20.4	/	6.1
1985	/	75.3	31.8	/	5.1	1985	/	34.5	9.7	/	2.1

SWEDEN						Women							
	50-54	55-59	60-64	65-69	70-74	75+		50-54	55-59	60-64	65-69	70-74	75+
1910	91.8	—	—	—	62.1	—	1910	17.2	—	—	—	11.3	—
1920	95.3	—	82.7	—	47.1	—	1920	23.6	—	18.0	—	10.6	—
1930	94.7	—	85.5	71.5	—	41.5	—	26.0	—	21.0	17.0	—	11.0
1940	94.9	91.5	79.8	59.8	/	/	1940	25.1	22.1	17.1	12.9	/	/
1950	94.1	—	69.2	—	23.7	—	1950	28.1	—	15.7	—	—	5.4
1960	95.1	92.3	82.5	50.6	20.3	7.3	1960	35.2	31.3	21.1	9.6	2.8	1.0
1970	91.9	88.4	75.4	31.3	—	5.0	—	50.3	41.1	25.5	7.6	—	0.9
1980	89.2	84.4	65.9	14.4	7.4	2.6	1980	77.8	66.4	41.4	6.1	2.1	0.5

U.K.						Women						
	45-54	55-59	60-64	65-69	70+		45-54	55-59	60-64	65-69	70+	
1911	94.1	—	—	56.8	—	1911	21.6	—	—	11.5	—	
1921	96.8	91.9	—	79.8	41.2	1921	20.7	19.1	—	15.1	6.5	
1931	96.7	94.1	87.6	65.4	33.4	1931	21.0	18.8	16.3	12.2	5.5	
1951	97.9	95.4	87.8	48.7	20.9	1951	34.0	27.7	14.4	9.0	3.2	
1961	98.6	97.1	91.0	39.9	15.2	1961	43.3	36.9	20.4	10.3	3.1	
1970	97.5	95.3	86.7	20.1	—	1970	59.4	50.1	27.9	—	6.4	
1985	92.1	81.8	54.5	—	8.2	—	1985	69.1	51.6	18.6	—	3.0

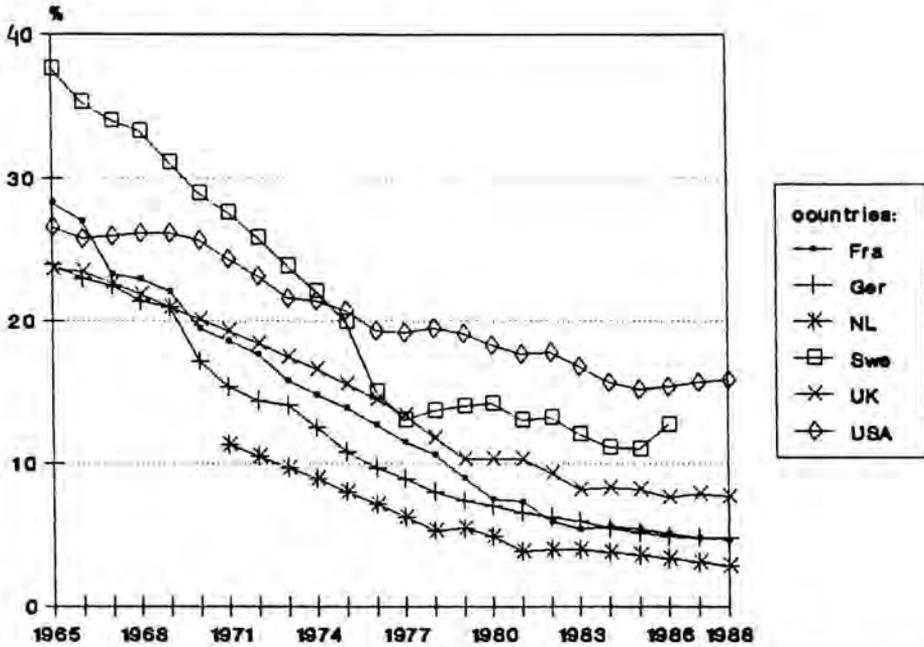
  

U.S.A.					Women				
	45-54	55-59	60-64	65+		45-54	55-59	60-64	65+
1890	95.2	—	—	73.8	1890	12.6	—	—	8.3
1900	95.5	90.0	—	68.4	1900	14.7	13.2	—	9.1
1910	92.1	—	—	63.5	1910	16.2	—	—	8.9
1920	93.8	—	—	60.2	1920	17.1	—	—	8.0
1930	96.5	90.2	—	58.3	1930	20.4	16.1	—	8.0
1940	92.0	87.9	79.0	41.8	1940	22.5	18.5	14.8	6.1
1950	92.0	86.7	79.4	41.4	1950	32.9	25.9	20.6	7.8
1960	93.3	87.7	77.8	30.6	1960	46.7	39.7	29.4	10.4
1970	93.2	88.3	71.7	25.7	1970	54.2	48.8	34.8	9.0
1985	90.4	78.9	55.1	15.2	1985	64.2	50.1	33.2	6.8

Sources: For France, Germany, U.K., U.S.A.: till early 1960's: "The Working Population and its Structure", Brussels 1968 (the German 1939 numbers are taken from "Bevölkerung und Wirtschaft 1872-1972"), from 1970 onward: OECD Labour Force Statistics, Paris 1988; for Sweden: population census.

From: Jacobs/Kohli/Rein, 1991a

Figure 1:  
Work-force participation rates: men 65+



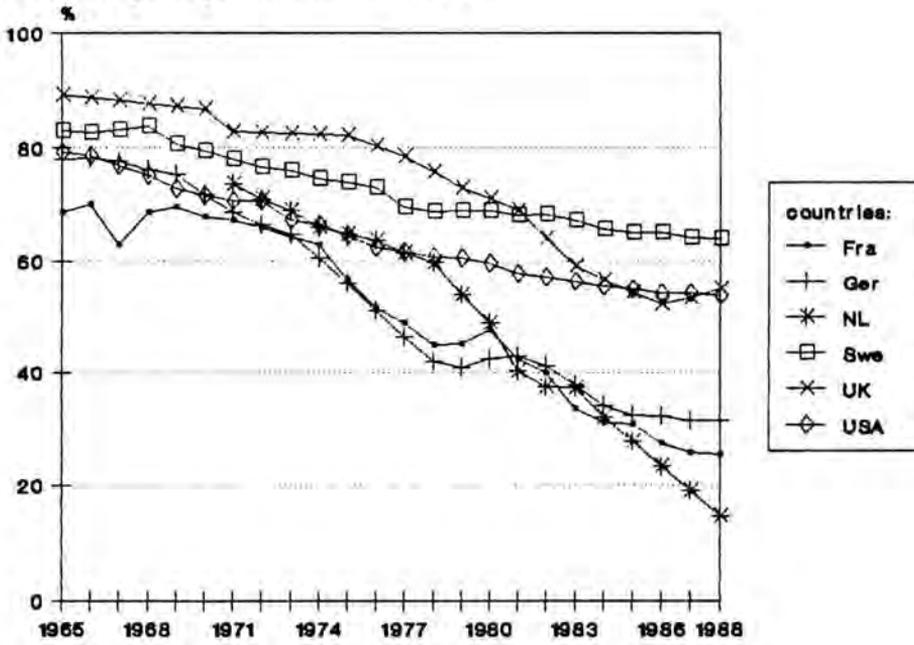
participation of men aged 60-64 has - with some fluctuation - remained fairly high. The largest decline for this age group can be seen in France (from 85.1% in 1906 to 68% in 1970), but there are only small declines in Germany, Sweden, and the U.S.A. (from 79.7% in 1925, 85.5% in 1930, and 79% in 1940, respectively, to still clearly above 70% in these three countries in 1970), and no decline at all in the U.K. (with a high rate of 87% in 1970). To the extent that appropriate measurement points are available, the downward fluctuations seem to be largest during the 1930s, especially during the Great Depression (France in 1936, Germany in 1933)<sup>2</sup>.

Thus, up to the end of the 1960s, retirement for men had become a normal feature of the life course, a taken-for-granted part of one's biography. Old age had become synonymous with the period of retirement: a life phase structurally set apart from "active" working life and with a relatively uniform beginning defined by the retirement age limit as set by the public old-age pension scheme. This process is part of the historical "institutionalisation of the life course" (Kohli 1986) as a chronologically standardized sequence and a set of biographical perspectives.

Over the last two decades, the situation has changed: the work-force participation of men over 65 has further decreased, but more importantly, that between the ages of 55-64 has also dropped considerably. The data for some western countries are presented in fig. 1-3 (cf. also Rein; Jacobs, in this volume). For women, the pattern is less obvious because of their generally increasing work-force participation. But cohort data (such as those given in fig. 4 for Germany) show that

<sup>2</sup> For women, the picture is less uniform. For women over 65, work-force participation (with the exception of France) has never been an important factor. For those below 65, exit trends are masked by the general increase in female work-force participation (see below).

Figure 2:  
Work-force participation rates: men 60-64



From: Jacobs/Kohli/Rein (1989)

Figure 3:  
Work-force participation rates: men 55-59

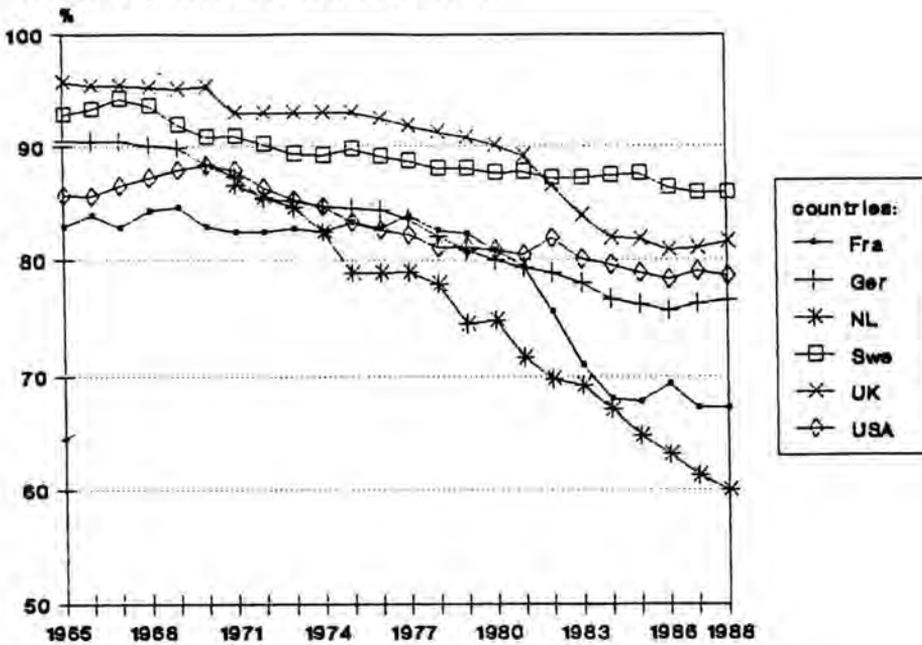
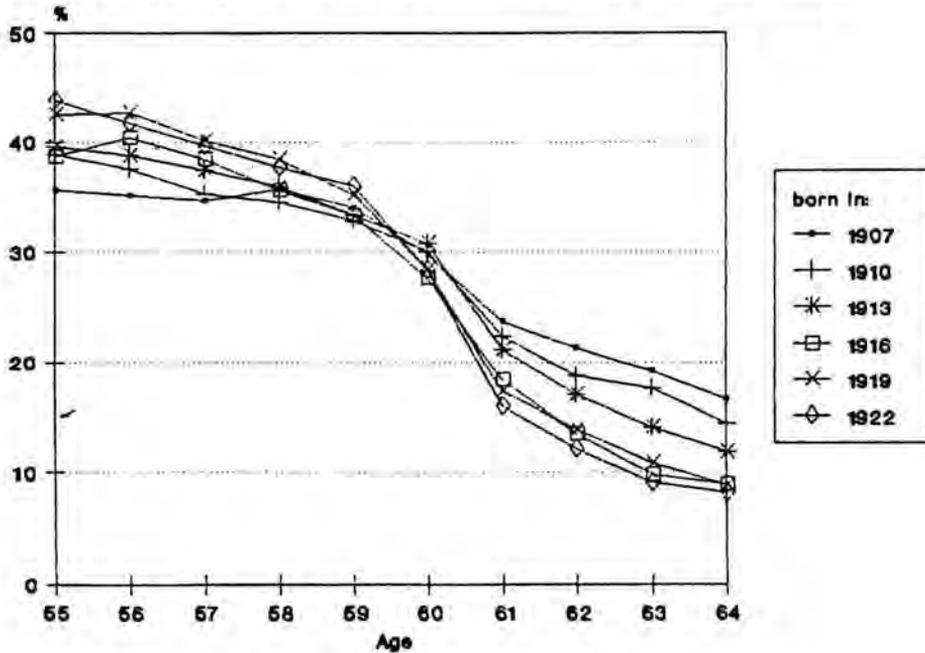


Figure 4:  
Work-force participation rates of birth cohorts by age. Germany: women



From: Jacobs/Kohli/Rein (1989)

the trend towards early exit applies to them as well: each successive cohort starts the exit process from a higher level, has a steeper decline, and reaches age 61 on a lower level.

Obviously, the shortening of the work life has been a key mechanism of adaptation to the shrinking demand for and/or the increasing supply of work. To be sure, it has not been the only such mechanism - it has been paralleled by a shortening of yearly work time<sup>3</sup>. But the tripartition of the life

<sup>3</sup> In Germany, the mean number of hours worked has decreased between 1960 and 1985 from 2144 to 1705 hours, i.e. by over 20% (Reyher, Kohler 1986). In Sweden, the total work-force has increased by 10% since 1970, while at the same time, the total number of hours worked has decreased by 4% (Kruse; Söderström 1989).

course has been retained (even though the transition periods between the three parts have become longer and more diffuse). The early exit of older workers has made it possible to conserve this basic structure of the life course. It should be added that the work phase has also been shortened from below, by extending the period of schooling. The trend is even stronger if we substitute employment activity rates for work-force participation rates which include unemployment; in many countries, the latter is highest at both ends of the work phase.

It may be useful to examine the change at age 65, which is mostly still the "normal" limit for access to public pensions (in the sense of eligibility for all those who have not entered the system earlier via a "special" scheme - which may be by far the majority). For German men, among the 10.2% who at age 65 were still "active" in 1988, more than half (5.8%) were self-employed, and another fifth

were family helpers (probably mostly in agriculture); only 2.5% were wage earners (Jacobs et al. 1989). This gives an idea of how rare it is to continue working after 65, or to enter new employment. In a comparative study of "additional jobs" by age and job-status groups, the retirees have turned out to be those with the lowest proportion - lower than the unemployed, students, and even the fully employed (Helberger, Schwarze 1986).

For the U.S., the aggregate work-force participation rate of those over 65 is (still) substantially higher than in Germany and most other industrialised countries (see table 1). Also, U.S. individual-level longitudinal data (from the *Retirement History Survey*) show that there is a considerable amount of counter-transitions from retirement back into work (see Burkhauser, Quinn 1989; Reimers, Honig 1989)<sup>4</sup>. It is not clear how much of this is linked to the higher aggregate rate of the U.S. - and thus to the specifics of its institutional regime - and how much would be found in other countries if longitudinal data were available for them as well.

#### **Explaining the trend: structures and actors**

The drop of the age of exit from gainful work has come at a time when many factors seemed to point in the opposite direction. The "hardest" one has already been mentioned: life expectancy (even at age 60) has considerably increased during this period. Also, the newer cohorts of aged people have increasingly better health and better educational resources. But there have also been dramatic changes in the cultural "software" of ageing. One is the steady stream

of (psycho-)gerontological literature which - starting around 1960 - has been arguing over and over again that the process of ageing is not necessarily associated with a loss of functional capacity and productivity (at least not in the age bracket that is at issue here), and that the commonly held "deficit model" of ageing should therefore be abolished. Another is the increasing emphasis on activity and social participation as beneficial for "successful" ageing. And finally, fixed age limits as criteria for the exit from gainful work and for the allocation of welfare benefits are increasingly seen as alien to the universalistic normative regime of modern societies, with their emphasis on achievement instead of ascription, and even as a violation of basic constitutional rights. In the countries of Western Europe, this notion has not had any immediate institutional impact, but in the U.S., it has become institutionalised in the legislation against mandatory retirement as well as in a broad discourse on whether to replace chronological age by "functional" age as the basic criterion (see Neugarten 1982).

In spite of these factors then, people have been leaving the work-force at increasingly earlier ages. Together with the increase in life expectancy, this has resulted in a massive lengthening of retirement. The median age of leaving work for German men (as measured by the aggregate work-force participation rates) has dropped by about 5 years (from 65 to 60)<sup>5</sup> between 1960-1985, and their life expectancy at age 60 has increased by 1½ years (from 15½ to 17 years). The mean duration of retirement has thus increased by almost two thirds.

Why this highly paradoxical evolution? When looking for an explanation, it is tempting to focus on the variation between

<sup>4</sup> The amount depends of course on how "retirement" is defined: by leaving the work-force (fully or partly), by an income reduction, by receiving an old-age pension, or by a combination of these criteria.

<sup>5</sup> Because the distribution is highly skewed, the mean age is lower, but cannot be ascertained exactly for lack of individual-level data. The latter are available only for program participation, i.e., entry into the public pension system.

countries and between periods. There are indeed differences in levels and slopes of the trend towards early exit; the most salient features of the trend, however, are its overall generality and homogeneity. If one considers these features, it is plausible to seek for an explanation not so much in social policy provisions - which differ considerably between the countries - but in common structural conditions of the labour market, especially in the combined pressure of the high rates of unemployment that have plagued most Western economies since 1970, and of increasing technological and organizational rationalisation. The social policy differences should not be neglected - especially as they coalesce into specific welfare regimes (e.g. Esping-Andersen 1990), which in turn are articulated with specific work regimes - but as a first step, it is important to stress the unity of the process. Thus, while most of my examples refer to the German case, they are not intended to highlight its specificity, but rather to illustrate the features that are common to most or all countries<sup>6</sup>.

However, the structural explanation can only be a first approximation. The term "structure" has several meanings, which may be the reason why it is so popular; on closer inspection the implied meaning often turns out to be simply "that which is given and cannot be changed". This is important in pointing out the resistance of social phenomena to easy manipulation, but it needs to be specified as to the processes involved; in other words, the language of structure needs to be translated into the language of action. The actors here are obviously not only the elderly workers themselves, but also (and more importantly) corporate actors such as the companies, the unions, and the state.

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<sup>6</sup> See Kohli et al. (1991) for a more detailed comparative assessment.

### *Companies*

There is by now a considerable literature both in sociology and in economics pointing out the interests of employers, based on conditions of internal labour markets (such as the form of the employment contract, see Sørensen, in this volume), in having their older workers leave early. It sets straight two deficiencies of previous research: a concentration on the individual retirement decision on the one hand, and a restricted model of the organization of work on the other. Many gerontological researchers (e.g., Thomae, Lehr 1973; Foner, Schwab 1981) have argued that the companies, in trying to rid themselves of their older workers, do not act in their objective self-interest but are instead acting on the commonly-held deficit model of ageing, i.e., on deeply entrenched but faulty stereotypes or "labels". This argument is however based on too narrow a view of the employment contract. There are indeed good reasons for such an interest on the part of the companies.

The most controversial reasons - and the ones that the gerontologists have mainly concentrated on - are those pertaining to the work performance of older workers. The empirical evidence here is mixed. On the whole, older workers are less physically fit and healthy than younger ones - partly due to the normal ageing process, partly to their long exposure to hazardous and stressful working conditions (that may have improved for younger cohorts), and partly to the special hazards that today's elderly cohorts had to bear e.g. during the war and the immediate post-war years. But while this is true in terms of means, only a minority of older workers has serious health impairments, and it has been argued that most jobs do not demand performance at the level of maximum capacity (Robinson 1986). As to job performance, a meta-analysis of age differences (Waldman, Avolio 1986) - restricted to the relatively small number of U.S. studies that fulfill the requirements for such analysis - has even resulted in a positive

correlation between age and productivity (in terms of unit output over a period of time) (see also the overview by Habib 1990).

Economists who rely on indirect estimates of productivity usually find a decrease with age (e.g. Kotlikoff 1988).

This is only part of the picture, however, it has to be complemented by the issues of costs and job deployment. First, it has been broadly documented that the older workers usually earn more than comparable younger ones, due to formal or informal seniority arrangements, and thus are more costly for their employers. Relative earnings usually peak at ages 45 to 50 and then decline, but still tend to remain above those of younger workers (Habib 1990). For older German workers, it has been shown that even this slight decline disappears if age is replaced by work years (Göbel 1983). Older workers also enjoy a series of other seniority-based prerogatives, making them less easy to move around or to fire as the interests of the company change, in other words, they present higher transaction costs. Economists have used these age-earning profiles to refute the neoclassical spot-market model of employment, replacing it with the notion of a lifetime earnings contract consisting of sub-productivity earnings at the beginning and above-productivity earnings towards the end of work life, which makes it profitable for the companies to terminate their older workers early (e.g. Lazear 1979; Kotlikoff 1988).

Second, older workers are on the average less well-educated - and educated in technologies that have long since become obsolete. In spite of all the exhortations, since the 1960s, for "recurrent education" during the whole life course, there has been no regular requalification of middle- and lower-level workers after their initial training - even in countries (such as Germany) where turn-over is comparatively low, and where good occupational training is considered important for the productivity of the work-force. As a consequence, older workers are also less flexible; given the amount of time

that has elapsed since their last formal training, they cannot easily be requalified when the need arises.

Third, the costs of requalification would have to be discounted more rapidly because of the shorter period of usability as retirement approaches. And fourth, the structure of the internal labour market may also contribute to the interests of companies to terminate their older workers, such as for clearing the vacancy chains (see Sørensen, in this volume).

There is another reason, one that has nothing to do with productivity or costs, and is often overlooked: the availability of a pension system, and the fact that retirement is an expected part of one's life course, makes early exit the most legitimate way of shrinking the work-force. It offers a possibility of dismissing workers in a manner that - given some institutional programs that bridge the gap until the age of eligibility for normal pensions - is acceptable to them (and to their unions). One of the most important social functions of retirement is "control of unemployment" (Atchley 1985).

This last reason applies to those companies that face the pressure to reduce their work-force. The other reasons also apply to those which maintain or even expand the number of their workers. Replacing older workers by younger ones is reasonable in terms of the cost issues just mentioned, and it becomes even more so if new job qualifications are required. As an example, in the German chemical industry - whose pre-retirement program we have studied in detail (Kohli et al. 1989) - there has been no decline of the overall size of the work-force but a large structural shift towards more highly qualified jobs, both within production-line work and away from the latter towards laboratory work. The overall result of this configuration of interests is that early exit takes place in almost all industries - not only in the declining ones but also in the expanding ones (see Jacobs et al. 1991b; Rein, Jacobs, in this volume).

## *Unions*

In Germany, the first post-war recession (in 1967) showed the older workers to be particularly vulnerable. As a result, the Unions in the years to follow adopted a policy of work-place and salary protection for them (thus increasing the transaction costs that they represent for the companies), and were successful in implementing it to the degree that it became a standard feature of most contracts. But the unions had also long been calling for a lower retirement age. Early exit, if financially and procedurally acceptable, was therefore very much in line with their long-standing demands. These demands became more urgent as the labour market crisis unfolded, with early exit being increasingly viewed as an instrument to redistribute the available work from the elderly to the young. In 1983, a bitter fight broke out within the German union movement over where to put the priorities: whether on the reduction of weekly hours or on the shortening of working life. But it has since been acknowledged by both sides that the two ways of reducing work time have to be balanced. The main conflicts between unions and employers have now shifted to the arena of weekly work-time (and of its flexibilisation), but the unions remain opposed to raising the retirement age.

## *The state*

For the state, the problem has become one of managing three competing demands. The first is to keep the "social contract" viable, by finding ways out of the employment crisis that are socially legitimate and acceptable, and that make room for the integration of the young into the work-force. This leads to a strong interest in early exit from work. The two other demands, however, hold this interest in check. The second is to keep the public finances viable, which applies to the pension insurance as well as to the publicly funded pathways of early exit (e.g. via

unemployment or disability insurance or special pre-retirement programs), and to the costs that accrue to the state as an employer<sup>7</sup>. The third is to keep the private economy viable, by allowing the companies flexibility in the management of their elderly work-force, and the possibility to externalise (part of) the costs.

The pressure of these competing demands has led to a "muddling through" - or, to use a more upgraded term, an "incrementalist" policy style - than can be discerned, e.g. in the German policies towards early exit (see Jacobs, Rein 1988). The state let the companies and unions turn existing institutions that had been created for special risks, such as unemployment and disability insurance, into regular pathways for early exit from work. When this became too costly for these institutions, the state opted for programs (such as pre-retirement) which made the companies assume most of the costs. However, pre-retirement has been discontinued in turn as the cost for the companies has risen, and their control over the exit process weakened, being replaced with a program of "partial retirement" that is meant to appease the unions and workers but in effect imposes more of the costs on the latter, and deprives them of the power to decide for themselves when to leave. This has created a considerable amount of dissatisfaction and pressure from the workers and unions, which may force the state to again do some accommodation work. The "muddling through" is likely to continue as long as the high rates of unemployment persist.

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<sup>7</sup> While it may be sufficient here to treat the state as a homogeneous actor, it is of course highly simplified. The social insurance organisations have varying degrees of partial independence from the state administrations, and some of the dynamics of the process of early exit are due to the differences between these public (or semi-public) actors.

### *The older workers*

For the older workers themselves, early exit has been a somewhat mixed blessing. In our comparative study, this is one issue where the evidence is not sufficient to make unequivocal general statements. In the literature of some countries, the elderly workers are pictured as the unwilling victims of a process of exclusion from work, while in others they are seen to willingly present themselves for early exit. The data from the German pre-retirement study (Kohli et al. 1989) support the second view. Many workers would like to continue to do some work - if it were "good work": less stressful and more self-controlled. But with the work they have, their preference is clear: the great majority of them accept early exit, and even view it as a blessing that sets them free from a work place that becomes increasingly hard to endure physically, and where they find themselves increasingly less "at home" with the changing technology and organisation.

The preference also depends of course on what institutional pathways are available to bridge the time until normal pension age. The pathways differ in terms of cost, control and moral meaning. The German pre-retirement program, e.g., proved to be favorable for the workers, and our data show that after some initial hesitation it was met with overwhelming acceptance. There was a small proportion of those eligible that rated the financial loss as too heavy, but for most, the financial arrangement (about 75-80% of former salaries) seemed well worth it. Also, pre-retirement - in contrast to the unemployment or disability pathway - was seen as a morally legitimate, non-degrading way of bringing one's working life to a close. This was reinforced by the aspect of intergenerational solidarity built into the program (and stressed in public discourse): leaving the work-force as a means to give the young a chance to be employed. And finally, the program left the ultimate decision with the workers themselves: within the rules of eligibility, they were the ones to decide

whether to leave or not. Although there was some pressure from companies and union representatives, we have ample evidence that it was not nearly as powerful as to invalidate the workers' freedom of choice.

Contrary to many beliefs, early exit from work is thus broadly popular with most of the actors involved. It is the result of a cooperative "effort" of companies, unions and the older workers themselves, with the state either actively creating institutional pathways for acceptable forms of early exit, or at least letting the other actors use existing social security schemes for that purpose.

### **Alternative forms of exit: partial or flexible?**

With the trend towards early exit, the cut-off point between work and retirement has not only moved downward, but also has been softened somewhat at least on the aggregate level of the population, by creating a longer and more diffuse transition period. On the individual level, softening the cut-off point would mean partial (gradual) or flexible retirement.

In Germany, partial retirement was offered as an option by the pre-retirement program, but it was almost universally rejected. This has also been the case with other partial or gradual ("gliding") retirement schemes: they have consistently been turned around and "subverted" to allow for full exit at the earliest possible moment. While partial retirement is recommended by many psychologists (e.g. Lehr 1984) to ease the transition to retirement, those in charge of the transition seem to view it differently. Most companies so far have no interest in it, and neither have most workers (in part due to the fact that for many it would mean being moved from their work-place and losing their seniority prerogatives). It is only in Sweden that partial retirement has met with success, in the context of a labour shortage that gives the companies an incentive to retain and accommodate their older workers even on a part-time basis.

Similarly, there has been little interest outside the U.S. in abolishing mandatory retirement, and replacing it with more flexibility. Why is this so? Should not the elderly workers themselves at least be in favor of flexibilisation if - as the psychologists tell them - it is so good for them? The problem is that the psychologists' position contains an error of aggregation. In a country with a well-developed public pension system, abolishing mandatory retirement could easily turn into an excuse for retrenching the benefit levels, because it would mean that retirement is not to be seen any more as a collective process to be taken care of by collective arrangements, but as the result of an individual decision, with the individual having to assume the financial responsibility for exiting earlier than would be necessary.

On the other hand, flexibilisation as such may be a doubtful gift. For some, flexibility is equated with more individual choice. But we need to ask "flexibility for whom?". Under many institutional conditions, it will be the company that is in control of flexibility rather than the older worker<sup>8</sup>.

Partial retirement can also mean retiring from one's main job to take up another one

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<sup>8</sup> In Germany, the issue of flexibilisation of what is called the "normal work contract" (Normalarbeitsverhältnis) is today one of the most heated areas of conflict between companies and unions. It concerns the modalities of part-time work and of temporally limited work contracts as well as the loosening of the boundaries of the workday and work week through more evening and week-end work. It is obvious that some of the heat has to do with the organisational interests of the unions that may be jeopardized by flexibilisation. Moreover, it involves a certain trade-off between those who are presently in normal work and those who are not. But it is also clear that for those who are in work, many forms of flexibilisation would turn out to be a disadvantage.

that is (temporally or in some other sense) more marginal. There are several patterns of such a process. One is the Japanese pattern, where those in "lifetime" employment in the core sector of the economy retire (or are retired) rather early, but due to the lack or low level of pensions are forced to continue in some secondary job, often arranged for them by their former employer (Kii 1987). On an aggregate level, this process may be seen as one form of labour market segmentation, with the marginal segment being stripped of the high employment security and salary typical for the core segment. It is plausible to interpret much of the U.S. work after retirement (as discussed above) along the same lines. A different pattern has emerged in Hungary before the recent changes (Szalai 1991), with the workers retiring from the "first" (state-controlled) economy to take up more gainful activity in the "second" private one. Retirement from the state-controlled economy has been a positive event: it has meant achieving more autonomy as well as being able to gain more money; and the possibility to do so rather early has been conceded by the state as a measure of appeasement.

But it is also possible to "use" a full pension as a basis from which to take up a part-time job. While some retirees find their pension not sufficient, and thus have to go back to the labour market to earn some additional income<sup>9</sup>, it is evidently preferable for retirees to be able to take up some job again without being forced to do so by the necessities of survival, because this leaves them the option to accept the kind and

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<sup>9</sup> This seems to account for a considerable proportion of the counter-transitions from retirement back to work in the U.S., where after some years of retirement the lump-sum exit payments and the pensions without inflation indexing turn out to be inadequate, and often much more so than was previously anticipated.

amount of work that they find intrinsically rewarding. In a qualitative study of several groups of male retirees who engage in different types of activities outside the primary world of the family and neighbourhood - self-employment, part-time work, voluntary work, political activity and self-organisation and highly institutionalised "hobby work" - we have found (Freter et al. 1988) that for those who take up part-time work, the fact that they do not have to do it for financial reasons is highly significant. They are comfortable, even with work of lower status than they did before retirement, because it is of their own choice - it is up to them to leave it any time they want - and also because they do not have to prove themselves any more: they have "done their part" in life up to the point that is socially expected, namely, the normal age of retirement. Work after retirement thus has a completely different character than before, due to the institutionalisation of normal retirement both in terms of a claim to financial security and of a measure of the legitimate work life.

A final pattern is the transition to some form of productive activity outside of gainful employment, such as voluntary work or household production. There is an increasing interest in sociology to view these activities in terms of their (partial) similarity to gainful employment, and thus to broaden the concept of work beyond its traditional core (not to mention all the other activities to which the term is now being applied, e.g. "emotion work" or "body work"). However, the similarity is often exaggerated; it should be kept in mind that in modern societies, the differentiation of a sector of formally organised gainful employment has simultaneously redefined the status of work outside its boundaries, turning it into a residual "private" activity. This is not to say that such work is not productive. The former disregard for its productive value is now being rectified, most clearly for the work done by housewives, and increasingly also for that done by the elderly (see Herzog et al.

1989). And the structural importance of it is likely to grow as the time taken up by gainful employment is shrinking (in the week-time as well as in the life-time dimension). Thus, early exit itself is likely to contribute to a higher salience of non-gainful work.

### Possible futures

It is easy to see that the process of early exit cannot go on indefinitely: if we extrapolate the trend of the past two decades, we would reach, somewhere in the second half of the next century, the point where people at about age 38 move from college directly into retirement. It seems safe to say that trend extrapolation here is not a good manner of prediction.

Moreover, while early exit is a popular solution for coping with (some of) the oversupply of labour, it is questionable on other grounds (cf. Riley, Riley 1991). In the long run, a solution which concentrates the available work on an ever shorter proportion of the lifecourse, and keeps an ever larger proportion of the population completely out of work, does not seem reasonable. There are good reasons - psychological ones concerning activity and competence, sociological ones concerning social participation and integration, and economical ones concerning the financing of social security - for preferring the opposite scenario, of trying to distribute work more evenly among all age groups (e.g. by further decreasing weekly work hours, by encouraging part-time work among the "active" population, and by opening the possibility for sabbaticals or periods of "retirement" over the whole life course). But good reasons alone do not produce the preferred outcome; it is the dynamics of interests among the actors involved that is decisive.

These interests in turn closely depend on the labour market conditions. Abolishing an institutional program such as pre-retirement,

and thus closing one pathway for early exit, will not result in making people work longer if the labour market will not accommodate them and if other pathways exist (such as disability or unemployment insurance). The likely result is that they will move to these other pathways. Specific social policy decisions have only limited impact<sup>10</sup>; they cannot by themselves reverse the trend. What they can do is shift the burden, even to the point where the older workers themselves have to bear most of it<sup>11</sup>. For them, the pathways differ greatly in their acceptability in terms of cost, control, and moral meaning, and it is in these terms that social policy matters most.

The main limiting condition for attempts to reshape the lifetime distribution of gainful work is thus the evolution of the labour market. In all ageing societies, the supply of potential young entrants into the labour market is declining rapidly. It is usually argued that this will lead to a labour shortage as well as to a financial crisis of the pension (and health) system. The most obvious way out of this demographic trap - as mentioned at the beginning - would seem to be by raising the age limit of retirement. However, whether the elderly workers would indeed be

absorbed by the labour market is still an open question. A few years ago, it was generally predicted in Germany that with the decreasing size of the entry cohorts, the oversupply of labour would disappear at the beginning of the 1990s. Then, the predictions - even before the prospects of unification - moved this date to the year 2000 or beyond. Now, the unification process has created, in the East, mass unemployment on an unprecedented scale, and again early exit is used to cope with (some of) it, with a pre-retirement scheme, starting at age 54. And for the next decades it remains to be seen whether the effects of the demographic change will outweigh the effects of job loss through rationalisation. In order that a higher retirement age would take, the labour market situation would need to be different. If the retirement limit for entry into the public pension system is raised, and the labour market does not offer jobs to the elderly, then it is simply a process of shifting the burden between the different welfare programs and the elderly themselves.

It is of course not sufficient to look at the aggregate labour market balance only; unemployment on the aggregate level may (and indeed does) coexist with a labour shortage in some (regional and/or qualification-specific) segments of the market. From the standpoint of the companies, the most advantageous solution would therefore be to get control over the exit process so that they could retain the needed workers longer and get rid of the others early and without undue costs. Such a solution could consist of raising the age limit of access to pensions but retaining an array of publicly financed pathways of early exit for the "problem groups" among the elderly.

It should be no surprise that this solution is not overly attractive to the unions and to the older workers themselves. Raising the age limit may however become more acceptable in the long run if manpower policy over the whole life course is changed, with less hazardous and health-threatening working conditions, a regular schedule of

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<sup>10</sup> Even in the U.S. system, where availability of pathways is rather restricted, the legislated increase in the age of eligibility for full Social Security benefits is predicted to have relatively small effects on the age of exit from work (Gohmann, Clark 1989; Ruhm 1989). Larger impacts could ensue from altering the incentives implicit in many private pension plans (Ruhm 1989).

<sup>11</sup> In some cases, as in the U.K., early exit continues even after most pathways have been shut down, resulting in increased poverty among those exiting (Laczko, Phillipson 1991).

requalification, and shorter working hours. (The last point is also relevant in terms of the relation of demand for and supply of labour.) In this sense, the various dimensions of manpower and work time policy depend on each other. What this also shows is the importance of differentiating between short-term and long-term policy options. In the long run, the conflicts may be less dramatic than they now appear to become.

Labour shortage and financial strain for the welfare system are moreover alleviated by migration: internal "migration" of women into the work-force (which is likely to continue), and immigration of workers from outside the country. The harmonisation of the E.C. labour market after 1992 will generally increase labour mobility (not to speak of the possibility of incorporating high-fertility countries such as Turkey into the E.C., and of illegal immigration). Older workers will thus face increasing competition by younger women and immigrants. In Germany, the events of the past three years have demonstrated the fragility of the assumption of a closed system; and in Western Europe more generally, the perception is slowly sinking in how difficult it will be to insulate these ageing and rich populations from the pressures of mass migration.

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## Employment Trends of Older Workers in Western Countries

### Abstract

While Western societies are ageing, the trend of the early retirement of older workers from work-force continues. Public policy tries to reverse this trend by extending the age limit of old age pension schemes. The trend of early retirement however, is primarily driven by labour market dynamics rather than by pension regulations. An empirical analysis of employment trends by single industries shows that the early retirement of older workers is a general labor market phenomenon in all countries and not restricted to certain industries. Therefore, reversing this trend will be a very difficult task for the future.

### The ageing society and the labour market

The increase in longevity and the decline in fertility are the two major forces creating a change in the age distribution of most mature industrial societies. The outcome of these trends has been an ageing society characterised by a growing share of older people in the population. One might expect that this process will be reflected in the labour market with a growing share of older workers in the work-force. Instead a reverse occurred: in almost every Western country in the 1970s and the 1980s there has been a more or less steady decrease in male work-force participation from age 55 to 64. There

are some differences in the slope, the level of exit, and in the time period in which the process began. For example, the work-force decline is not as steep in Sweden and Japan as it is in Germany, the Netherlands, and France. The United States and the United Kingdom fall between these extremes. In France and the United Kingdom the trend began in the 1980s, whereas in the Netherlands and Germany it started in the early 1970s. Moreover, the trends appear more similar across countries for the 60-64 age group than for the 55-59 group<sup>1</sup>.

In almost every country the standardised age of retirement at age 65 has de facto been substantially lowered. From the perspective of the labour market, people are seen as "older workers" in the last phase of their working life. If the normal end of working life increasingly occurs in the mid- or late 50s, then those in the late 40s or early 50s have already become "older workers". The labour market has thus accelerated the trend of an ageing society by redefining the meaning of ageing.

Public policy in Germany, Japan and the United States has taken the first step towards reversing this trend by gradually extending the age of retirement. However, the age of entering the public pension system is not necessarily the same as the age of exiting the work-force employment. Policy and practice can thus diverge, because there are also other important actors, such as the firms and unions and the elderly themselves. We believe that the key to unravelling the changing boundary between work and retirement primarily lies in a better understanding of labour market dynamics, rather than focusing on changes in the structure of the pension system.

One way to understand these dynamics is to look at the changing age profiles within different industries over time. If the trend of

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<sup>1</sup> see Martin Kohli's detailed summary of our documentation and analysis of these trends in this volume.

to early exit from the work-force is limited to a few industries which are, for example, experiencing economic hardship or rapid technological change, then the expectation of reversing the trend of early exit does not appear completely unrealistic. The continued employment of older workers in other industries shows that, in general, they still have an economic role to perform.

If, on the other hand, the pattern of early exit is more general and extends to almost all industries, then reversing the trend seems much more difficult. Such a scenario might suggest that firms are in general unwilling to employ older workers, from the perspective of an economic rationale, and/or the older people prefer the early exit option because, if the economic penalty of early exit is not too high, they see an opportunity of enjoying retirement when they are still healthy and active.

In this paper we will present some empirical results from our analysis of industry-specific employment trends of older workers in the 1980s in five countries. We want to answer the question whether the trend of early exit of older workers from the work-force is concentrated in certain industries or represents a general phenomenon of the total labour market.

### **Employment trends of older workers by industry**

#### *Previous findings*

In a previous study, we analysed the exit patterns in industry over a period of time in the 1970s in the Netherlands, Germany and Sweden; three countries which represent different industrial mixes and different rates of exit of older workers (Jacobs et al. 1987). The most obvious interpretation of the process of early exit from the labour market was that troubled industries, or industries experiencing rapid technological change, were expelling older workers. If this interpretation

was correct, one would expect to find that exit takes place in certain industries and not in others. Secondly, we expected that the different industry mixes in countries might help to explain the overall exit patterns or processes. Economies with a rapidly declining industrial sector and a lower proportion of employment in services would show higher rates of exit than economies with less industrial transformation and a growing service sector.

The main conclusion of our study was that exit takes place almost everywhere in growing and declining industries, although not necessarily to the same extent. The decline in male participation rates was larger in declining industries than in rapidly growing industries. In Sweden, a country where the general level of exit is much lower than in Germany and in the Netherlands, there were some industries that were exceptions to this generalisation.

#### *New evidence for the 1980s: more countries and industries*

The main shortcomings of our previous study of the early exit process in industry were the limited number of countries and the relatively low level of disaggregation of the total work-force into only 16 different industries. Our new data base allows a much deeper analysis. The data cover the most recent time period in five countries with a disaggregation of the total work-force in each country into 34 to 38 different industries.

#### **Selection of countries: different processes of work transition**

In our first study, the choice of countries was oriented at the level of overall decline of work-force participation of older men and the specific industry-mix. We chose Sweden as a country with a relatively low decline of work-force participation of the elderly and Germany and the Netherlands as two

countries with a sharp decline since the early 1970s, but with clearly different industrial structures: Germany with a great share of the total male employment in the manufacturing sector and the Netherlands with a very large service sector.

In the present study, we want to call attention not only to differences in the scope and level of early exit of older workers between countries and the specific industry-mix within each country, but also to different processes of work transition that exist in different countries in the last phase of working life before leaving the work-force.

Germany is a prototype of those countries where the early exit from employment of older workers is permanent exit from work, because the proportion of workers who re-enter employment is very low. Other countries that belong to this category are France and the Netherlands. In Germany there are not only few employment opportunities for older workers, but also the different exit pathways (unemployment insurance, disability, and firm- or industry-based pre-retirement programs) are generally adequate and produce a high level of income replacement (Jacobs, Schmähl 1989). There is little economic need, therefore, at least for male workers with continuous work careers, to seek further employment. Not only is the economic need low, but workers consider early retirement a moral right that they have earned and would oppose the need to re-enter work in order to receive an adequate income (Kohli 1987). Thus, it is not only the availability of jobs or the adequacy of income, but the legitimacy of early retirement which is also at stake in an effort by the state to alter the retirement process.

Sweden is very different from Germany, because the decline of the work-force participation of older men has been more moderate and limited primarily to the 60-64 age group. Noticeable work-force declines have not yet occurred in the 55-59 age group. This is partially due to the societal evaluation of the role of employment rather than the

existence of a limited repertoire of exit pathways. This societal evaluation is made possible by industry's willingness to make part-time employment available in the same firms or occupations in which they had primary employment. Sweden is the only country where part-time employment for older men exists to any large extent (Kruse, Söderström 1989). However, once workers exit from work their exit is permanent. Japan is quite similar to Sweden in the relatively high employment rates of older workers, but instead of relying on part-time employment, Japanese workers leave their primary jobs ("lifetime employment") between age 55 and 60 and start a second work career (Schulz 1989). The age of entry into the pension system for most men begins at age 60. The interim period of up to five years without income is completed in the continuation of work, not by transitional public and private retirement pathways. Moreover, the pension level at retirement is relatively low, so that, even after age 60, men find it economically necessary to continue to work. The Japanese pattern then is exit from permanent lifetime employment, but the continuation of work largely by re-employment; thus, permanent exit from work is postponed. This process leads to high participation rates. Of course, the participation rates do not capture this process, only the final outcome. As in Sweden, everyone who is able is expected to work, although there appears to be a subtle difference between the Swedish emphasis on the right to work and the Japanese emphasis on the obligation to work.

In the United States, the decline in the participation rates of older male workers is relatively high in comparison to Japan and Sweden, despite anti-age-discrimination legislation and the limited repertoire of public early exit routes. The main early retirement route is largely made possible through the private occupational pension system. These pension arrangements are designed to encourage early exit at a specific age. Postponing the age of exit leads to

economic penalties in the sense that the relative value of the pension declines after an optimum age is passed (Ruhm 1989). In the United States, the relative net disposable income for older workers is much lower than it is in Sweden and Germany. Many workers appear to receive neither a private occupational pension nor a public pension. They are dependent on assets or on the earnings of other family members. In the case of early retirement, the firm's occupational pension occurs long before the earliest statutory possible retirement program at age 62. Some recent studies show that the proportion of workers re-entering the work-force is growing (e.g. Burkhauser; Quinn 1989). In this case, the pattern is similar to Japan, in the sense that exit from the primary job is not equivalent to permanent exit from the work-force as it is in Germany and Sweden.

We can sum up the retirement process in the four countries as follows. Japan and Sweden both have relatively high, but declining, employment activity rates, while the United States and Germany have much lower rates. In Sweden and Germany exit is exit, i.e., it usually leads to permanent exit from work; whereas in Japan and the United States this is not the case. The continuation of work is a normal feature of the working career and firms provide re-employment opportunities in Japan, while the initiative of finding work rests with the individual and typically takes place in different firms and in industries at lower earning levels in the United States.

The situation is unclear in the United Kingdom. First, the repertoire of institutional routes to early exit is more limited and less adequate and, therefore, there is more use of means-tested programs in Britain than in any other country. At the same time there has been a very rapid decline in work-force participation of older workers in the 1980s. While workers have an interest in re-entering work, because their financial situation is not very good, their opportunities for re-entry are much more limited than in the United States.

Given the different meaning of early exit from work and the practice of re-employment and re-entry, these five countries seem to be a good selection for analyzing the early exit process on a disaggregated branch level.

#### Data sources

The data are based on *National Employment Surveys* of a population sample for the United Kingdom and the United States; census data, which are available every five years, in Sweden and Japan; and data from the Social Insurance Beneficiary Lists for Germany, excluding self-employed, lifetime civil servants ("Beamte"), and workers with less than 15 hours work-week. The data cover a period of at least five years during the 1980s. Our main interest was to secure the most available data for the most recent time period.

The partly different data sources and employment definitions create some problems for comparisons across countries. The focus of this analysis, however, is not a comparison of industry-mixes or industry-specific age profiles across countries at a certain time point, but a comparison of early exit trends and changes in the age composition of the total work-force and particular industries. Therefore, it is not absolutely necessary to have identical employment data for all countries, which do not exist in such a disaggregated form by single age groups and industries, but to have comparable data for both time points in each country.

Two further explanations are necessary: first, agriculture is excluded from the present analysis, partly to increase comparability across countries and also for substantive reasons. In our first study, we found that agriculture accounts for a large part of the employment of older workers. In all countries in the study, agriculture is declining, but the processes and level of decline are different in each of the countries. Agriculture represents a special case of a declining industry. It is still

large in Japan but already very small in Germany and Sweden. The data we present are for non-agricultural, civilian employment.

The second explanation refers to the fact that in this paper we examine male rather than total and/or female employment. The work-force participation of women differs widely across countries. The analysis of the total employment pattern is very much influenced by the work-force participation of women. Women are more likely to be employed part-time than men. Finally, although the trend of early exit for women also exists (see Jacobs et al. 1990), this trend does not show up in cross-sectional data, because two different phenomena are taking place simultaneously: an increased overall female work-force participation and the early exit of older women. In a cross-sectional perspective, one trend offsets the other. The only way to disaggregate these two trends is by examining birth cohorts. Such data, however, are not available for industry and therefore, this analysis is restricted to men.

#### **The measures of employment: shares and rates**

For the kind of cross-sectional data we have, we can look at two different types of measures: employment shares and rates. A share is the proportion of the total employment of the work-force for a particular industry by age. Employment shares represent the perspective of the production regime within an industry and are the outcome of the aggregate behavior of firms within that industry. An old industry is characterised by a high proportion of older workers 55-64 years of age. An ageing industry by this measure is one where the share of older workers is increasing over time. The age structure is seen as a parameter of the production function which can be actively shaped by management decisions.

Since all employment shares within an industry must, by definition, add up to 100

percent, a measure of the decrease in the proportional share of older workers can be the result of very different processes. In a declining industry, if the number of older workers decreases more rapidly than total employment, employment shares will decline. One can also see decreasing shares, even when the number of older workers is increasing. This can occur if the increase is less rapid than that of another age group, thus, some of the results can be produced by very different processes.

Employment shares are largely shaped by management decisions. The scope of such decisions is partly restricted by the simple demographic availability of workers and by social policy measures, such as job protection provisions for older workers and the existence or absence of public routes for early retirement before reaching the age limits of the pension system. The demographic factors are mainly influenced by the birth rate, migration processes and special factors, such as the consequences of the two World Wars. These demographic factors are especially important in Germany and Japan.

Employment activity rates represent the proportion of the total population of a specific age group that is employed. The measure of employment activity rates is interesting from a societal perspective, because it tells us what proportion of an age group is actively working. There is a societal obligation to provide income alternatives for older men who are not at work.

#### **Findings**

The most important empirical results of our analysis are shown in tables 1-3. In each country, the single industries are grouped by their average annual employment growth. Total male employment in Japan and the United States increased by an annual average of 0.8 percent (table 1).

In both countries, the total male population is also increasing, in the United

**Table 1:**  
**Male employment trends in the 1980s**

Employment growth	Employment by industry				Growth rate (%)	Annual rate (%)
	(100)	(%)	(100)	(%)		
<b>GERMANY</b>						
	1980		1987			
a) decline over - 2 %	29780	23.6	24438	19.8	-17.9	-2.6
b) decline - 0.6 to - 1.7 %	26872	21.3	25174	20.4	-6.3	-0.9
c) stable - 0.2 to + 0.5 %	34110	27.1	34117	28.0	0.9	0.1
d) increase + 0.8 to + 2.1 %	27956	22.2	30077	24.4	7.6	1.1
e) increase over + 3.0 %	7276	5.8	9025	7.3	24.0	3.4
Total non-agricult. male employment	125994	100.0	123131	100.0	-2.3	-0.3
Total male population	294171		293984		-0.1	0.0
<b>JAPAN</b>						
	1980		1985			
a) decline over - 2.4 %	8388	2.7	7033	2.2	-16.2	-3.2
b) decline - 0.6 to - 1.9 %	61276	19.5	58550	17.9	-4.4	-0.9
c) stable - 0.4 to + 0.5 %	105398	33.6	104389	32.0	-1.0	-0.2
d) increase + 0.8 to + 2.2 %	113412	36.2	123199	37.7	8.6	1.7
e) increase over + 4.1 %	25126	8.0	33271	10.2	32.4	6.5
Total non-agricult. male employment	313601	100.0	326442	100.0	4.1	0.8
Total male population	574904		594973		3.5	0.7
<b>SWEDEN</b>						
	1980		1985			
a) decline over - 2.7 %	2287	11.2	1827	8.9	-20.1	-4.0
b) decline - 1.2 to - 1.7 %	5343	26.2	4934	24.1	-7.6	-1.5
c) stable - 0.6 to + 0.6 %	7814	38.3	7818	38.2	0.1	0.0
d) increase + 0.9 to + 1.9 %	3079	15.1	3324	16.3	7.9	1.6
e) increase over + 4.2 %	1880	9.2	2545	12.4	35.4	7.1
Total non-agricult. male employment	20403	100.0	20448	100.0	0.2	0.0
Total male population	41198		41271		0.2	0.0
<b>UNITED KINGDOM</b>						
	1981		1988			
a) decline over - 2.5 %	38163	28.7	29451	21.6	-22.8	-3.3
b) decline - 1.5 to - 2.1 %	12621	9.5	11127	8.2	-11.8	-1.7
c) stable - 0.5 to + 0.1 %	21187	15.9	21103	15.5	-0.4	-0.1
d) increase + 0.6 to + 2.1 %	30391	22.8	33432	24.5	10.0	1.4
e) increase over + 3.1 %	30686	23.1	41382	30.3	34.9	5.0
Total non-agricult. male employment	133049	100.0	136495	100.0	2.6	0.4
Total male population (1981, 1987)	274090		277370		1.2	0.2
<b>UNITED STATES</b>						
	1978		1985			
a) decline over - 3.0 %	53741	8.9	32232	5.1	-40.0	-5.7
b) decline - 1.4 to - 1.6 %	31536	5.2	28365	4.5	-10.1	-1.4
c) stable - 0.4 to + 0.5 %	171504	28.5	173422	27.3	1.1	0.2
d) increase + 0.7 to + 1.6 %	215731	35.8	233067	36.8	8.0	1.1
e) increase over + 2.8 %	129786	21.5	167000	26.3	28.7	4.1
Total non-agricult. male employment	602299	100.0	634086	100.0	5.3	0.8
Total male population	1074570		1161610		8.1	1.2

States even more rapidly than male employment. In the United Kingdom there is also male employment growth, but at a much lower level - about half the annual rate of that of Japan and the United States. By contrast, total male employment is stable in

Sweden and slightly declining in Germany.

These numbers are interesting because increasing total employment indicates that there is more scope for the employment of older men. The reason for this overall growth in Japan and the United States is that

declining industries account for only 10-20 percent of employment in the mid 1980s; whereas in other countries where the male employment rates are not increasing, the share of declining industries is almost twice as large.

When we consider the impact of growing

and declining industries on the share of employment of older workers, we see a clear decline in the employment shares of older men 55-64 years of age in Sweden, the United Kingdom, and the United States (table 2).

The relative decline in the employment

Table 2:  
Relative Change in Employment Shares by Age (in %)

Employment growth	Age							
	15-24	25-49	50-54	55-59	60-64	65+	55-64	55+
<b>GERMANY</b>								
1980-1987								
a) decline over - 2 %	3.9	-8.7	29.8	27.3	-8.3	-53.5	19.8	16.4
b) decline - 0.6 to - 1.7 %	-4.4	-0.1	10.3	11.6	1.5	-56.1	9.0	2.5
c) stable - 0.2 to + 0.5 %	-5.8	-1.6	14.1	13.2	3.6	-50.1	11.1	8.8
d) increase + 0.8 to + 2.1 %	5.4	-2.3	3.2	6.3	2.2	-49.6	5.3	2.5
e) increase over + 3.0 %	-8.8	2.4	4.2	1.4	-2.6	-48.5	0.3	-7.4
Total non-agricult. male employment	-2.8	-2.3	13.0	13.6	2.1	-50.3	10.8	7.0
Total male population	-6.4	-0.2	7.3	14.0	44.4	-11.6	25.7	3.8
<b>JAPAN</b>								
1980-1985								
a) decline over - 2.4 %	-0.2	-11.4	23.7	46.1	1.4	-2.4	29.2	19.6
b) decline - 0.6 to - 1.9 %	3.4	-5.5	16.4	37.9	0.5	-1.2	16.7	10.2
c) stable - 0.4 to + 0.5 %	-11.1	-3.1	8.1	43.0	12.5	-10.9	32.9	22.3
d) increase + 0.8 to + 2.2 %	1.9	-3.9	11.2	25.4	5.8	-5.7	18.0	10.5
e) increase over + 4.1 %	25.3	-6.8	-1.7	19.7	8.8	-9.0	15.3	7.8
Total non-agricult. male employment	1.5	-4.3	9.3	31.1	6.8	-5.9	22.1	13.5
Total male population	1.1	-7.0	5.1	27.3	14.6	7.9	21.7	14.8
<b>SWEDEN</b>								
1980-1985								
a) decline over - 2.7 %	-3.1	4.9	0.1	-7.4	-18.0	-1.6	-12.1	-11.3
b) decline - 1.2 to - 1.7 %	10.1	0.9	-3.8	-10.6	-11.9	-6.6	-11.2	-10.7
c) stable - 0.6 to + 0.6 %	9.1	2.0	-7.6	-12.8	-5.8	-1.6	-10.0	-9.4
d) increase + 0.9 to + 1.9 %	3.9	2.5	-6.5	-12.1	-6.0	-16.0	-9.6	-10.3
e) increase over + 4.2 %	44.3	-4.6	-14.3	-20.5	-4.2	97.7	-13.9	-3.1
Total non-agricult. male employment	9.1	1.7	-6.9	-12.9	-9.2	7.7	-11.3	-9.6
Total male population	1.3	2.0	-7.5	-13.4	-3.1	3.6	-8.4	-1.8
<b>UNITED KINGDOM</b>								
1981-1988								
a) decline over - 2.5 %	-15.7	15.4	-16.2	-22.8	-22.1	-29.6	-22.5	-23.0
b) decline - 1.5 to - 2.1 %	4.1	9.3	-18.3	-21.4	-23.6	-33.3	-22.3	-22.9
c) stable - 0.5 to + 0.1 %	10.2	7.3	-9.7	-23.7	-29.9	-26.3	-26.0	-26.0
d) increase + 0.6 to + 2.1 %	-2.6	3.6	7.9	-10.1	-11.8	-38.1	-10.8	-14.8
e) increase over + 3.1 %	10.6	2.7	-7.2	-15.7	-16.8	-26.5	-16.2	-18.6
Total non-agricult. male employment	3.3	6.7	-8.9	-20.2	-19.9	-22.7	-20.1	-20.4
Total male population	-1.7	3.4	-7.5	-9.8	0.1	1.4	-5.2	-1.7
<b>UNITED STATES</b>								
1978-1985								
a) decline over - 3.0 %	-48.4	12.2	-1.3	0.7	14.9	42.6	6.2	10.5
b) decline - 1.4 to - 1.6 %	-26.6	14.6	-15.4	-12.5	-23.4	23.4	-17.0	-12.5
c) stable - 0.4 to + 0.5 %	-29.7	12.9	-6.7	-3.2	-11.9	-6.9	-6.8	-6.8
d) increase + 0.7 to + 1.6 %	-22.2	15.0	-12.5	-6.3	-2.2	-10.1	-4.6	-5.8
e) increase over + 2.8 %	-9.3	12.6	-14.9	-15.4	0.6	-22.9	-8.4	-13.8
Total non-agricult. male employment	-18.9	12.6	-12.3	-9.0	-5.3	-7.9	-7.5	-7.6
Total male population	-13.4	9.9	-14.9	-9.5	4.2	5.1	-3.3	1.0

shares is over 20 percent in the United Kingdom, 11 percent in Sweden, and almost 8 percent in the United States.

For these three countries, there is a clear pattern of the relative declining share of older workers in both growing and declining industries. In Sweden, the decline appears to be more or less uniform; in the United Kingdom, the relative decline in the employment shares of the elderly is higher in the rapidly declining industries and somewhat lower in the growing industries; in the United States, the data show a small relative increase in employment shares in rapidly declining industries. In the rapidly declining industries in the United States, the increased share of older workers occurred because of a very rapid decrease in the share of very young workers 15-24 years of age. In no other country did such a pattern occur.

At first sight, the situation in Germany and Japan seems strikingly different. Both these countries show a uniform increase in the relative share of older workers in growing and declining industries. This trend appears to be due largely to special demographic factors. There were fewer men born during World War I, and the size of this birth cohort was further reduced because many men died in World War II. The size of the cohort of men aged 55-64 in 1987 in Germany is substantially larger than the small cohort that preceded them. If it weren't for these demographic forces, we believe that there would have been a decrease in the relative share of employment of older workers in Germany and Japan as has occurred in the other three countries. That this is indeed the case becomes clear when the age specific size of the male population is also taken into account.

We can see the demographic effect when we shift our measure from relative changes in employment shares to relative changes in employment rates. In table 3 we find that in Japan and Germany, as well as in the other countries, there is an overall decline in the employment activity rate of men 55-64 years of age. The relative decline is smallest in

Japan at about 2 percent, and largest in the United Kingdom and Germany at about 17 percent. Sweden and the United States with 5 and 8 percent relative declines fall between these extremes. This pattern of declining relative rates is not only found in overall declining industries. In Germany, employment activity rates of men 55-64 are declining everywhere, while in the other countries these rates are increasing in rapidly growing industries but declining elsewhere. Only in Sweden, is there already an increase in modestly growing industries.

In general, these results do not contradict the empirical findings of our first study of employment trends, but they do somewhat challenge our previous generalisation. In our first analysis of Germany, the Netherlands and Sweden, we found that early exit of older men was taking place in almost every industry. Sweden was an exception with an increase in the employment rates of older workers in very rapidly growing industries. The more recent time period does not change our findings for Germany and Sweden. However, the addition of other countries where practices of re-entry and re-employment occur, now makes Germany an exception. In all the other countries, as in Sweden, we still find declining overall employment rates of older men, but increasing rates in rapidly growing industries. Furthermore, this picture is much more pronounced for men 60-64 than for men 55-59.

If we examine specific industries for each growth pattern, do we still find the same pattern of relative decline in employment shares and employment rates for older workers? The answer appears to be "yes" with some exceptions. Table 4 for Sweden is included to illustrate the general trend. Here we identify only two branches with a significant increase (larger than 5 percent) in employment shares of older workers 55-64 years of age: education and research, and repair services. There are some other exceptions in the other countries, such as the small group of declining traditional

Table 3:  
Relative Change in Employment Activity Rates by Age (in %)

Employment growth	Age						
	15-24	25-49	50-54	55-59	60-64	15-64	55-64
<b>GERMANY</b>							
	1980-1987						
a) decline over - 2 %	-12.7	-28.1	-5.0	-12.2	-50.1	-22.8	-25.1
b) decline - 0.6 to - 1.7 %	-8.3	-10.2	-7.8	-12.1	-36.9	-11.6	-22.2
c) stable - 0.2 to + 0.5 %	-2.7	-4.7	2.7	-4.0	-30.7	-5.1	-14.6
d) increase + 0.8 to + 2.1 %	16.0	0.9	-1.0	-3.9	-27.1	1.3	-13.8
e) increase over + 3.0 %	15.8	21.8	15.2	5.6	-19.9	17.4	-5.3
Total non-agricult. male employment	-2.8	-8.3	-1.5	-6.8	-33.9	-8.0	-17.5
<b>JAPAN</b>							
	1980-1985						
a) decline over - 2.4 %	-22.2	-25.0	-7.3	-9.6	-30.3	-20.4	-16.4
b) decline - 0.6 to - 1.9 %	-8.1	-8.8	-0.6	-9.8	-21.2	-9.3	-13.9
c) stable - 0.4 to + 0.5 %	-18.2	-3.1	-4.3	4.5	-8.6	-5.8	1.6
d) increase + 0.8 to + 2.2 %	2.9	5.4	7.9	0.5	-5.7	3.3	-1.0
e) increase over + 4.1 %	54.2	24.7	16.3	16.9	18.2	26.1	17.8
Total non-agricult. male employment	-1.7	0.6	1.6	0.7	-8.8	-1.1	-1.9
<b>SWEDEN</b>							
	1980-1985						
a) decline over - 2.7 %	-24.9	-19.3	-15.0	-16.1	-33.6	-20.9	-24.7
b) decline - 1.2 to - 1.7 %	-1.4	-10.2	-5.6	-6.4	-17.5	-8.5	-12.0
c) stable - 0.6 to + 0.6 %	5.8	-1.8	-1.8	-1.1	-4.4	-0.9	-3.4
d) increase + 0.9 to + 1.9 %	8.8	6.5	7.2	7.6	2.8	7.2	4.6
e) increase over + 4.2 %	89.4	24.3	23.2	22.0	31.4	31.8	25.0
Total non-agricult. male employment	6.1	-1.9	-0.9	-1.0	-7.7	-0.9	-4.7
<b>UNITED KINGDOM</b>							
	1981-1988						
a) decline over - 2.5 %	-36.1	-16.8	-32.6	-36.3	-42.0	-25.0	-39.1
b) decline - 1.5 to - 2.1 %	-9.8	-10.0	-24.9	-25.8	-35.1	-14.4	-30.2
c) stable - 0.5 to + 0.1 %	7.9	-0.2	-6.2	-18.6	-32.7	-3.2	-25.0
d) increase + 0.6 to + 2.1 %	5.3	6.4	23.8	5.8	-6.5	7.4	-0.1
e) increase over + 3.1 %	46.5	29.4	30.5	21.6	8.2	32.0	15.1
Total non-agricult. male employment	4.1	2.2	-2.5	-12.4	-20.8	-0.2	-16.5
<b>UNITED STATES</b>							
	1978-1985						
a) decline over - 3.0 %	-67.3	-44.1	-36.5	-39.1	-39.6	-45.3	-39.9
b) decline - 1.4 to - 1.6 %	-30.3	-14.3	-18.3	-20.6	-39.6	-17.6	-29.5
c) stable - 0.4 to + 0.5 %	-25.0	-5.1	1.2	-1.3	-21.9	-6.7	-11.0
d) increase + 0.7 to + 1.6 %	-11.2	3.3	1.5	2.1	-7.4	-0.3	-2.7
e) increase over + 2.8 %	23.2	20.5	17.5	9.8	13.4	20.2	11.3
Total non-agricult. male employment	-9.8	-1.5	-0.9	-3.3	-12.6	-2.8	-8.0

manufacturing industries in the United States like leather and mining, that show an increasing share of older workers due to the very rapid decline in the share of the young. The general picture, however, is not substantially affected by these exceptions.

### Conclusion

In at least three countries: Japan, the United

States and Germany, new national legislation has been passed to extend the retirement age because of anxiety over financing old age pensions, early exit routes and changing demography. Can international comparisons shed some light on how these new legislative initiatives will affect the employment trend of older workers?

Our most general empirical finding is that decreasing employment shares and employment rates of older workers, do not

Table 4:  
Relative Change in Employment Shares by Age in Sweden (in %)

Industry	Age							
	15-24	25-49	50-54	55-59	60-64	65+	55-64	55+
Textile, Apparel, Leather	6.5	7.4	-10.9	-13.9	-10.3	-10.4	-12.2	-12.0
Stone, Clay, Ceramic, Glass	-5.5	2.5	12.2	-7.5	-11.5	2.7	-9.3	-8.7
Repair Serv.	-5.4	0.1	-0.5	7.5	3.0	16.8	5.6	7.3
Basic Metall Ind.	-4.8	6.6	7.2	-1.2	-41.6	-35.0	-19.4	-19.8
Other Manufacturing	-0.2	6.7	-12.0	-15.1	-2.5	-5.7	-9.8	-9.2
Mining	-24.5	2.2	9.4	5.8	-5.6	56.8	2.4	4.3
Lumber, Wood Prod./Furniture	-3.1	6.7	-4.9	-12.0	-12.7	0.8	-12.3	-11.2
Personal Serv.	28.7	5.4	-14.5	-28.6	-18.6	-12.6	-24.2	-21.4
a) decrease over - 2.7 %	-3.1	4.9	0.1	-7.4	-18.0	-1.6	-12.1	-11.3
Retail Trade	13.8	-1.7	-8.6	-5.9	-7.3	-5.7	-6.5	-6.4
Construction	12.4	-0.6	1.0	-10.5	-14.8	18.9	-12.3	-10.4
General Machinery	2.8	5.9	-10.2	-19.3	-14.2	1.9	-17.1	-16.5
Non-Profit-Organisations	2.3	3.0	-0.5	0.2	-6.8	-20.1	-3.1	-6.6
Recreational, Cultural Serv.	4.9	3.6	-4.4	-6.3	-3.9	-45.2	-5.3	-13.8
b) decrease - 1.2 to - 1.7 %	10.1	0.9	-3.8	-10.6	-11.9	-6.6	-11.2	-10.7
Transportation Equipment	23.1	0.9	-12.6	-20.6	-19.2	8.3	-20.0	-19.3
Transportation, Storage	1.3	4.8	-9.8	-17.0	-5.0	12.1	-12.8	-11.4
Paper, Paper Products	-0.6	3.1	-3.4	-6.6	-7.4	-7.0	-7.0	-7.0
Real Estate	24.6	4.8	-8.3	-12.5	-11.1	-24.4	-11.8	-14.2
Metal Products	4.1	3.4	0.4	-16.7	-15.2	0.3	-16.1	-15.1
Food, Tobacco	6.8	2.7	-10.4	-11.9	-7.3	-18.1	-9.9	-10.4
Rubber Products	25.3	-0.3	-8.0	-23.9	-14.5	-17.9	-19.9	-19.8
Education, Research	-21.8	-2.9	2.6	18.7	24.8	25.0	21.2	21.5
Precisions Instruments	12.8	6.5	-19.4	-33.0	-10.2	-15.5	-23.6	-23.1
Wholesale Trade	12.9	1.9	-11.1	-15.4	-3.6	-6.3	-10.4	-10.0
Electrical Machinery	28.2	-0.3	-14.5	-21.0	-11.4	4.7	-17.1	-16.3
c) stable - 0.6 to + 0.6 %	9.1	2.0	-7.6	-12.8	-5.8	-1.6	-10.0	-9.4
Printing, Publishing	12.0	-1.9	-1.6	-5.3	-0.6	16.1	-3.2	-0.8
Utilities, Sanitary Serv.	5.8	3.5	-10.3	-13.3	-7.5	8.2	-10.8	-9.9
Business Serv., Computer Serv	15.5	1.0	-4.7	-12.1	-4.3	-21.0	-8.9	-11.0
Chem., petrol., coal prod.	0.8	2.7	-5.7	-7.2	-4.7	-19.5	-6.1	-6.7
Communication	-2.1	5.2	-8.5	-18.1	-14.9	-53.9	-17.1	-18.3
Health	-2.7	4.1	-7.4	-13.5	-5.5	-28.6	-10.2	-13.5
d) increase + 0.9 to + 1.9 %	3.9	2.5	-6.5	-12.1	-6.0	-16.0	-9.6	-10.3
Finance, Insurance	15.9	-1.5	-3.5	-11.5	3.8	19.2	-4.8	-1.3
Social Serv.	28.1	0.9	-18.7	-23.2	-22.3	-43.7	-22.8	-24.8
Restaurants, Hotels	50.8	-7.2	-38.0	-32.1	-34.5	-35.6	-33.0	-33.4
Public Administration	58.9	-5.9	-13.6	-21.9	-1.2	183.2	-13.6	1.8
e) increase over 4.2 %	44.3	-4.6	-14.3	-20.5	-4.2	97.7	-13.9	-3.1
Non-agricult. male employment	9.1	1.7	-6.9	-12.9	-9.2	7.7	-11.3	-9.6
Total male population	1.3	2.0	-7.5	-13.4	-3.1	3.6	-8.4	-1.8

only occur in declining industries in those countries where the demographic factors do not offset the general pattern. Thus, early exit of older workers is a general phenomenon of the labour market rather than a strategic measure of coping with specific problems of certain industries. Therefore the expectation of reversing this trend does not appear to be very realistic

since the trend of early exit is primarily driven by labour market dynamics rather than by old age pension arrangements of the state's. The more or less uniform trend of early exit in all western countries with different industrial structures and different transition processes from work to retirement indicates a general and still growing unwillingness of firms to employ workers

below the formerly "normal" retirement age. While society as a whole is ageing, "older workers", by definition of the labour market, are getting ever younger.

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## **Labour Market, Retirement and Generation Contract**

### **Abstract**

Ageing societies provide a new context and challenge to rethink our traditional theories of ageing. One important element in the ageing process is the individual's experience of retirement. It means a considerable change in balance-work and the structure of learned opportunities for everybody gainfully employed, and results in different types of hopes and plans for the future: on the individual level pessimistic, pragmatic and optimistic views and conceptions are of importance according to the opportunity-structure people have learned during their life.

### **Some doubts at the beginning**

Gerontological research of recent years may leave the impression that there is remarkable empirical knowledge about the changes under way and those to be expected in the future concerning the situation of the elderly in society. The discussion becomes difficult, however, when we start to see that out of all the dimensions we should take into consideration, only a few allow us to make predictions, i.e. to say with what degree of probability which event will take place at which point of time in the future. In fact, we are only able to predict some demographic and economic developments, and even these with remarkable uncertainty. Thus, the

following considerations are explicitly meant to be only reflections about the changes demographers tell us are likely to occur in the future - reflections made in the light of what is known about policy and research in the field of gerontology.

Besides the questions of demographic and economic concern which dominate the public discussion in most European countries today, there are developments which deserve more attention; the changing social meaning of age, the influence of interrelationships between the labour market and the social security system on the whole process of retirement, the questions of the so-called generation contract, and the consequences of these systems' changes for individual biographies. Research knowledge seems to be especially poor concerning the consequences of changing structural conditions for the biographies of people.

### **Processes of change in ageing societies**

What we can call systems - without going into details about systems' theory and how to define systems under an empirical perspective - are the different areas in society where, during historical development, institutionalized patterns of societal organisation have emerged by differentiation. We have to distinguish three main systems relevant to our topic: the system of occupation and labour, the system of the welfare state, and the system of marriage, family and other social relations. Using a different terminology one could speak of state, market and life-world. The system of population and its characteristics being the bio-social basis for all the other systems.

### *Policy consequences*

Given the pattern of a steadily growing proportion of adult age groups within European populations we have to reckon with policy problems in three main areas: the

labour market; the systems of social security, health care, social assistance; and the family and intergenerational relations. Two political measures intended to ease the tensions of the labour market are the policies of reducing daily working-time and of forcing "early retirement". The number of people retiring earlier is rising in almost all countries largely due to the second measure.

In Austria, 90% of men and 59% of women becoming pensioners in 1987 were below 65 and 60 years of age respectively, i.e. the age where men and women in Austria formally become pensioners; the actual average retirement age is 58,2 years among men and 57,9 years among women. That strategy failed in two ways - replacement of the retired by younger people only occurred slowly and the cost of increasing numbers of early retirees rose more steeply than any politician had expected. The "progress" of the early seventies turned out to be a boomerang and "new" strategies are now under consideration or have already been adopted (see Nusberg 1988).

Discussion is intensified by anticipation of a special demographic-economic problem: the increase in the "dependency-ratio" - a statistical rate of measure which has to be used carefully. In Austria there are, at the moment, 4,7 million people in the (economically) active age groups and 1,5 million over 60 years; in the year 2041, provided that the birth rate remains as low as it is, there will be 3,1 million people in the active age groups and 2,2 million over 60 years.

### *The changing social meaning of age*

Closely connected with the demographic and social changes are the *changing social meanings* of age. The major disadvantage - and this is the central point of the problem - is "that the validity of using age as a proxy depends on how well age corresponds with the characteristic for which it stands" (Neugarten; Neugarten 1986). Sensitised by

that methodologically motivated caution, we have learned that the presumed correspondence between age and health, age and retirement, age and life cycle stages, etc. has lost its significance and is increasingly at risk of conflicting with empirical evidence. Laws change over time, and the most striking example of the changing significance of institutionally defined age limits is the large number of regulations in European countries regarding "early retirement". Given that the social definition of age has usually been closely connected with the legal definition of pensionable age, these limits vary across Europe from 52 to 67 years of age. The old and widely-held notion that age comes with retirement (at 65 or even 70) is crumbling. It has become difficult to distinguish between middle-age and old-age. As a consequence of the changes taking place in the system of retirement and social security since the seventies, we have to consider the possibility that the young and middle-aged are now questioning the extent of their commitment to an older population that is increasingly affluent when compared to earlier decades (Morrison 1986) - the "generation contract" seems to deteriorate and discussion is growing about the necessity for formulating a new generation contract. However, first the understanding of the character of that contract has to change: it is erroneous to view the transfer - the heart of the idea of a contract - as a one-way-flow from the young to the old, and it would be shortsighted to make the exchange of material resources between the generations the only and central point of consideration.

### **Is there a need for a "new" generation contract?**

Pension insurance (in the case of an obligatory state pension system) establishes an artificial contract between the generation of working age and that which has already left the labour market. The contract's meaning is the transfer of an appropriate

part of the labour income of the active generation to the retired one. We see what the metaphor of a "contract" means, however and we see how fragile it is as well: neither of the two parties has promised the other to do something or to refrain from doing it; prerequisites for the establishment of a contract. The two parties in the contract are tied together anonymously and their mutual obligations are defined and brought to fulfilment by the coercive power of the state. That leads to the central problem of the generation contract: it is a compulsory contract under state control, financed by the active to guarantee financial subsistence to those who are not active any more (here we find a central indication for the next problem to be discussed: the interrelations between the social security system and the labour market). In this sense we speak of the "old" generation contract which might be replaced, or at least completed, by a "new" one, as many people seem to believe. Contrary to the old contract which provides benefits stemming from gainful employment, a modified generation contract raises another problem: the possible contributions of those who "work" within the intergenerational setting without being gainfully employed. We all know that such work done by women, grandparents, volunteers etc. is indispensable to the functioning of the system, but we have systematically failed to award it its proper place in our "theories" about the generation contract. The question would be far easier to answer if it concerned only financial transfers, but more is involved: solidarity between the generations, social relations, the ethics of the common existence of different generations in a given society. A few examples will demonstrate the broad basis of these concerns. The increasing number of the very old will probably lead to higher demands for social services and private help, and to initiatives for social integration; the increasing number of one-person households, a considerable proportion of which consist of old people, especially women, the rising proportions of women gainfully employed, the growth of

mobility and of incomplete families, is already undermining the old idea of a helping, supporting and nursing family which cares for all those old people's needs not met by the welfare system. There is convincing empirical evidence that families are already overtaxed by all these tasks - particularly women in their middle years who have to carry the burden.

There is therefore a rising demand for social investment (social integration of work, help and care) which cannot be supplied solely by the traditional systems of the family and the welfare state. We have to rethink our usual models; the notion of solidarity needs to be adapted to new conditions. One big hindrance lies in lack of experience with models of solidarity which are restricted in time and based on pragmatic criteria. At this time we can only discuss possible ways in which groups might act in solidarity with others - the young - old with the old, the young with the unemployed, the old with the children - but without such discussion our traditional models will remain what they have been. After all, it may not be necessary to establish a new generation contract significantly different from the old one; it may be sufficient to supplement that contract by a culture of integrating and supporting relations which adapts itself continuously to changing conditions in an ageing society.

#### **On some relations between the labour market and the social security system**

One important question often ignored in social policy studies is: how, in recent decades, did older workers increasingly become a target group for labour market policies? According to classical theories of the market and the state, two main functions have to be fulfilled by such policies: (1) the total work-force has, in all its diversity, to be allocated to special activities and production processes by the labour market; (2) the "fruits" of labour (monetary income) have to be distributed (through public and private

households) among the active persons and among those who are legitimately not economically active: pensioners, invalids, dependants, the unemployed, etc., by the labour market and the state. (This differs from a statement published earlier by me [Amann 1989]).

### *The unequal distribution of "labour market risks"*

The linking of the market system with the social security system allows us to take special measures against certain risks. Illness, accident, unemployment, old age, etc. are acknowledged and legally defined risks, and the benefits people receive under these conditions are without exception dependent on gainful employment. Looking back through recent years we can see developments which demonstrate the characteristic distribution of such risks among the gainfully employed; a recent experience is the unemployment of millions of people in the OECD-countries, rapidly increasing numbers of retirees below traditional retirement age because of invalidity, unemployment, and special regulations for certain groups in the work-force. Thus, exit from the labour market is distributed unequally between groups according to their characteristics; there is a "power difference" on the labour market, resulting in differential labour market risks. Certain groups have less chance of being offered a job accordingly because of age-, sex-, and qualification-specific characteristics. This phenomenon can be explained on two levels: (1) on a general level involving the nature of the commodity labour power, and (2) on a more specific level where the peculiar quality of "labour power" is aggravated among certain groups. I shall first concentrate on the general level and, in particular, on two main properties typical of labour power.

### *The role of labour power*

Labour power can only present itself on the market in constrained figurations. The members of a cohort entering the labour market are not able to reduce or increase their numbers according to the demands for labour power. Also, whilst suppliers of labour power differ in their qualifications and occupational experiences, they may not be able to wait for optimal opportunities to sell their labour power because they would otherwise lack the means of subsistence (Amann 1989). These constraints are particularly prominent among *older workers*.

The second level is concerned with the concrete situation of groups on the labour market, rather than with the abstract category of labour power. For older workers, the situation of a general gap between labour power demand and labour power supply is aggravated when adaptational difficulties appear because of supposed or actual physical, psychic, and socio-cultural impairments and deficiencies. Different institutions are meant to step into the breach caused by lost abilities and outdated qualifications; one of them is "early retirement" because of unemployment, invalidity, or special regulations for certain groups, as for instance, workers in the declining steel-making industry. Such institutions have increasingly taken over the task of compensating for unfavourable conditions of demand for labour power. It is only in this exact understanding that we can speak of the "alternative role" of the pensioner. During recent years lower demand for labour has resulted in older workers being more at risk on the labour market than most other groups. In order to guarantee the livelihood of suppliers of labour power who are no longer able to meet actual demands, especially the subsistence of older workers, the coverage of social security has been expanded. In other words: the linking of the labour market system with the social security system has resulted in an expanding channelling of one of the most vulnerable

groups into the status of pensioners - with all its economic, social, and psychological consequences. So far, I have tried to discuss the systems' effects only in quantitative terms. However, individuals also experience limited freedom for their perception, planning, and practical preparations for retirement. White-collar workers often experience a loss of status (and of course income) through early retirement, with consequent feelings of dissatisfaction. Blue-collar workers, on the other hand, often welcome early retirement as an opportunity to end a physically exhausting job. How the structural components of the interplay between labour market and social security system, especially in the case of early retirement, influence the conditions for individual planning and action, how people anticipate retirement, what their plans are and how the unavoidable transition from work to retirement and its consequences is perceived, are discussed below.

### **Biographical elements in the expectation of retirement**

The material I use in this part of my analysis has been, contrary to the structural perspective of the first part, gathered from qualitative interviews with steel workers facing early retirement. In 1983, the Austrian Ministry of Social Affairs implemented a regulation whereby women in the steelmaking industry would retire at 52, and men at 57 (the so called "Action-52/57"); this regulation is an example of a step-into-the-breach measure discussed above. In analyzing 24 biographically oriented interviews of an exploratory study, I have tried to develop a frame of reference by which it would be possible to link aspects of the life course of an individual with his/her expectations of future life and development. The concepts are those of "Balance-Work" and "Structure of Learned Opportunities" (see also: Amann 1989).

We have to see people as agents in their

own development, but they are agents only under external conditions characterised by opportunities and limitations. All narrated experience, however subjective it may seem, is a genuine individual experience only in that it is shaped and mediated by objective conditions. Experiences are reference points both of individuality as well as sociality, they are sediments of past and actual and future action as well (Lorenzer 1980). We shall see in the analysis that plans (and even dreams) about future activities are indeed part of people's thinking but that this thinking is modelled on external realities. Social action, needs, plans and expectations are interpretable only in the context of these external conditions and the ways in which people have or have not learned to make use of them.

### **Balance-work and structure of learned opportunities**

We are familiar with the idea that the resources people use to organise and build their lives are scarce. Money is scarce, physical strength is scarce - and scarcity requires coordination. Beyond the biological-anthropological, psychological, and economic basis, a general concept of scarcity could be developed. We draw attention here to the different forms of social organisation, the "institutions", within which people are forced to coordinate their resources because they have only limited potential in the physical, mental and psychological fields as well as in the economic and social ones. I distinguish *three* areas in which the different social institutions influence, steer, or even control orientations, expectations, and the action of individuals - these areas are partly identical with the systems mentioned above. The first is that of the *occupational or work world* with its characteristic formation through the division of labour, industrial production, and its specific types of organisation of work and control of performance. The second is that of *family*

*and partnership.* It is often taken to be external and independent from the first, even as its clear counterpoint. There are also, however, obligations and assignments that are anchored in institutions and are accepted as unavoidable. Finally, the third area is that of "free" *social relations* which, in contrast to the two others, contains fewer institutionalised and unavoidable regulations.

What is now important is that people have to divide their strength and energy between these areas, considering what is demanded and what they themselves would wish. They must achieve a balance between the multiple elements of coercion and freedom. They have to do *balance-work*. For most of their life until now the first area has dominated and influenced their potential for conformity and adaptation and for opposition and resistance, and they have learned all this by doing *balance-work* in the areas mentioned. The occupational and working world takes energy away which then is missing from other areas so that they are considered interference in the working process, as opposition to the occupational world. It is only by the dominance of this area in the life of people that the other areas become conceivable as their opposition. In this area, perceptions of opportunities and limitations in life are formed and chances are used and lost as in the case of the other areas. But pressure for economic security gives the first area primary importance. Measuring by the degree of institutionalisation and range of obligation of the specific norms, we find a hierarchy in the areas in such a way that the occupational world possesses the greatest sense of obligation, with the highest amount of formal (instrumental) relations and capacity for guidance, whereas the area of "free" social relations has the least. In all three areas, individual obligations, expectations, and chances or offers develop. Wishes and needs are fulfilled; joy and sorrow is experienced; challenges, expectations, opportunities and choices are specifically structured within the areas and highly stratified according to

priority. Engagement and investment of strength and awareness devoted to the different areas may change. In times of building up a family or overcoming a crisis in partnership, in times of caring for illness in the family or taking over responsibility as a volunteer in a care institution, orientations, expectations, and actions are more strongly directed towards these areas, although the occupational or work area seldom loses its coercion on the individual. Retirement then is one of the most remarkable changes in this *balance-work*, because it is perhaps the first and only time that almost all the obligations and demands of this area are cancelled at one point of time, and forever. But choices and decisions are never the result of individual preference alone, they are bound to the *priority- and opportunity-structure* formed by the three areas themselves, with all their concurrent interplay. These structures are not only represented in moments of an objective reality, they are also inherent in learned patterns of successful action. To put it more precisely: the experiences and actions (habits) of individuals reflect - within considerable degrees of freedom - the structure of priorities and opportunities which are institutionalised in these areas. It is in this perspective that retirement makes a change in the *balance-work* and in the structure of learned opportunities; it is the cessation of working life; at one stroke putting out of commission a number of obligatory and institutionalised regulations and opportunities and favouring others. It is widely known and acknowledged that after half a year or a year at the longest, contact with old work colleagues dies off. This is an expression of the changed balance on the level of social relations and actions.

The theoretical notion of "labour market risk" gains its importance exactly at this point; the linking of the labour market with the social security system results, in the case of a labour market in functional disorder, in an unequal distribution of the risk of release from the labour market. The structurally

created risk of being released from the labour market and being channelled into the retirement system is complementary to the risk of changing the conditions of balance-work and of suddenly facing the necessity suddenly of adapting plans and actions to a new situation, a situation that often contains worse conditions than had been expected: retirement comes earlier in life than expected, financial loss may hit harder, plans have to be changed.

The expectations and orientations which were learned over a long period of time and which have been integrated into the personality, keep working after retirement. They lead, on the one hand, to expectations of future retirement almost identical with those previously held, on the other hand they lead to the intention of certain kinds of behaviour although they are no longer required by institutionalised regulations.

#### *Plans between optimism and pragmatism*

Within the structure of learned opportunities and facing the new situation of a suddenly decreed pre-retirement, individuals show great variations, but they have some elements in common. Leisure time was used by workers to do handicrafts, extend the house, help the neighbours to build, go hunting, photograph, make leather bags for the grandchildren, work in the garden, go for walks, but above all leisure time was needed to recuperate, to rest, to use opportunities for activities "which you don't get around to otherwise". Quite often leisure time showed, in a way similar to that of working time, a clear time structure, with recurring patterns of activity, e.g. a meal after coming back from shift work, then a 30-minute rest, gardening afterwards, dinner at a fixed time, then looking at the TV, but only during the early evening, and then going to bed at 9.15 p.m. in order to get up at 4 a.m.

Respondents include present activities in their description of what will take place in the time after retirement. Three of those

questioned were remarkable for their euphoria and the number of ideas they had about everything they were going to do and how little fear they had that it would be boring or uninteresting for them. These three I called *expectation-optimists* who exude certainty and purposefulness for the coming years in retirement. A second minority is formed by those to whom retirement only meant stopping work without any ideas regarding the new situation, except that the stress and burdens would become less and that one could perhaps enjoy things still a bit, experience a little pleasure, if this were possible and health remained good. Then there are the *expectation-pessimists*. Among them are those who are conspicuous due to their own worsening health, and the lowered life span expectations of their colleagues. Their future years no longer appear so rosy to them. The area of planned and hoped-for activities is small, their hopes are reduced. Numerically, the *expectation-pragmatists* were in the majority; about 15 of the 24 questioned fall into this category. They were going to do in retirement what indeed they were already doing: devote themselves to their children and grandchildren, improve or repair the house, travel and pursue hobbies, but with more time; that no longer had to be taken up by occupation and work.

#### *Between dreams and the achievable*

Mr. S. (57 years old, to retire within 2 months)

- I: Do you have any wishes that you've had for a long time, but have kept back, and that now you're retiring you'd like to fulfil?
- S: Well, I would say: to see a little more of the world. What I've missed out on doing, would be (...) it is, well, dreams.
- I: What kind of dreams do you have?

S: Well, I'd like to see South-America, and I'd like to have 4 weeks to see Alaska. Okay, up until now we've been hindered in getting around. That would be really something; to be able to see something else. To see something else, a bit of other countries. Just a part, because one can't do a lot.

I: And will you be able to do that?

S: What? Oh yes, we'll be able to do that. If we get the "40 years" (a premium for working for the company for 40 years) then we can buy a camper and do something. And even if it's only in Austria that's good too. We haven't seen everything in Austria yet because we haven't had enough time. And then naturally, when you're retired, you have all sorts of projects. Here and there, and this and that. Okay, and what happens when you can't do that any longer and when you have to put up with bad health? You can just forget about it. You either sit at home or are in the hospital. And that happens too, right? You don't know what's going to happen to you tomorrow or the next day (...). If you have to go to work again on Monday, who wants to do that? And Saturday and Sunday there are just too many people. A young man has it, sure, because everywhere he has a good time. That's the way it is. And the young man says: "What has the old guy lost?", when someone goes up somewhere or someone comes around. Or one will say: "Listen, are we on the right route? There's a lot of invalids here"; if you get irritated and say: "Listen, you still have to go where we were", you don't dare say that because then he explodes. That happens too, right? He sees that this is an old man with white hair. That he sees. And how he came here makes him think.

Wishes and plans, even dreams are similar to those that the young workers and

other older workers also cultivate and attempt to realise. They include what the social economic and conditions allow, but also what might remain unrealised. To travel and see something of the world plays an important role not only for Mr. S. The moment he thinks about it, it already makes him uncertain in the face of the obstacles that stand in his way. The goals that are to be seen in these desires or even dreams now mark every advertisement that modern tourism sells attractively: the general flurry of impression and expectations, the invitation to experience other countries, especially exotic ones - Alaska, South-America. One wants to see at least a part of all those places offered because it's not possible to see a lot. That which is possible is kept within limits by the availability of money and the state of health. This became especially clear through the answers given to our insistent question as to whether such things could be realised. Bringing dreams down to the level of what can be realised functions automatically through thinking of the money necessary, the state of health, and other things pensioners hope they can accomplish. The "reality principle", the consciousness about one's own room to manoeuvre, goes so far that even in thinking about travelling when one isn't concerned with anything definite, the dream is reduced step by step until the individually achievable wins the upper hand over the exotic. Looking at the sequence of these steps, the picture becomes obvious: in the beginning it was the money that was necessary, and then there wasn't any time to fulfill the wishes, finally, there arises, even when you do everything to prepare yourself for retirement, the insecurity about whether your health will let you do these things. Suddenly, the limitations of what is possible are visible. The unpredictability about what's going to happen makes one cautious about plans for the future.

### *The status of diminished life energy*

Mr. L. (57 years of age, to retire within half a year) in answering the interviewer's question about what the "Action52/57" means to him:

- L: Yes, those (...), okay, those who are 57, what that is, yes every year is a gift. Because when someone works 41 years he sure has the right to relax sometime.
- I: I believe that!
- L: Since some people give up the ghost earlier. They don't even get a pension, at least they don't live to get it.
- I: Are you happy at any rate that you can stop?
- L: I'm happy about it; anybody would be happy about it who's been going at it for 41 years. And then when you're older everything gets to be too much; then you see everything differently. A young man, he has more energy and he wants this and that and he needs the other (...). What, what, what, he already has a house and he has (...). This is the way it really looks. Then he says, "It's later than you think, we have to go somewhere, let's go, let's go see it, let's get out of here so that we really get out from under a bit!" And so life runs out. When you're healthy it's okay. But later when you are not so well ...

The common thought that retirement and giving up work is desirable because of their drained life (at 57!) is bound up with the conviction that a working life, especially one like that, has given one a right to some peace. It is certain that being pensioned off is seen as an act of charity, even as a *gift*; but at the same time it is something that, because of long years of hard work, you *deserve*. Whoever grows older has "served out his time". The phrase shows in its double sense what has happened: the service (to the

production) is no longer expected, reaching the right age lets the legal regulation take its course. Besides this, the man is exhausted and can no longer serve (work). Every year not spent at work "is a gift". But whose? People work for this right, and in this duality one can see the answer objectively: it's a true gift, this right that one has "earned".

It is not only arduous work that has earned a right to peace, but also the widely acknowledged norm that age plays a demarcation role (how old must one be?) as opposed to the younger workers. The combination of the two elements results in a new quality of experience. Expressions like: "Anyone would be happy if they've been working for 41 years" and "A younger man has more energy", come close to expressing it. One could call it the *status of lowered life energy*.

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## Part IV



## Some Issues in Cognitive Gerontology and Their Implications for Social Policy

### Abstract

Whether we wish to describe the effects of ageing on mental ability in society or in the individual, the main research goals are deceptively simple. For both we may ask: at what ages do changes in mental ability first appear and how rapidly do they then proceed? What variation there is in the moments of onset and in the progress of such changes? Whether all ageing has "global" effects, so that all mental skills (and so, perhaps, the neurophysiological structures that support them) change at the same rate, or, whether the ageing of the brain and cognitive system can be "local", so that some skills are affected before others and there are a variety of distinct patterns of mental ageing, each with its characteristic time course and etiology? For both societies and individuals, the most pressing question of all is whether, and how, we can retard or abolish cognitive ageing. A review of the current state of the field can be structured in these terms.

### When do cognitive changes first appear?

Although psychologists have very intensively studied children and undergraduates, and cognitive gerontologists have begun to study people aged from 50 to 100, the idiosyncrasies of individuals aged between 25 and 50 remain almost completely uninvestigated. Thus we have little

information about the point of earliest onset of age changes. However Lehman's (1953, 1954) biographical analyses of the most striking lifetime achievements of scientists, men of letters, and other professionals suggest that in all occupations in which notable achievements can be precisely documented, a peak of maximum productivity and originality is attained in the late twenties and thirties and a subsequent plateau of achievement, held for varying times by members of different professions, is eventually followed by a marked decline in quantity and quality of output. Lehman noted that practitioners of disciplines which are recognised to be exceptionally demanding of intellectual power and originality, such as mathematics, physics and chemistry, (Lehman 1953, 1954) or Grandmaster skill at chess (Elo 1965) show peaks of brilliance and productivity in the mid-, to late twenties, which may begin to wane by the late thirties. In contrast, historians and novelists, who arguably require time to amass a vast database of information and experience in order to produce their best work, may continue to do so after the age of 50. There seems to be no age-boundary for the best productions of graphic artists, composers and musicians. Lehman concluded that there the ability to solve novel and complex problems may begin to decline very early, but that in many very complicated and demanding creative activities this can be amply compensated by a growing repertoire of learned skills and information. This maps well on to the distinction between "fluid" and "crystallised" intellectual abilities which has been developed by psychometricians such as Horn (1982), and which is further discussed below.

Lehman's analyses have been contested. Stern (1978), analysing citation indices, concludes that in mathematics "no clear cut relationship exists between age and productivity or age and quality of work" and attributes any declines in the quantity and quality of mathematical output after the age of 45 to increasing distraction by administrative responsibilities. This point is

obviously well taken, because apart from changes in intrinsic abilities, individual differences in life span productivity must certainly be strongly affected by idiosyncratic life-patterns, by changing domestic and economic demands, by changes in motivation and externally imposed "career structures". In this connection, it is noteworthy that investigators have often reached markedly different conclusions because the biographies they have analysed data from very different historical periods, between which radical social changes occurred and during which many contemporary career structures did not exist (e.g. the conclusions from Dennis' 1956, 1958 and 1966 analyses of 738 careers between 1600 and 1820 are only dubiously applicable to 20th century life patterns). The effect of changing patterns of career structures and role expectations on lifetime productivity of men and women is evidently a rich and open field of enquiry. A comprehensive review by Fox (1983) debates these issues to not very clear conclusion.

Evidence from laboratory studies is, as usual, much less rich or ambiguous. There is evidence that the middle-aged begin to have increasing difficulty with laboratory problem-solving tasks (Rabbitt 1974). From the beginnings of psychometrics, it was recognised that test scores change sharply during the life span. Early standardisations of intelligence tests took this into consideration by "age-weighting" scores of older individuals in order to estimate equivalents for their young adult "Intelligence Quotients". Such excellent and systematic applied work forced early recognition of slight declines in unadjusted IQ test scores and in scores on tests of flexibility and creativity between the ages of 30 and 45 (e.g. Jones and Conrad 1933; Wechsler-Bellevue Standardisation 1955; Willoughby 1927). Recent laboratory studies of complex paced tasks tend to confirm, but also strongly to qualify, these signs of very early change. For example, Rabbitt, Banerji and Szemanski (1989) gave individuals aged from 18 to 36 years 5 hours of training on a complicated interactive

video-game and found that average performance fell with chronological age even when effects of variance associated with IQ test scores and with previous experience at games had been partialled out. Similarly, Rabbitt, Banerji & Szemanski (1990, in press) have found that, within the same age range, although older individuals take longer to reach equivalent levels of task performance than their juniors, both old and young retain skills equally well over long periods of time. Such results demonstrate unexpectedly early "age effects" on cognitive ability, but are even more interesting because of the changes that they did not find: there was no evidence that age between 18 and 36 either slows the rate at which individuals improve with training, or speeds the rate at which they forget what they have learned. Because older individuals performed less well during their very first sessions of practice, and thereafter learned the game no faster than their juniors, they lagged behind throughout practice until they were given extra training sessions to catch up. This simple point is methodologically important because it shows that age may effect the levels of performance which people can attain at any point during an unusually prolonged experiment, without also altering the rate at which they learn a complex skill. This highlights a crucial methodological weakness in nearly all the comparisons between age groups which have yet been published.

Age groups have nearly always been compared only on their initial performance on novel tasks. However we know rates at which they improve, we do not know whether differences between age groups represent *initial problems of accommodation* to novel tasks, differences in rates of acquisition of new skills, or, (as has usually tacitly and illogically been assumed) *differences in the maximum levels of performance which are attainable at different ages*. Without this information we cannot address the crucial practical questions as to how far cognitive decline in old age represents the effects of disuse of systems which can perhaps be

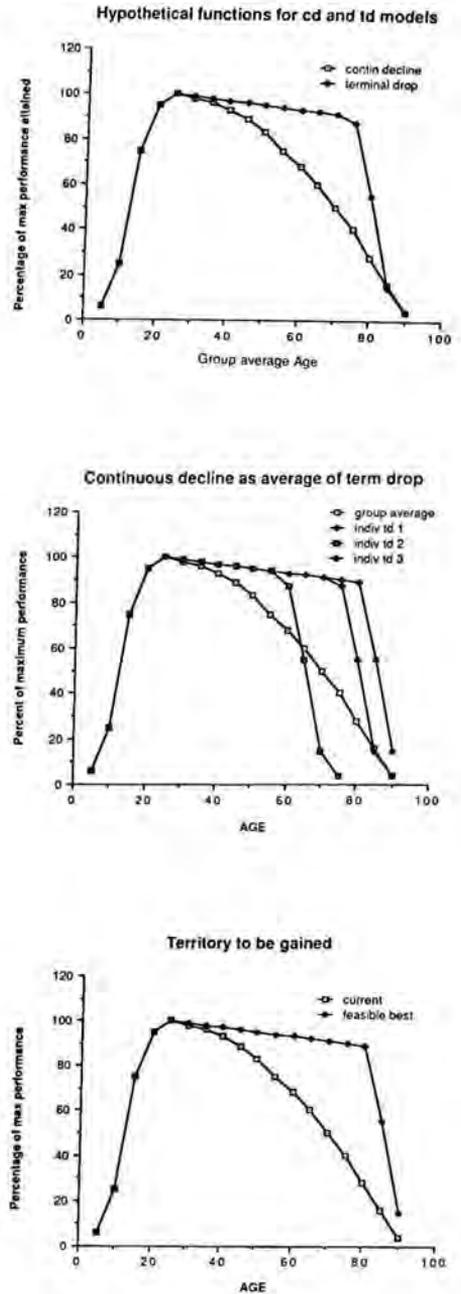
rehabilitated with practice, and how far it represents an irremediable change in functional capacity. Until this is resolved, our theoretical models will also remain inadequate because we do not know whether changes in learning and memory and changes in maximum rates of information processing represent changes in functionally and logically separable "modular" systems which may "age" at different speeds, or whether learning rates and information processing rates are merely highly inter-correlated indices of the progress of a "global" change which simultaneously affects all cognitive systems.

**Once cognitive changes begin, how rapidly do they proceed?**

Because of the obvious logistic difficulties in undertaking longitudinal studies, most data on rates of cognitive ageing have been derived from "cross-sectional" comparisons between members of two or more age cohorts. Such comparisons suggest that a rapid rise to peak performance in the third and the fourth decades of life is followed by a "continuous decline" which is slight over the fifth and sixth decades and then rapidly accelerates. This pattern is characteristic of nearly all functions, from visual and auditory scores on most IQ-tests as it is, indeed, of mortality statistics and the increasing incidence of pathologies (see the "continuous decline" model illustrated in Fig 1a).

An obvious difficulty with cross-sectional data is that they track average levels of performance across successive age groups which, as group mean age rises, must include increasing numbers of individuals who are suffering from a variety of known or unsuspected pathologies and who may indeed be closely approaching their deaths. This raises two related, but separable, possibilities: first, that, if we could obtain them, functions describing changes in performance over time for individuals would prove to be different from functions illustrating changes in average performance across successive age groups.

**Fig. 1:**  
The hypothetical "continuous" decline and "terminal drop" performance functions, their mutual relationships and implications for possible improvements in performance of individuals and social groups.



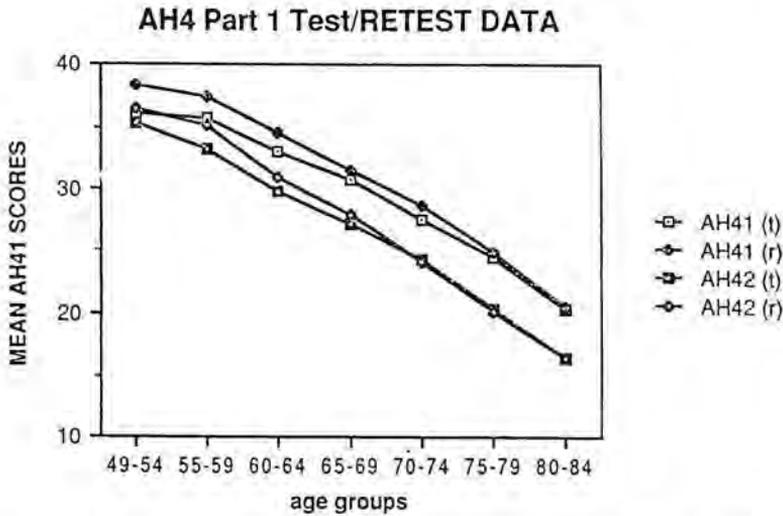
For example, any given individual may reach a performance peak in the early 20s which he or she can maintain, good health permitting, even to age 70 or beyond, but which will show a sharp decline when pathologies inevitably occur (the "terminal drop model" illustrated in Fig 1b). On this model, because pathologies likely to affect central nervous system (CNS) function become more common with age, successive age groups will contain diminishing numbers of healthy individuals who still hold their performance plateaux, and increasing numbers of ill individuals who have begun to decline. Thus, average performance will decline with group-age in spite of the fact that the true "age performance function" for each individual may be rectangular (Fig 1c). A second possibility is that every individual does indeed experience a continuous decline of performance with age, perhaps because accretions of minor pathologies at first do little to impair performance, but escalate in their cumulative effects as age advances. This suggests that better health care, nutrition, economic improvements and occupational and preventative medicine may alter the lifetime performance curves of individuals, and groups may increasingly be shifted from continuously accelerated decline towards an ideal rectangularity. On this cheerful model, the gap between "continuous declines" in currently obtainable average age/performance functions and in the ideally rectangular functions shown in Fig 1c represents valuable territory to be gained by social and economic improvements.

It might seem that these questions can be simply, if laboriously and expensively, answered by protracted longitudinal studies on very large samples. However, interpretations of longitudinal studies also present severe methodological difficulties (Glenn 1977; Schaie 1973 and Strother 1968). One is that, at least in fortunate countries, standards of nutrition, education, hygiene and health care have steadily improved over the last 100 years so that each successive generation has grown up under more

favourable conditions than the last. In short, from Fig 1c, we would expect that successive generations should attain different average performance peaks and, because in groups more recently born, individuals will stay fit for longer, longitudinal studies will show progressively slower ageing in successive cohorts. A classical study by Schaie & Labouvie-Vief (1974), illustrates just such an apparent reduction *in rates of change with age* for scores on a spatial IQ test. Unfortunately, recent studies raise the possibility that the measures which we use to assess cognitive change with age, particularly IQ tests, may have altered in their validity in that the norms against which they were standardised are now quite inappropriate (Flynn, paper at International Congress of Psychology, Sydney, August 1988; Raven, paper at Annual General Meeting of British Psychological Society, St. Andrews, April 1989). It is likely that this is partly due to increasing sophistication and practice within and across cultures and educational systems with problems similar to those on which older IQ tests have been based. If this is so, in addition to all the other methodological difficulties with longitudinal comparisons, we must accept that the instruments we use to measure differences between the populations we study may have become steadily less reliable at detecting the changes that we hope to examine. In short, their original validity as instruments for assessing individual differences within populations has been gradually lost.

The practical reality of an obvious methodological problem which has always been a theoretical source of uncertainty in longitudinal studies is illustrated by data collected by Rabbitt, Abson and Bent on 2100 residents of Newcastle on Tyne aged between 50 and 86 years. Even after a 3-year interval, and even for the oldest groups within this sample, improvements due to initial experience with a test battery outweighed any changes associated with age (for illustrative data see Fig 2). It is certainly true that these data usefully focus interest on

Fig. 2:  
Improvements in AH 4 (part 1) scores in a population of 2100 individuals aged 50 to 86 years on retesting after a three-year interval.



those individuals whose performance deteriorated between testings, allowing them to be intensively investigated. However, the results concretely establish that even when identical tests are not repeated, increasing relaxation in initially intimidating laboratory contexts markedly improves performance. Even the oldest cohorts in longitudinal studies can become "test sophisticates" to an extent that blurs effects of ageing and, indeed, sharply raises the question as to how far practice may reduce or abolish "age changes" in cognitive skills.

**Are the effects of age on cognition "global" or "local"?**

One important category of age changes certainly occurs in functional sub-systems which are unambiguously "local" and "modular" rather than "global": the sense organs. Like reduced performance on IQ test scores, gradual loss of visual and auditory sensitivity accompanies ageing, but, within individuals, there is no *necessary* correlation or causal relationship between the time

course, or the amount of sensory and of cognitive decline. However, it is crucial to recognise that this lack of necessary causal relation does not mean that because sense organs are "merely peripheral" to "higher cognitive functions" sensory changes should be dismissed as uninteresting to cognitive scientists. Sensory losses pervade most aspects of everyday living. They constitute obvious hazards. They require marked changes in life-management which can radically affect possibilities for social interaction, employment, the learning of new skills and cognitive engagement in, and enjoyment of, life. It has only recently been realised that they may also have marked, secondary "knock-on" effects on memory and comprehension in everyday living.

A tractable instantiation of the general question as to how older people cope with all of the many changes which they must experience is the problem of how they adapt to sensory and cognitive changes. Such studies have made the crucial point that, in order to adapt to a sensory or a cognitive change, a person must first be aware that it has occurred. Gradual loss of vision and

hearing may be insidious and, to a surprising extent, pass unnoticed. Holland and Rabbitt (1989) have recently found that while individuals aged from 50 to 80 years show the marked deteriorations on objective tests of visual function which are expected with age, all decade-cohorts in this range give identical estimates of their subjectively perceived visual losses. Unawareness of increasing visual and hearing handicaps may constitute a dangerous hazard in everyday life - for example, for elderly motorists and pedestrians. Failure to notice changes in the efficiency of other, less dominant, senses may also have effects which range from mild social handicaps to life-threatening hazards - for example, loss of tactual sensitivity combined with visual impairment may lead to inefficient grooming and impair self-presentation in everyday life, but unawareness of loss of thermal sensitivity puts elderly people at risk through hypothermia and anosmia makes them vulnerable to dangerous gas leakages.

This remarkable subjective oblivion, even to considerable change, is also found when people are asked subjectively to estimate their current competence, or their experienced loss of competence, in complex everyday tasks. Rabbitt and Abson (1990, in press) have found that individuals in their 50s give much lower estimates of their current memory efficiency, and higher estimates of their decline in efficiency and commission of errors in everyday tasks than do individuals in their 60s and 70s. These subjective impressions are contradicted by IQ test scores, which are highest for the 50-year-olds, and steadily decline with age. The explanation seems to be that humans have no way of making absolute judgements of their own abilities, whether these may appear to be simply and directly apprehended, such as sensory acuity, or more complex and difficult to evaluate, such as efficiency of memory and planning. People can only compare their performance against that of others, such as spouses or colleagues, whom they can closely observe, or evaluate themselves against the

demands which their environments make on them. These environments markedly change with age. People in their fifties are still much engaged in the world and must frequently face challenges against which some failures are inevitable. They are probably also very conscious of their own ageing and anxiously alert for signs of change. In contrast, individuals in their 60s and 70s have gradually moved into more lenient environments in which even their reduced abilities may sustain them without frequent lapses. Thus a central issue in applied cognitive gerontology is that individuals must assess their own ageing in terms of their interactions with changing environments and with the changing composition, demands and standards of the social groups in which they live. In short, *individuals' subjective feelings about their own ageing will depend on the social structures which they must inhabit, as much as on the biological changes that they must experience.*

There are other, important reasons why sensory changes cannot be regarded as "merely peripheral" to "higher cognitive functions". Even in terms of theoretical models for human information processing, changes in sensory efficiency cannot be dissociated from more "central" changes in cognitive function. Rabbitt (1989) found that mild hearing loss can have more direct "knock on" effects on cognitive efficiency than through its secondary impact on individuals' social competence and self-regard. Elderly people with 35 to 50 db hearing losses may flawlessly repeat aloud all of the words in a list read aloud to them, but then have difficulty in recalling them. They have no such problem if the list is printed so that they read it themselves at the same rate. Control groups with good hearing who were precisely matched with the mildly deaf in Age and IQ tests scored, and, in their recall of printed words lists, performed much better than the mildly deaf when lists of words were read aloud, but only equally well with printed lists. This finding parallels earlier demonstrations by Rabbitt (1968), that when young adults with no hearing loss are required to repeat

aloud words or prose passages which are presented to them through low levels of white noise they remember them poorly. The additional effort they have to make to recognise each word through noise borrows information processing resources which they might otherwise deploy to rehearse the words read to them, to increase the elaborative depth of processing by rapidly generating associations to target words (Craik and Lockhart 1972), or to make inferences rapidly enough to comprehend difficult text correctly. Memory for words presented through noise, albeit they have been correctly recognised and repeated is, accordingly, poorer than for words heard clearly. For age comparisons, a crucial additional point is that when age-groups were matched for amount of hearing loss, 70-year-olds showed much more marked "knock on" effects of hearing loss on memory and comprehension than did individuals in their 50s or 60s. In all age groups, individuals with high IQ test scores showed few or no effects of mild hearing loss on memory or comprehension of spoken prose. In contrast, individuals with precisely the same degrees of hearing loss, but with low IQ test scores, showed a significantly greater discrepancy between memory for auditorially and visually presented material. It is known that unadjusted IQ test scores pick up individual differences in rates of information processing among groups of elderly people (Goward 1987; Rabbitt & Goward 1990a in press). Evidently, high rates of information processing increase the margin of "spare channel capacity" and allow gifted individuals, in effect, to simultaneously carry out two separate tasks without loss of efficiency in either: that is, to rapidly identify speech in spite of their deafness, and simultaneously to rehearse, elaboratively encode, and correctly make inferences about what they hear.

This ability to deploy "spare resources" in the central cognitive system to mitigate the effects of peripheral sensory losses or distortions illustrates some logical and methodological issues which are central to the debate as to whether ageing "globally"

affects all cognitive systems or has greater specific and local effects on some "cognitive modules" than on others.

One specific implication of Rabbitt's (1989) results is that IQ test scores may be reasonable indices of levels of information processing capacity (in Navon's (1984) terms "a high level of resource" or a high "system operating characteristic"). The possession of high levels of resource may allow fortunate older individuals to compensate for deficits in neural sub-systems which are unambiguously "modular" and, indeed, very tightly localisable, both anatomically and functionally (e.g. for basilar membrane damage). The corollary that hearing deficits in individuals with high IQs may not easily be detectable from their performance at correctly and rapidly repeating aloud what they hear, but may be obvious from audiometry, is trivial only at first sight. It illustrates that deficits in a particular sub-system may be concealed when tasks can be devised to test it in isolation, but may not be concealed when the tasks used involve it as one or a pair, or series, of mutually interactive "coupled" systems. Compensation between members of pairs of such coupled systems may elude detection unless subjects are assessed on a wide range of experimental tasks which load the "damaged" and the "supportive" system both in isolation and together. However, if impairment of performance occurs when both of a pair of coupled systems are jointly loaded, this is only a necessary, and not a sufficient, indicator that one of them has broken down under overload. The simplest explanation for such a finding must always be that the joint operation of two or more systems has been impaired by loss of a single, "global" resource (e.g. information-processing capacity), on which both depend. In order to be certain that we are, indeed, dealing with a decrement in one system but not in another, we have to demonstrate clear dissociations of function between them by discovering specific tasks which affect each without affecting the other (see Baddeley 1986). This is easy to do when we are dealing with functions so

disparate as peripheral hearing acuity and memory efficiency, *because we can use entirely different measures to assess both*; i.e. evaluation of pure-tone threshold in decibels, in the case of memory. The logic of the technique breaks down when *we have to use the same index of functional efficiency in order to assess the integrity of each of two or more putatively independent systems*.

This possibility of logic error in mistaking measurable changes in a particular, very general, *index* of system operating efficiency (information processing rate) for evidence of global, *functional change affecting the entire cognitive system* unfortunately weakens an otherwise very elegant and comprehensive theory of cognitive ageing (Salthouse, 1986). It is easier to recognise this logical confusion in attempts by Eysenck (1986), Jensen (1982, 1985), Vernon & Kantor (1986) and others to revive a "single factor" theory of intelligence originally proposed by Spearman (1904). Here the argument is that when factor analyses are used to interpret patterns of mutual relationships between performance indices across a wide range of cognitive tasks, the most successful models for distribution of variance yield a single key factor, "Spearman's *g*", which can be identified with indices of information-processing rate. The argument then shifts from a description of shared variance in individual performance between tasks to an assumption of functional causality. Salthouse (1986) proposes that functional changes in cognitive ageing are best understood by treating loss in maximum information processing rate with increasing age as a *causal determinant* of simultaneous and equivalent declines in all cognitive systems. Similarly Eysenck (1986) and Jensen (1985), point to ubiquitous scores on IQ tests and their Choice Reaction Times (CRTs), or their tachistoscopic recognition thresholds (ITs), as evidence that Spearman's single factor-analytic construct "*g*", on which all IQ tests have a heavy loading, may be operationally reified as "information-processing rate" in functional models of intelligence. Since Rabbitt & Goward (1990a)

have found that declines in unadjusted IQ test scores account for nearly all of the observed age-slowness in CRT, these two models are mutually congenial.

However Rabbitt's (1989) studies can be used to illustrate some logical difficulties with this satisfyingly simple story. An unobjectionable, though obviously incomplete, description of the effects of mild deafness is, that it markedly slows the rate at which people can process information from complex auditory signals. This peripherally imposed reduction in information processing rate may affect comprehension of, and memory for, spoken material. Thus, deaf people may appear more distracted, absent-minded and slow on the uptake (in common parlance, stupid) than they actually are. It is very probable that, as Salthouse (1986) suggests, age-related neuro-anatomical and neurophysiological changes in the CNS may also reduce maximum central processing rates for all types of information input - including continuous speech. This will certainly affect efficiency of memory as well as other cognitive functions. Thus Waugh and Barr (1980) have suggested that elderly individuals may be able to learn and remember word lists as well as do the young if they are given sufficient extra time to study the items which they have subsequently to recognise or recall so as to compensate for the reduced rate at which they can process new information. Thus, a reduced information processing rate, whether it is due to peripheral deafness or to central neuro-anatomical change, can indeed reduce performance on laboratory memory tasks.

It is certainly true that amounts of slowing associated with peripheral deafness and with loss of central efficiency can both, alike, be quantified in terms of bits per second. Indeed it may also be true that the combined effects of deafness, old age, and IQ test score can conveniently be expressed in terms of changes in position on a common "resource plane" (Navon 1984) for which "bits of information transmitted per second" may serve as very convenient, and empirically

plausible units of measurement. However, the logical point raised by Rabbitt's (1989) studies is that *the identity and serviceability of this common metric can distract us from the fact that we use it to evaluate the relative degrees of integrity of systems in which the functional nature, and the etiology, of deficits are totally distinct and, further, may be exacerbated or improved by quite different changes, or resources of differences, between individuals.*

Thus, if we are unwary we may mistake changes in the numerical values of an extremely general and serviceable empirical index for evidence of common functional etiology. This danger would be less pervasive if models and paradigms in cognitive psychology were sufficiently precise to specify independent performance operating characteristics for different hypothetical cognitive sub-systems. Unfortunately, in empirical practice, the only performance indices which we can actually measure are either the speed with which individuals make decisions or the errors they commit; i.e. our indices either directly assess information processing speed or trade-offs between speed and accuracy. Unhappily, *all* our models for hypothetical cognitive sub-systems and our comparisons between the relative efficiency of these putative systems are, ultimately, based on these two indices and the relationships between them. Because all systems are, in effect, evaluated in terms of variants of the same basic indices, it is inevitable that factor analytic models of variations in performance across tasks and individuals should yield "a single common factor" which can be very misleading; to assume that because older individuals, or individuals with lower IQ test scores, show slower speed and poorer accuracy of performance (i.e. reduced information processing rate) can be modelled as a single *causal* factor that underlies global changes in all cognitive functions with age, or all individual differences in cognitive ability.

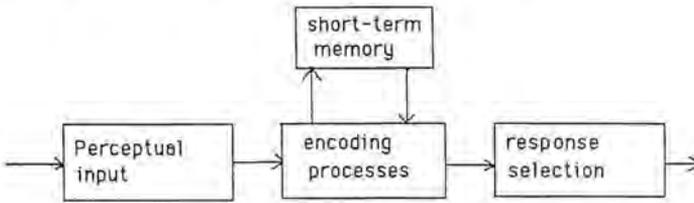
This argument can be made more concrete by considering tasks in which we

actually can measure individuals' efficiency in terms of two or more truly independent performance parameters. Goward (1978) and Rabbitt and Goward (1990b) attempted this in memory tasks in which they could simultaneously measure the speed with which individuals could make decisions and the rates at which they both learned and forgot new information. Because individuals, ages and scores on a well-validated performance IQ test (the AH 4, Heim 1968) were also known, this allowed investigation of the extent to which differences in age and IQ were reflected in differences in information processing speed, and whether learning and forgetting functions were partially or entirely predicted by all these other measures.

The summary conclusion of a number of different experiments was that one system performance characteristic, information-processing rate, was found to partially account for individual differences in efficiency of learning words, and to vary with Age and with IQ test scores. In contrast, a second system performance characteristic, the rate at which information once learned is subsequently forgotten - which also, obviously, crucially determines everyday memory efficiency - appeared to be independent of information-processing rate, of age and of IQ. Like all other system performance characteristics, forgetting rates do markedly vary between individuals. However, these variations between individuals are not predicted by their ages, by their performances on IQ tests or by their decision times.

As we have noted, within the explanatory frameworks proposed by Salthouse (1986) for Cognitive Changes with Age and by Eysenck (1986), Jensen (1982, 1985) and others for individual differences in IQ test scores, individual differences in information-processing rate are seen as causes of differences in functional efficiency. Within these frameworks we might interpret Goward's results as evidence that losses of information processing rate affect some "modular" cognitive sub-systems (e.g. rate of

Fig. 3:  
A hypothetical linear independent "modular" information-processing system, after Broadbent (1958).



information encoding and elaboration, rate of rehearsal and speed of information retrieval) but not others (e.g. persistence of stored information). This would imply a framework of description in which each of these functions might be illustrated as a separate, independent module in an entrained sub-system such as that adapted from Broadbent (1958) and illustrated in Fig. 3.

Recent theory now suggests more tenable and useful frameworks of description - for example, in terms of network models (Hinton 1989; Rumelhart & McClelland 1987). These propose that a main biological advantage of processing and storing information in terms of systems of connections between units in a neural network is, that this allows parallel rather than serial processing, so achieving fast information-processing times even with very sluggish biological components (i.e. neurons). As a thought experiment we may consider that young adults' simple reaction times may average 130 msec. or less. We know that at least 40 msec. are required for transmission through the retina and visual pathway and that muscle potentials occur some 50 msec before any overt movement begins. We also know individual neurons cannot fire faster than 100 times per second. It follows that identification of a critical signal from among all other concurrent visual events, plus the programming an initiation of a specified response to it, must be achieved by a neural pathway which cannot include a linear sequence of more than 40 neurons and synaptic connections. At first sight this would seem to be a very implausible conclusion.

However, as Crossman (1959) presciently foresaw, the more richly interconnected an information processing network is, the greater the number of different, parallel pathways within it will be, each of which can allow any given decision to be implemented. In Crossman's model, parallel activation of such a "sheaf" of equivalent decision pathways will allow whichever terminates most rapidly to initiate the necessary response. Thus the average decision time (information-processing rate) possible for a network will decrease with its density of interconnectedness and so with the number of alternative pathways it provides.

An advantage of modelling decision processes in this way is that it makes it obvious that information-processing rate is by no means the sole performance characteristic in terms of which the efficiency of a network can be evaluated. The maximum complexity of any pattern of input which a network may "learn", retain and access will not be determined solely or directly by the maximum speed with which its component units can communicate with each other. To this extent, the information-processing rate of a network and the efficiency with which it can learn to represent new patterns of input may be independent indices of its efficiency. However, the efficiency with which a network can learn to differentiate between critical and incidental elements in recurrent patterns of input will partly depend on the number of different units that it contains and on the density of connections between them. Since the information-transmission efficiency of a

network will also correlate with the number of its components and with the density of their interconnections, we would expect to find weak correlations between individuals' maximum information-transmission rates and the efficiency with which they can learn new material. This is indeed the case. Further, we might expect that as a network degrades, (e.g. "ages") so that units and connections between units are increasingly lost, both its maximum information-processing rate and its learning efficiency will correspondingly reduce. This also is what is generally found. However, within this framework of explanation it would be misleading to discuss slowing of information-processing rate as the underlying *cause* of loss of learning efficiency - as, for example, Waugh & Barr (1980) conclude from their important observation that increased study time allows slower older people to master new material as efficiently as do the young. For the same reasons, it would also be misleading to discuss slowing of information-processing rate as a single *causal* factor in the general loss of efficiency across all cognitive systems which occurs in old age (Salthouse 1986), or to propose that individual differences in information-transmission rate are the functional *causes* of individual differences in intelligence and, consequently, provide a functional reification of Spearman's single psychometric factor, "g", which accounts for the high degree of common variance shared by most IQ tests score and Age and are *accompanied by* correlated changes in learning efficiency. However, within the explanatory framework of network, information-processing rate and rate of acquisition of new material would not have status as components of functional models of cognition but would rather be seen only as operationally measurable system performance characteristics which may co-vary because the same changes in the neural substrate affect them both, but for quite distinct functional reasons. Similarly, Spearman's "g" would merely be a measure of the amount of shared variance between scores on a range of

different complex tasks which the network carried out. The modest correlations which are typically obtained between individual difference measures such as "g", or chronological age, and performance indices such as information-processing rate or the signal detection statistics of system efficiency  $d'$ , would reflect the fact that they determine, or are determined by, the richness and connectivity of available neural networks.

### **Do different brain structures age at different rates?**

Current frameworks of description in cognitive neuropsychology suggest a different, and more direct, way of posing the question whether the ageing of cognitive systems is "global" or "local". Thus we may consider whether particular skills, for which studies of brain lesions in young adults have determined distinct anatomic loci, may "age" at different rates. This is neuro-anatomically plausible because the global loss of brain tissue which occurs in old age is more pronounced in some areas than in others (Petit 1982), and it is also likely that characteristic patterns of changes in brain-blood circulation may have local as well as general effects.

The best evidence for such hypotheses comes from comparisons of the relative rates of age-related decline between skills which are known to have left and right hemispheric localisation. For example, Rabbit, Bent and Abson (in preparation) screened a population of 6000 individuals aged from 50 to 96 years on two IQ tests devised by Heim (1968) and found that when scores were standardised to allow comparability of performance between tests, scores on a test of spatial reasoning (the AH 4 Part 2) declined markedly faster across successive age groups than did scores on a parallel test of logical and verbal reading; (the AH 4 Part 1). Lapidot (1987) ably summarises a body of studies giving strong evidence of "hemi-ageing"; ie that "right hemisphere" skills decline with age faster than "left hemisphere"

skills. While many of the studies that Lapidort discusses are methodologically flawed, a more recent, and convincing, large-scale study by Albert, Duffy & Naeser (1987), which incorporates evidence from brain scans to support correlations between local tissue changes and specific skill loss, leaves this intriguing possibility open.

### **How far does practice protect cognitive skills against ageing?**

This idea that anatomically localisable neural modules, each of which supports a different cognitive function, may "age" at different rates can easily be assimilated into current neuropsychological theories. However, neuropsychologists might profitably learn from cognitive gerontologists to consider a quite different explanation for the relative resistance of different cognitive skills to changes in neural function. This is that cognitive skills are radically different in kind, depending on whether they are based on bodies of information acquired over long periods of time, or whether they require the momentary input and analysis of new information for which no existing organisational framework is available. There has long been evidence that while learned skills such as vocabulary and use of language may be retained unimpaired until very late in life, skills which depend on rapid information processing, on speed and accuracy of logical and arithmetical reasoning or on spatial ability are, in contrast, markedly affected by increasing age. For example, among the 6000 volunteers tested by Rabbitt, Bent and Abson, marked age-decrements in AH 4 part 1 and part 2 scores contrast with no observable changes in Mill Hill vocabulary scores for groups aged between 50 and 80 years. Within a psychometric framework of description this general picture has been described by Horn (1982) as a loss of "fluid" intelligence with concurrent retention of "crystallised intelligence". Horn's (1982) factor analyses of data from a variety of

performance measures given to large groups of subjects of different ages show common clustering for IQ test scores with measures of information processing speed and learning rate distinct from clustering for tests of vocabulary, verbal ability and general knowledge. As Horn has argued, while it is a credible assumption that left-hemisphere neural structures which support verbal skills age less rapidly than right-hemisphere structures which support spatial, musical and other skills, this does not explain the available data nearly so well as the assumption that cognitive skills built up by practice are more resistant to age than those which depend on "raw" information-processing ability alone.

It is now possible to derive from recent theoretical work by Schneider (1986) an interesting new explanatory framework for qualitative differences between "fluid" and "crystallised" abilities and for their differential resistance to ageing. Shiffrin and Schneider's (1977) and Schneider and Shiffrin's (1977) studies of prolonged training of young adults have shown qualitative as well as quantitative differences between practised and unpractised skills. When a skill is first attempted it has to be "controlled" by higher order cognitive programs. This process is slow and demanding of information processing capacity, so that the speed with which subjects can carry out a new task varies sharply with the amount of information which it requires them to process. At this level of practice, as task information demands are increased, subjects' efficiency is correspondingly markedly reduced. This is most obvious if they are required concurrently to perform secondary tasks. Once a skill has been well practised it is not merely carried out much more rapidly and accurately, but becomes unaffected by large variations in task information-processing load and invulnerable to distraction from concurrent secondary tasks. Schneider (1986) has elegantly modelled this transition from "controlled" to "automatic" performance in terms of the ways in which a hypothetical

decision network might "learn" new skills. Early in practice, a novel task will require the use of a wide range of different pathways within a neural net, thus making heavy demands on the information handling resources (i.e. in effect, the information-transmission capacity) of the entire structure. Under these conditions, the network will find it impossible to process other information in parallel. However, with prolonged practice the network will progressively adapt so that the task is carried out in an increasingly efficient way by the fewest and shortest pathways which are sufficient for this purpose. Thus, besides increasing the speed and accuracy with which a skill can be carried out, practice steadily reduces the demand which the skill makes on the total available information-processing capacity of the network which supports it. This frees increasing numbers of alternative pathways within the network (increasing amounts of "spare information-handling capacity") which may be deployed to absorb increased demands, either from increases in information load of the main task, or from a concurrent secondary task.

It is easy to see how progressive losses of component units or connectivity (degradation) would correspondingly limit a network's capability to provide, and to select between, the large number of alternative pathways which are optimal for initial learning of a novel task. In contrast, the lesser demands of highly practised (in Shiffrin and Schneider's terms "automated") skills would leave them much less affected by networks degradation. In this metaphor the "fluid" capabilities of a network would corresponded to its total available resources for providing the maximum number of alternative pathways and information processing control during learning of novel tasks. The "crystallised" properties of the network would corresponded to its acquired stock of special purpose pathways, each developed by practice to carry out a particular task with maximum efficiency, and with minimal demands on the information-

processing resources of the network as a whole. These "fluid" and "crystallised" properties would, consequently, have different degrees of resistance to network degradation.

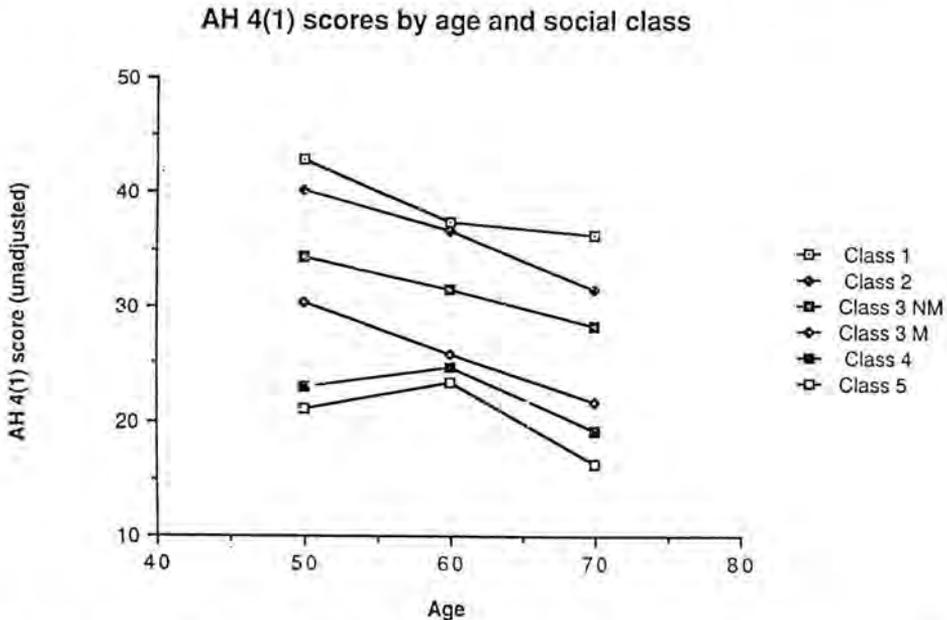
If we adopt this, admittedly as yet crude and untested, framework of explanation, we may extrapolate some important practical advice for the elderly: the maintenance of skills acquired throughout a lifetime's practice will probably require ever-increasing effort, since progressive loss of components and connectivity will affect even well-established optimum pathways and will be increasingly difficult to repair by new training. However it may still be more cost-effective and rewarding to maintain existing skills at a high level than to spend time laboriously attaining mediocrity at entirely novel tasks. Elderly people may well find it more cost-effective, in terms of the time and effort involved, to adapt existing skills to new needs than to attempt to learn radically new ways of doing things.

#### **Do individuals show different trajectories and patterns of cognitive ageing?**

Many distinct sources of evidence suggest that the complex of physiological changes which constitute "ageing" do, indeed, occur at different rates in different individuals. An illustrative limiting case is the genetic abnormalities which result in conditions such as Hutchinson-Guildford syndrome and Werner's syndrome (Hayflick 1977), in which many of the physiological concomitants of ageing may appear in early childhood. The heritability of longevity has long been recognised, as is its interactions with health habits (Rockstein and Sussman 1979). The effect of diet during maturity on fish and mammalian longevity has been intensively studied. There is good evidence for genetically determined predispositions to cardiovascular, circulatory and respiratory diseases which, apart from affecting duration of life, may reduce efficiency of brain blood

Fig. 4

Changes in AH (part 1) scores with increasing age in a population of 2100 individuals stratified in terms of their membership of H.M. Registrar-General's occupational categories.



supply and so affect CNS efficiency in later life.

In geopolitical terms there is also clear evidence that survival rates differ as a result of marked variations in socio-economic conditions. These, of course, entail factors as diverse as adequacy and salubriousness of housing, of diet, of education in hygiene and preventative medicine, of understanding and avoidance of occupational health risks such as industrial toxicity, of adequacy of infant care and of access to medical treatment. It is certain that any conditions that accelerate physiological ageing, increase incidence of pathology and shorten life will also accelerate cognitive decline. As an illustration of how such data can be assembled and analyzed, Fig. 4 below presents data on IQ test scores obtained from successive age cohorts of a population of 2100 residents of Newcastle aged between 50 and 86 years, broken down to illustrate difference between individuals classifiable in the UK Registrar general's

occupational categories A through D.

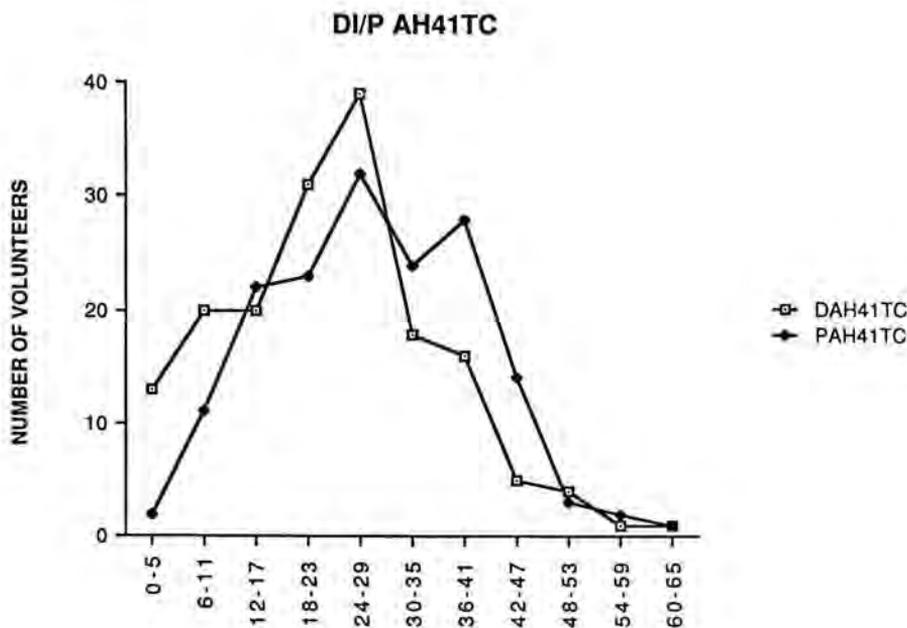
The finding that, across all age groups, average IQ test scores differ between socio-economic categories is unremarkable. The more interesting point is that, within this particular self-selected sample, *the rate of change in cognitive function* does not differ between occupational categories. It is important to note that these volunteers selected themselves by answering media advertisements to participate in a longitudinal study of age-changes. Thus, these data cannot be held as general evidence of a lack of effect of socio-economic categories on rate of cognitive ageing and are presented only to illustrate the methodology by means of which such differences may be sought. An alternative, and less cheerful, picture is presented by Fig. 5 which illustrates differences in the distribution of AH 4 (part 1) IQ test scores obtained from a group of 168 individuals who suffer from diabetes and from their controls, who were very precisely

matched in terms of age, gender and current scores on the Mill Hill Vocabulary test (and so implicitly in terms of their young adult AH 4 part 1 scores). The diabetics performed significantly worse than their well controls, making the point that, besides affecting life-duration, particular pathologies can effect the rate of decline in performance IQ with age - while leaving verbal IQ comparatively unaffected. It follows that socio-economic conditions that increase the prevalence of pathologies that affect CNS efficiency, or reduce the possibilities for their efficient treatment, will accelerate cognitive ageing in individuals and in communities.

As we have seen, evidence accumulates that, over the last century, improvements in socio-economic conditions have not merely resulted in a great increase in average life expectancy, but apparently also slowed the average rate of cognitive decline across successive generations so that individuals born during the 1930s appear to maintain

ability longer than their predecessors born between 1910 and 1929. Through some of the data supporting these impressions have been drawn from small longitudinal studies (e.g. Schaie and Labouvie-Vief, 1974), most are from cross-sectional comparisons and all represent only average trends. Ideal studies would track cognitive change in large numbers of individuals over long periods of time and attempt to correlate differences in rates of change between individuals with data on heredity, socio-economic conditions and adequacy of lifetime care and medical history. Such information will be extremely laborious to acquire, but until we can obtain it, our conclusions on these crucial issues must remain tentative. At the moment, the best we can do is to develop methodologies which may allow us to estimate from a single testing the relative amounts of cognitive decline which different individuals have suffered. If this is possible, it will be much easier to make preliminary estimates of the relative

Fig. 5  
Distributions of AH 4(1) scores on a population of 168 diabetics and controls individually matched in terms of age, sex, socio-economic background and Mill Hill vocabulary test scores.



impact of factors which we suspect may affect the course of cognitive ageing, and we can begin pilot work which will allow laborious longitudinal studies to be more accurately targeted.

One promising technique for estimating amounts of lifetime change from a single testing derives from Rabbitt's (1986) finding that while scores on performance IQ tests such as the AH 4 parts 1 and 2 steadily declined with group age in contrast, on vocabulary test such as the Mill Hill, very large 50, 60 and 70 years old cohorts not only had identical means scores, but identical distribution of scores. Early in life, Mill Hill scores strongly predict AH 4 test scores. This fact allows us to use elderly individuals' current Mill Hill scores to estimate their young adult AH 4 scores. The discrepancy between current observed and estimated young adult AH 4 test scores thus gives an index of the decrement in AH 4 test performance since youth. When individual cases within the groups evaluated by Rabbitt (1986) were examined, substantial numbers of volunteers aged between 70 and 79 years showed no discrepancy at all between their current observed and youthful estimated IQ test scores. In marked contrast, among the remainder, the absolute sizes of discrepancies in scores varied in terms of a factor of 5 or more. As we have seen, elderly diabetics who were precisely matched with controls in terms of Mill Hill vocabulary scores, and so in terms of young adult performance IQ scores, showed a greater disparity between verbal and performance IQ test scores than did their individually matched controls. The use of atypically large verbal/performance IQ score disparities to identify individuals who have experienced significant changes in cognitive competence allows follow-up studies on much more tractable numbers which may more clearly identify the particular social or physiological factors which may have brought these changes about.

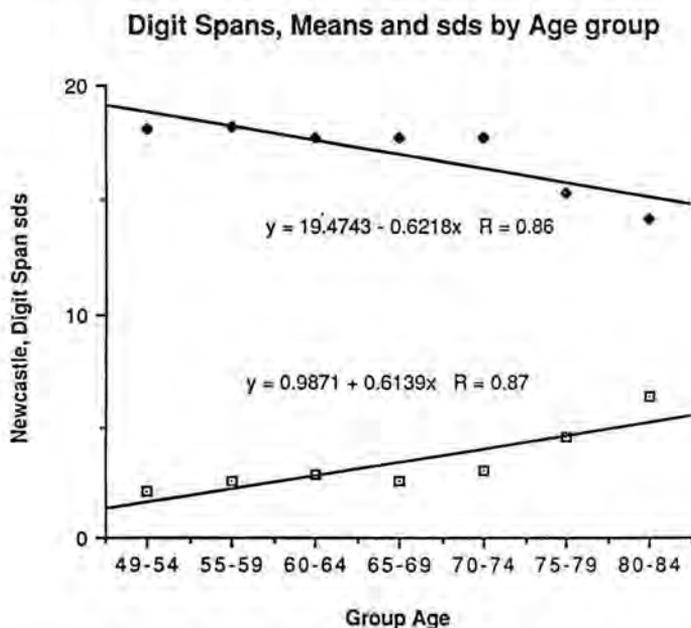
In spite of the obvious margins of error inherent in this technique our data at least show that the universally observed trends of

declining unadjusted IQ test scores between 50 and 80 years show wide variations in rates of cognitive change between individuals, and that part of the variation in these rates of change may be accounted for by the pathologies from which unfortunate individuals may suffer. Looked at in another way, these data do indeed confirm that not merely the overall rate, but the pattern, of cognitive ageing may vary markedly between individuals as a result of the differential resistance to age of "crystallised" in contrast to "fluid" abilities. Some individuals perform very well on tests of vocabulary but very poorly on tests of logical reasoning and of rapid information processing. Others may show no change in either - or equal changes in both. It seems that, in some individuals, highly practised skills may remain as islands of competence in an ebbing sea of general decline.

Another, more direct, check on whether individuals vary in their rates of cognitive ageing is to consider the statistical implications of a situation in which some individuals show little or no change with age while others markedly decline. In this case means of scores on performance test will, of course, decline across successive age groups but these reductions in group means will be accompanied by correlated increases in variance between individuals as increasing age spreads the group across a wider spectrum of performance. Figures 6 a, b and c give data for performance on digit span. In tests of this kind it is crucial to allow even the least able individuals to attain non-zero scores and so to avoid "floor" effects. Accordingly individuals were first given lists of three, then of four then of five digits, and so on, until their span was reached. Scores are total numbers of lists correctly reported. Given this expansion of the scale over which subjects are scored we see that standard deviations of scores between subjects steadily increase while, in contrast, mean scores steadily reduce with cohort age.

Once again this picture of increasing diversity in ability against a trend of average

Fig. 6  
Decline in means and increase in variance of scores on a digit-span for successive groups aged between 50 and 79 years.



decline in competence suggests that individuals do, indeed, markedly vary in their rates of cognitive ageing. This is a very optimistic finding since it provides the first step towards identifying factors that promote cognitive longevity. The knowledge that fortunate individuals who age unusually slowly do actually exist motivates us to identify them and, by *post hoc* research on their biological and social histories, to recognise which factors promote and which interfere with cognitive integrity in later life.

#### Is there anything we can do to mitigate cognitive ageing?

The basis of cognitive change with age must lie in changes in the central nervous system which are, as yet, very poorly described and little understood. However the data we have discussed at least confirm that there is enormous variance in rates of cognitive ageing, and that this variance is partly

accounted for by vectors which we can control. At present our best guess is that when all other factors are kept constant massive hereditary differences will emerge. At the moment we can foresee that even hereditary differences may be controllable by genetic engineering, but this is a distant prospect which we must not allow to distract us from the many other factors which we can already profitably attack. Cognitive change will be slower, the old will live richer, socially more useful and longer lives if we come to grips with the simple evils that have always devastated human existence: illness, ignorance, poverty, hunger and lack of social compassion for the weak.

#### Social implications of research by cognitive gerontologists.

Economists and social scientists are rightly interested in broad trends which affect entire populations, or at least large groups. For

these specialists, descriptions of the minutiae of the experimental paradigms used by cognitive gerontologists, and the functional models for cognitive change which derive from them can only be of peripheral interest. However, if the intellectual style, and aims of cognitive gerontology are better understood, and the extent and limitations of its potential contributions are appreciated, it becomes possible to judge the broader implications of what the discipline can tell us.

For architects of social policy, data from cognitive screenings of very large numbers of individuals offer important messages. The first is that factors that promote longevity also promote increasing duration of cognitive competence. Our data increasingly suggest that a major determinant of variability in lifespan is genetic. Other things being equal, longevity and the maintenance of mental skills that goes with it, seem to be strongly heritable. However other things are not equal, and good fortune in avoiding accident or pathology, in maintaining a healthy life regimen, in access to and use of information about diet, health and exercise, in escaping occupational hazards all contribute at least as much as the prudent choice of parents to capable and useful, as well as lengthy, old age. The crucial point is that it is not merely mortality and demographic statistics which are affected. Factors which allow people to live longer by the same token allow them to remain well in later life and so do not merely extend the duration of their demands on the societies in which they live. They also very greatly enhance the time-span over which they are capable of sustaining their maximum intellectual, social and economic contributions. Thus deliberate, active investment, by any society, in factors which tend towards the prolongation of the lives of its members is not at all a suicidal escalation of the demands which are likely to be made by an unproductive sector of the population. It is rather an extremely prudent conservation of unique intellectual resources.

It is crucial for individuals and for societies to understand that improvements in

the rectangularity of the "continuous decline" functions currently obtained (see Fig 1d) do not merely reflect improvements in the duration, but in the quality of life.

In considering how social policy may be adapted to capitalise upon the resources of ageing populations a second message from cognitive screenings is helpful. For the first time we begin to have objective evidence of an extreme increase in variability between individuals with advancing population age. On any particular skill, differences in attainment between the most and least able 70-years-olds are very much greater than those between the most and least able 50 years olds. This demonstration has obvious and important social consequences when we consider the ages at which individuals may retire from active participation. It is evident that any fixed retirement age must be Procrustian - too late for some, and far too early for others. As the demography of Western Societies rapidly changes this waste of human resources will become increasingly intolerable.

A related, but distinct, social implication can be drawn from accumulating evidence that, *within any individual*, the variance in ability across different skills will markedly increase with age. For each of us, the gap between our best and our worst cognitive performance will steadily increase as we age. Some skills which we practice continually into later life, like vocabulary and the use of language, will remain with us to a very high degree. This will contrast with marked decline in other skills, apparently especially in those concerned with solution of spatial problems. Growing evidence suggests that older members of our societies may maintain to a formidable degree "crystallised" skills which they have spent a lifetime acquiring, and which they maintain by continued use. Thus it is the *patterns*, rather than the *levels* of their competence and their potential social contributions which changes as they grow old.

These two distinct kinds of variability - variability in overall rates of ageing between individuals, and increasing variability in the

levels of performance at individual skills within particular individuals - urgently demand new ideas and structures in framing social policy. To obtain maximum benefits from an ageing population we must abandon unrealistic rigid frameworks which prevent us from capitalising both on unique skills, individuals, and on the unique skills which particular individuals retain. Flexibility, both in terms of decisions about ages of retirement and in terms for career options moulded to changing patterns of abilities is an urgent necessity for Western society. We can no longer afford traditional rigid career trajectories in which an individuals are supposed to reach their maximum contributions shortly before we require them to give up work altogether. There certainly exist societies which have developed roles for the elderly which allow them to maintain their young adult patterns of contributions as long as they can, and then radically to alter these patterns so as to continue to maximise their value to the community. This seems an enlightened use of a considerable resource in contrast to "developed" societies which have not yet been able to imagine a better way to cope with their older members than compulsory leisure.

A further implication of the distinction between "crystallised" and "fluid" intelligence must be taken with caution. We have remarked that older individuals may find it more profitable and satisfying to devote their energies to maintaining skills at which they have attained high proficiency than laboriously to train themselves in radically new achievements. While this may be accepted as a truism, accumulating data make it very clear that it should not be taken as a rigid guideline. It is not only the case that some fortunate individuals appear to gain considerable resources of "crystallised" skills while losing little or nothing in the way of "fluid" capabilities as they age. Such deficits in learning and memory as have unambiguously been demonstrated are also now known to be complex. While most older individuals may take longer to learn new

skills, and while it is likely that their maximum attainments at these new skills will never be as great as they might have been had they mastered them in youth, the benefits of training are nevertheless very real. Individual differences in skilled performance produced by training are, in absolute terms, many times greater as those which can be attributed to age alone (Schneider & Shiffrin 1977; Shiffrin & Schneider 1977). The levels of new attainment which may be gained by the elderly are now seen to be much greater than has been supposed. More importantly it is increasingly clear that while older individuals may take longer to master a skill, they do not forget it faster than they did when they were young. For older individuals to educate themselves in new skills is by no means laboriously to "write on the water", acquiring expertise which is as transitory as it is mediocre. Investments in new skills can be as valid, and as rewarding in old age as in youth.

A final issue is that of the importance, in old age, of self-awareness and of self-monitoring. It must be borne in mind that accurate self-monitoring is necessary not only to detect failing competence but to explode the illusion of early cognitive decline. Holland & Rabbitt's (1990) investigations show that older people may rate themselves as being better than they actually are, thus suggesting that they can be dangerously unaware of insidious, but gross, perceptual decline. It is necessary to put this in the context of Abson & Rabbitt's (1990) findings that on self-ratings of cognitive competence individuals in their 50s, and older individuals with higher IQs, tend to rate themselves as *worse* than they actually are. In older populations both illusions of competence and illusions of incompetence exist, and are equally undesirable. Enhanced objective feedback on actual levels of competence is as vital to prevent individuals from unnecessary capitulations to illusions of cognitive ageing as to inhibit them from undertaking activities that they should no longer safely attempt. Like societies, individuals must learn to make

regular, and objective, appraisals of their cognitive resources, and gladly accept the vitality of a rich variety in patterns of living and of contributions to life.

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## Issues for Predicting the Health of the Elderly

### Abstract

In this paper we consider the extent to which we can anticipate changes in the health profiles and likely experience of future generations of the elderly. We evaluate the extremely limited evidence on the changing health and morbidity of previous generations and younger generations to see whether any clear trends emerge as the basis for future estimates. We draw attention to the importance of age, cohort and period models in evaluating the available data. Finally we consider the implications for morbidity of changes in mortality patterns. Each of these elements separately and together determines the degree of predictability of future health patterns. The emphasis is on the overall burden of ill health of the population and the balance between broad categories of conditions rather than on the aetiology of particular conditions.

### Introduction

#### *Quantitative and qualitative aspects of the debate*

The single most compelling and most frequently documented fact about the populations of Western societies is the dramatic increase in the proportions and absolute numbers of the elderly (Olshansky and Ault 1986; Rice and Feldman 1983;

OECD 1988). These demographic changes are largely driven by events and transitions which occurred early in the century and are of such magnitude that they are likely to be the major determinant of changes in the overall quantity of ill health for the foreseeable future. A focus on future demands on the health services would direct attention primarily to increasing proportions of the very elderly where dependency is concentrated and the greatest demands are generated (Milbank Memorial Fund Quarterly 1985;63/2).

Brody (1985) gives some illustrative examples of the magnitude of changes to be expected as a result of these demographic shifts. In the U.S. in 1980, there were 200.000 elderly persons who experienced hip fractures; by the year 2000 this is expected to rise to 330.600 and by 2050 to 650.000. In 1980 an estimated 2.000.000 showed symptoms of Alzheimer's disease; this is expected to rise to 3.800.000 by the end of the century and to a massive figure of 8.500.000 by 2050, 5.000.000 of them aged over 85. In any discussion of population health in the future these major demographically driven trends need to be kept firmly in mind.

In this paper we have left these calculations to one side and instead analyse recent changes in the prevalence, composition and severity of health as experienced through middle age and beyond into old age. It has been argued that recent fundamental changes in morbidity and mortality patterns can be observed to be taking place, which serve to modify the brute changes due to demography alone and soften the apparently pessimistic vision of the future which they suggest (Fries and Crapo 1981; Palmore 1985; Fries 1988). The arguments and data which we present relate exclusively to the developed economies. The evidence comes from a limited number of sources. While virtually all industrialised societies have evolved systems for recording mortality, very few collect information on morbidity at a national level for other than a few selected

morbid conditions (Alderson 1988).

Blaxter (1989) has drawn attention to the difficulty in comparing morbidity across Europe. This stems in part from practical difficulties in finding comparable indicators, but also because health, in any other than the narrowest biomedical definition, has strong cultural and social determinants. While there may be no good morbidity data, international analysis of mortality shows large differences in cause-specific death rates and therefore provides an indirect suggestion that underlying morbidity might also show strong differences (Manton 1984). Having set out to investigate class inequalities in mortality patterns in a variety of European societies Leclerc (1989) concludes: "The probability of dying from one given cause of death can probably be more accurately predicted by the country where a person lives, than by whether or not he belongs to a given social class."

The data presented here are therefore indicative; we do not imply an universal pattern. Arguments and conclusions about the size, rapidity and importance of change are greatly affected by the time-perspective adopted. If we consider the entire span of the twentieth century, then for Western countries we are confronting a period of massive transformation. Demographers have characterised it as a unique epidemiologic transition, consisting of three distinct stages. We have moved from the "Age of Pestilence and Famine" via the "Age of Receding Pandemics" to the "Age of Degenerative and Man-Made Disease" (Omran 1971). In less colourful terms, we have seen a massive drop in death rates and a dramatic extension in life expectancy primarily driven by the virtual extinction in Western societies of the previously rampant major infectious diseases. The inevitable outcome has been a huge upward shift in the age pyramid and the emergence of the chronic degenerative diseases of middle and old age as the major elements in morbidity and mortality. On this scale we observe unprecedented qualitative change in a relatively short space of time.

The interesting question is whether we have reached the end of the process or whether we can expect further significant transformations in the future.

To many observers in the 60s and 70s it did seem as if a new equilibrium had been reached, with mortality restricted to the middle and late years and resulting from relatively intractable chronic disease states. It seemed there was little scope for further change or improvement. Population predictions were made on this basis and they were wrong (Olshansky 1988). Starting in the mid-60s, the U.S.A. and a number of other developed countries began to experience further, and unpredicted declines in mortality in middle age. Most recently similar declines appear to have occurred in the oldest old (Manton and Soldo 1985). These gains are due largely to declining death rates in the circulatory diseases, although many other common degenerative illnesses do show some improvement. Olshansky and Ault (1986) considered these developments dramatic enough to talk about the emergence of a fourth, qualitatively different, epidemiologic era characterised as the "Age of Delayed Degenerative Disease."

While we have some sense of the pattern of mortality over time, we seem to know almost nothing about corresponding morbidity. In the absence of substantial data, observers have made wildly differing assertions about likely developments. Much of the recent debate on patterns of morbidity in the elderly has centred round the controversial writing of James Fries. He represents the extreme of optimism as he contends that, against a finite human life span and a "compression of morbidity" onset to the very last years of life, we can look forward to a time when chronic illness is postponed and the typical life span is predominantly disease-free. Others have argued the contrary, that given the general association between age and increased morbidity, as causes of premature death are removed, the larger surviving population will simply be proportionately older and suffer

more of the existing chronic ailment over a longer period of time; existing health problems are projected into the future on a magnified scale (Gruenberg 1977; Kramer 1981; Sneider and Brody 1983; Riley 1989).

We will return to the details of these debates later, we merely note at this point that these are predictions still painted on a very broad historical canvas. Long-term future predictions are derived from underlying theoretical models of the relationship between mortality and morbidity, drawing generally on accurate mortality data, but utilising only thin strands of information on changing morbidity.

### *Estimating morbidity*

We begin by shortening our focus to empirically observed recent trends in health, which might allow us to form short or medium term predictions about changing health patterns. This is less exciting than debating sweeping theories, but it is a necessary starting point and a useful corrective to overgeneralisation.

Evidence is so thin that Manton (1982) has argued that currently we can only utilise mortality data to explore changing patterns of health. At the same time, he emphasises the vital importance of developing good databased models of the relationship of morbidity, disability and mortality if we are to have any real insight into underlying processes and future projections. Blaxter (1989) provides indirect evidence of the independence of mortality and morbidity rates, cross-nationally and within class and sex subgroups of the population, and argues for the necessity to use morbidity rates rather than mortality as indicators of differential health and health inequalities in advanced countries, which share generally high life expectancies.

Verbrugge (1986) looks at the distributions of symptoms, acute and chronic health problems and causes of death at various stages in the life-cycle. She concludes

that for the young there is little connection between everyday health and the commonest causes of death, by middle age the potentially fatal diseases begin to compromise daily health and appear as causes of some of the most frequently experienced symptoms and conditions along with other non-fatal conditions, while for the elderly there is a higher but by no means complete correspondence between predominant health problems and the commonest causes of death. A Nuffield Provincial Hospitals Trust working party carefully considered the extent to which mortality data can be utilised as a surrogate for morbidity data for planning purposes, and concluded that it is only demonstrably valid for a small class of diseases with high case fatality (Ashley and McLachlan 1985).

### *Morbidity and self-reported health measures*

In considering morbidity we do have a large number of cross-sectional estimates of morbidity from one-off population surveys, and we have a quite a number of longitudinal studies, often of specific conditions such as heart disease (Blaxter 1986). But what we need are time series data on the general health of successive cohorts at each age in a population, using comparable methodologies and definitions. Because this sort of monitoring requires a long term perspective, and the data are expensive to collect, it is scarce. None of the data sources are ideal, but it nevertheless seems worth drawing together what data we can from published sources. (Alderson 1988) attempts a comprehensive list of possible sources. We concentrate on conditions which are potentially life-threatening, or chronic and capable of producing long-term disability or discomfort, on the enduring health status of the population, rather than on transient acute episodes.

There is one very important caveat about the commonly utilised data sources. They are all based on self-reported measures of health

rather than on clinical investigation. While there is no absolute dichotomy in validity between "medically" identified and self-identified conditions, different approaches to the clinical evaluation of health give differing results, and self-reports can be made more accurate by careful methodology. The particular problems inherent in self reported data are fairly evident (Taylor 1981). The relatively few studies which have compared self-reports of health conditions with clinical investigations or clinical records show a modest level of agreement. Usually, less than half the conditions uncovered by clinical investigation are self-reported, while about a third of self-reported conditions are not matched by clinical evaluation (Trussell and Elinson 1959a; Trussell and Elinson 1959b; U.S. National Centre for Health Statistics 1965).

This is not to say that the subjective element in self-reporting is in a simple sense error. A number of studies have shown that the subjective aspect of self-reported health carries important information, which is not captured by the clinical account of current health status. Maddox and Douglas (1973) in the *Duke Longitudinal Ageing Study* found that self-rated health was a good predictor of subsequent physicians' rating of health, while physicians rating was a poor predictor of self-rating at a later point in time. Recently, Idler et al. (1990) have shown that self-rated health is a strong independent predictor of mortality even when current health status is controlled. When we look at data on health, based on self-reports collected over time, we need to be aware that observed changes may be due to a number of major artefacts in addition to any real underlying change in health status. Firstly, there may be changes due to differences in question wording. The major data sets we consider minimise this problem by consistent question wording, but there may of course be subtle changes over time in the way that people respond to particular wording. Secondly, there might be broad secular trends in the propensity to report ill health based on a changing level of

tolerance and changing lay definitions of health and illness.

This variation in reporting might be variable between conditions. Cultural changes, changes in medical practice and media attention periodically "discover" and emphasise new or different conditions, while other illnesses become unfashionable. It is nevertheless worth considering trend data in self-reported health. We have no other substantial evidence on trends and many previous authors have based quite strong claims on data of this sort.

### **The empirical pattern of the recent past**

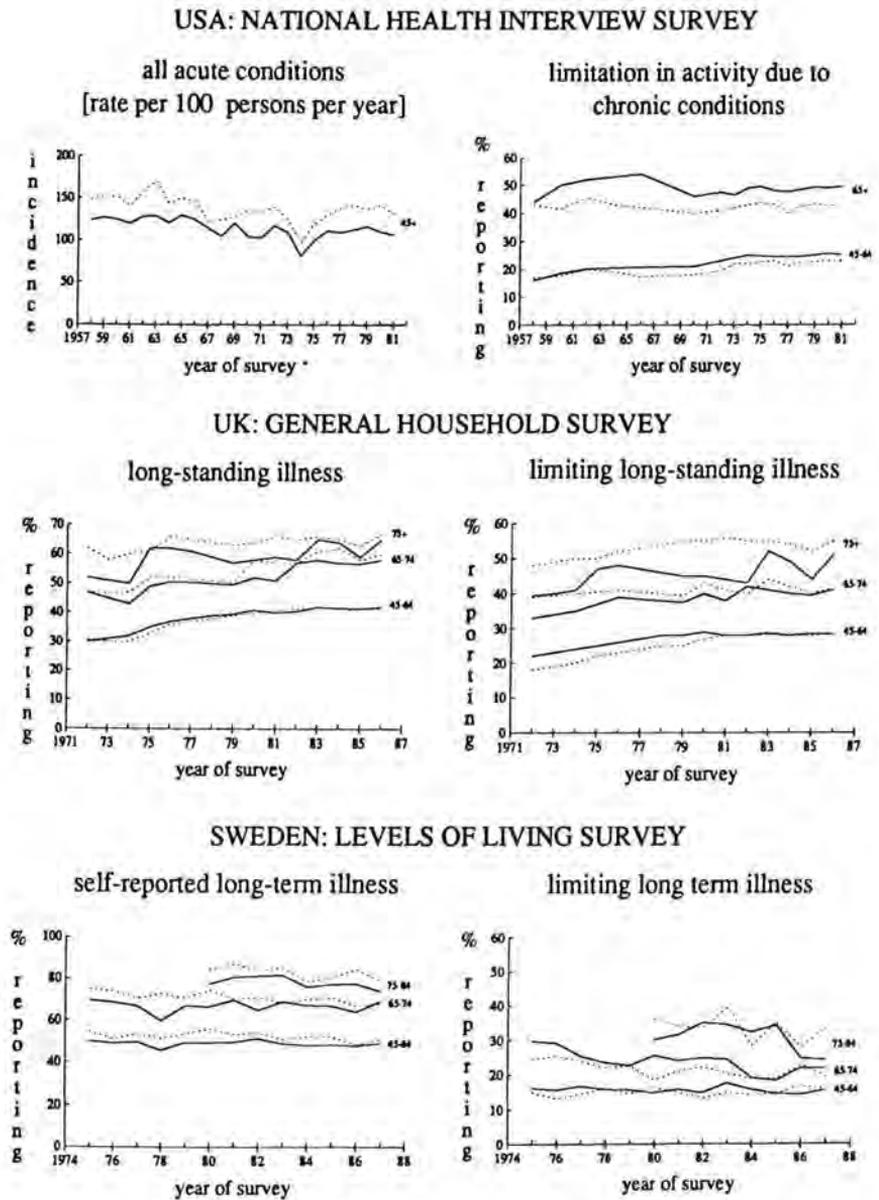
There are four basic questions we can address. We can consider changes in the overall incidence of chronic or serious illness in general and at various stages of the life cycle; we can look at the changing mix of morbidity; we can ask what implications observed changes make or might make to the illness experience of the population; and finally, we can look at changing health service demands generated. The later point is not addressed in this paper.

#### *Trends from time-series data*

Considering first the total quantity of ill health, Verbrugge has analyzed U.S. data from the *National Health Interview Survey* (Verbrugge 1984). This annual survey was initiated in 1957 and provides the longest available time-series of self-reported health indicators. It contains measures of acute and chronic morbidity, restricted activity and long term limitation. The basic patterns are represented in fig. 1.

Acute episodes alone show a general, although not dramatic, decline for the population aged 45 plus. The method of data collection prevents a direct estimation of prevalence of reported chronic ill health. However, we can look at patterns of restriction and limitation due to chronic ill

Fig. 1:  
International self-reported morbidity indicators



health. We see quite consistent trends. Rates for the elderly generally run at about double those for the middle-aged. The figures seem to run pretty much in parallel, with little suggestion of any decline in illness in the middle-aged group, which would lead to a divergence of the lines as the rates for the middle-aged fell. It is difficult to make definitive statements about trends by eyeballing graphs, but they all seem to be flat or rising. There may be some suggestion of a dip between 1958 and 1970 for some groups, but in every case these have shown a consistent flat or rising trend thereafter. If there has been any trend in limiting illness it has been upward for both age groups.

Women are consistently worse than men, which is part of a different story.

In Britain, *the General Household Survey* provides information over a shorter time period. The data are also presented in fig. 1. These figures show very similar trends. For prevalence of longstanding illness and limiting illness, there are quite strong upward gradients. These appear to be larger than in the U.S. data, but the time period corresponds with the second half of the U.S. time series when a generally upward trend is also discernible. Here the data are presented for three age bands and again they run strikingly in parallel, suggesting no alteration in the relative distribution of illness between the age groups.

*The Swedish Levels of Living Survey* suggests a different pattern. The graphs show changes between 1975 and 1987. Tests of significance based on fitted linear trends are reported between 1975 and 1985 (Vogel et al. 1988). The trends are downward for both measures shown for all age/sex combinations except long-term illness for men aged 65 to 74. The trends are statistically significant at the 95 percent level for long-term illness in women aged 65-74 and for impaired working in both men and women of the same age but not for the other combinations (for those not employed, a definition of impaired daily activities was substituted for impaired working. Significance levels are not reported

for the oldest group). Finally, decennial surveys conducted in France in 1970 and 1980 showed an increase from 64% to 82% respondents reporting "some illness", although this is likely to be an overestimate due to changed question format (Aiach and Curtis 1988).

Is there any shift in the illnesses experienced between groups or over time? In two out of three countries, for which we present data, there has been a clear increase in the propensity to report illness and consequent activity limitation. There is some indication that the French data show a similar increase.

### *Changing composition of illness*

The next question we would wish to address is whether there is any change in the nature and composition of that reported illness? Satisfactory data here are even less easily obtained. In addition to the fact that there is very little available, the interpretation of apparent changes in particular health problems are crucially affected by the level of aggregation of the data and the categorisation used. Conclusions should be treated cautiously.

The best data again come from Verbrugge. She has assembled tables from various sources covering self-reported disease prevalence the U.S. in the years 1968 to 1979. This quite elderly data cover quite a short time period. It is nevertheless worth examining to gain an impression of just how volatile, or otherwise, the health mix might be over a short time interval and to get some impression of any redistribution of health which might have occurred. It is worth remembering that it was precisely during this period that Fries put forward claims to have detected an emergent and dramatic change in the trajectory of ageing. Table 1 presents data from Verbrugge in a simplified form.

Verbrugge makes a distinction between potential killer and non-killer diseases which we reproduce in the tables. The rank

**Table 1:**  
Mortality change in the U.S 1968 to 1979

Killer diseases	MALES 45-64		MALES 65+		FEMALES 45-64		FEMALES 65+	
	A	B	A	B	A	B	A	B
Diabetes	1.54	+58	1.24	+22	1.53	+24	-0.74	-8
Diseases of the heart	3.44	+35	6.64	+33	4.45	+55	1.42	+12
Hypertension	10.16	+100	17.38	+123	7.54	+50	19.33	+80
Cerebrovascular	0.16	+13	-13.90	-20	0.68	+65	-0.39	-9
Arteriosclerosis	-	-	9.15	+305	-	-	10.32	+151
Bronchitis	0.50	0	-1.10	-23	-0.42	0	1.51	+11
Emphysema	0.69	+21	0.94	+16	1.13	+174	1.25	+109
Asthma	-0.15	0	-2.05	-48	0.33	0	-1.10	-35
Hernia	1.58	+46	-	-	0.55	+24	1.43	+34
Cirrhosis	0.34	+60	-0.19	-41	0.18	+56	-0.08	-47
Nephritis	-0.74	-31	-0.85	-19	-0.89	-16	-0.08	0
<u>Non-killer diseases</u>								
Varicose veins	-0.97	-29	1.55	-29	-3.34	-30	0.25	0
Memorrhoids	-1.92	-24	1.31	-9	-1.13	-14	-0.45	-6
Sinusitis	1.39	+9	1.39	+11	4.54	+27	2.40	+16
Hay fever	1.64	+40	0.91	+26	1.81	+30	1.64	+43
Peptic Ulcer	-1.13	-25	-1.72	+55	0.31	0	1.74	+79
Upper gastrointestinal	1.07	+42	0.15	0	0.41	+19	-1.11	-27
Constipation	-0.68	-35	-2.10	-34	-0.94	-19	-4.23	-35
Eczema and skin	1.18	+59	0.96	+46	0.69	+19	-0.44	0
Corns	-2.70	-54	-3.36	-55	-5.75	-50	-6.92	-48
Arthritis	4.04	+27	6.76	+24	5.62	+22	5.43	+12
Gout	1.07	+62	1.44	+74	0.37	+49	1.49	+106
Other Musculoskeletal	0.89	+24	-0.63	-26	1.59	+39	1.39	+46
Vision	0.08	0	-6.33	-35	-1.00	-19	-10.28	-47
Hearing	0.76	0	-1.14	0	0.26	0	-1.27	0
Back and spine	0.36	0	2.20	+40	0.89	+13	3.27	+43
Lower limb	-1.43	-26	-1.73	-26	-1.15	-25	-2.88	-32
Paralysis	-0.38	-32	-0.74	-27	-0.43	-45	-0.15	0

A absolute change in incidence    B percentage change in incidence

ordering by prevalence of these conditions is broadly similar for both middle-aged and elderly and for males and females (data not shown here). The ordering is also stable over time; there is little indication of a shift in the health problems experienced between age/sex combinations.

The tables are fairly indigestible, but there do seem to be clear patterns. Considering the columns marked B we see substantial percentage increase in the incidence of many conditions and importantly, many of these are the commonest conditions. Among the killer diseases, diseases of the circulatory system show consistent and usually large increases across age/sex categories, with the exception of cerebrovascular disease which decreases in both elderly males and females. Neoplasms are not shown here, but we know that they show an upward trend for total incidence and also for many specific forms in most industrial societies over this period. Hernia increases for all groups for whom there are data, while diabetes also shows a strong upward trend for all but elderly females. Cirrhosis increases for the middle-aged while decreasing for the elderly. Of the respiratory conditions, emphysema increases while bronchitis shows a mixed pattern. Only asthma, along with nephritis and nephrosis show a general decline. The picture is one of sizable overall increase in this group of conditions and it is important to note that the percentage changes for middle-aged and elderly, usually move in parallel. There is little evidence of morbidity declines for particular conditions in middle age, but not in old age, with the implication of delayed onset of chronic ill health.

The non-killer diseases reported by Verbrugge are a curious mixture of conditions, symptoms and impairments. It is less easy to infer an overall trend as there are some quite sizable shifts, but for many conditions these go in opposite directions for different subgroups in ways that hard to interpret. Looking at the columns marked B, we see the absolute percentage difference in

prevalence caused by the proportionate shifts reported already discussed. That is, it takes note of initially very different prevalence rates between different age/sex cohorts.

The overall changing health experience of these cohorts is dominated by changes in already prevalent conditions. In the killer categories we see, as might be expected, that the circulatory diseases show far bigger absolute changes than any other categories. Diseases of the heart, hypertension, and arteriosclerosis (only shown for the elderly) show very large percentage increases, while on the other hand, cerebrovascular disease shows a big drop, but only for middle-aged men. Other significant increases are in diabetes for middle-aged men and younger women and emphysema for elderly women. Only asthma shows sizable drops in any cohorts.

In the non-fatal conditions, arthritis shows by far the biggest increase. The other musculoskeletal conditions also tend to show quite large increases as do hay fever and sinusitis. Varicose veins, haemorrhoids, constipation, corns and problems of the lower limbs are declining. Peptic ulcers are declining for men but increasing for women. Vision and hearing are hard to interpret since it is not clear whether the rates include some or all medically-corrected conditions. The high rates reported for the sensory conditions make this seem likely.

#### *Summary of time-series changes in composition of illness*

Overall what we seem to observe is the following:

1. A picture dominated by large proportionate and absolute changes in circulatory diseases. These are probably the only changes affecting a sufficient proportion of the population to lead to talk of qualitative transitions in population health.

2. Sizable, but less dramatic increases in arthritis, already the leading disease of women and older men - almost a slow epidemic - which taken with increases in the other musculoskeletal diseases is likely to have widespread implications for population health and functioning, especially of older segments of the population.
  3. Substantial declines in some previously common conditions such as varicose veins, haemorrhoids, constipation and corns, which together we might reasonably describe as diseases of discomfort rather than limitation.
  4. In general, these first three groups show consistent trends across age/sex sub-groupings. There is no indication of major redistribution of ill health between age groups, only a secular tendency to increase or decrease.
  5. Major proportionate changes in some conditions, which suggest likely trends for these particular conditions and might have major implications for the health of subgroups and pose particular management problems, but which still have relatively low population incidence and therefore show fairly small absolute changes. Some of these, such as gout, show consistent secular trends, while others, such as peptic ulcers, have complicated sex or age differences. Taken together these tend to "cancel out" in their effect on total chronic health, and it would probably be wrong to make strong predictions about them individually on the basis of this type and quality of data.
- Verbrugge argues that "signs of increasing morbidity far exceed signs of decreasing morbidity or no change." If we view the data setting aside the circulatory diseases, it seems less certain that we would clearly see a pattern of increase. We might instead perceive fairly large movements between conditions but no overall increase or

decrease. We have to guard against letting a major but localised set of changes colour our perception of the entire set of conditions. It is also critical to remember that these are self-reported data and that changes are affected both by underlying changes in incidence and by factors affecting propensity to report them.

### *Subjective experience of illnesses*

How important might these changes be for peoples' experience of health? The increases reported might well be due to an increased tendency over time to report relatively trivial problems, with consequently little significance for health experience. In the *West of Scotland Twenty-07 Study*, currently being conducted by the Medical Research Council in Glasgow, a group of 1600 middle-aged people were asked about chronic ill health. Information was collected on the self-reported degree of limitation and pain associated with particular chronic health conditions. In table 2 we report the patterns for the most frequently reported conditions, where possible reproducing Verbrugge's categories. The table shows the percentage experiencing any limitation, the percentage experiencing serious limitation (that is, reporting that the condition limited their activities quite a lot or a very great deal), the percentage experiencing pain associated with the condition and the percent reporting severe pain.

The majority of conditions cause both limitation (60%) and pain (67%), but only 22% report severe limitation with, perhaps surprisingly, 26% experiencing severe pain. If we examine first the "killer diseases", starting with circulatory diseases other than hypertension, we see that they are high on mild and severe limitation, the angina/"heart attack" category has disproportionate severe pain, while stroke and other heart conditions have below-average pain. Hypertension causes little limitation or pain. Arteriosclerosis appears here under "other

Table 2:  
Percent experiencing limitation and pain for selected conditions

	any limitation	severe limitation	any pain	severe pain
<b>Killer diseases</b>	50	20	40	-
Diabetes	82	50	89	37
Heart attack/angina	86	29	61	13
Other heart	29	7	34	7
Hypertension	65	35	29	-
Stroke	64	27	77	24
Bronchitis	42	16	84	22
Other respiratory	80	28	80	25
<b>Mixed categories including killers</b>				
Other blood vessel	77	33	85	38
Stomach ulcer	42	8	86	29
Other digestive	49	4	78	41
<b>Non killers</b>				
Varicose veins	58	19	88	15
Skin	32	14	65	27
Arthritis	70	25	98	48
Other bones/joints	83	33	97	26
Cataract/blindness	75	21	25	-
Deafness	72	31	21	-
Back problems	82	34	98	48

Source: West of Scotland Twenty-07 Study

blood vessel" disorders, which also shows a pattern of high limitation and high pain. Diabetes is low on both. These are all diseases which are increasing in the Verbrugge data. The respiratory diseases show a pattern of high severe limitation and average or high pain. Hernia is aggregated with ulcer, while cirrhosis disappears into other digestive. The digestive categories all show the same pattern of low limitation and high pain.

Of the "non-killer" diseases the musculoskeletal conditions showed by far the biggest increases and they are the conditions showing the most severe combination of reported limitation and pain. The other conditions which increased in the American study, sinusitis and hay fever, are treated as symptoms in the Glasgow study and do not appear here. Similarly, the conditions showing large decrease in Verbrugge only appear in small numbers due to differences in methodology. Varicose veins and haemorrhoids (piles) are low on limitation and high only on mild pain. For the most part, those conditions which increased most in the U.S. study show high limitation or pain or both. Only hypertension, of the rapidly increasing conditions, is relatively benign in

its day to day manifestation. Diabetes is also benign. The conclusion is that the quantitative increase in chronic ill health also seems to be concentrated on these conditions, which are qualitatively experienced as the most unpleasant.

#### *Time-series statistics: conclusions*

We have expended rather a lot of energy to identify trends in some unsatisfactory data. However, the trends mainly seem to lead in the same direction and we can make the following statements with some confidence.

1. The total occurrence of self reported chronic illness has shown no decline and has probably been increasing both in the U.S. and in Britain and probably also in France over the last two or three decades. Only Sweden shows an overall improvement in experienced health.
2. In the U.S., this process has not been accompanied by any major redistribution in chronic disability within the lifespan. Both middle-aged and elderly people show similar patterns of change.

3. Also in the U.S., there have been sizable increases in the reporting of circulatory and musculoskeletal disease and there is every reason to believe that these increases will have been accompanied by an increasing burden of experienced limitation and pain (a study conducted in Aberdeen, Scotland in 1958 found that 13% of men and 19% of women aged 60-69 reported arthritis. In a second study of the same age group carried out in 1980, the figures were respectively 40% and 49%).

Any straight-line extrapolation from this data would have to strike a pessimistic note. However, the lesson of the circulatory diseases is that unpredicted major changes in both mortality and morbidity can occur in relatively short time-periods and we need to think about the likely stability of observed trends over time. A useful framework within which we can do this, is provided by the Age, Period and Cohort [APC] model.

### Age, Period and Cohort

Previous authors have drawn attention to the importance of understanding changing characteristics of successive birth cohorts if we wish to make predictions about future health (Bury 1988). Discursively we can identify successive groups born under different circumstances, attaining different levels of education, adopting different habits and lifestyles and differentially subject to traumas of war, recession and the ills of human society. Intuitively we feel we know that they are going to have different health and disease profiles as a consequence. We need to know how the coming generations will differ from those which went before.

It is equally clear that we live in a changing world. There are a multitude of medical, social, behavioural and scientific developments and external and contingent events which are likely to affect and modify health in any future population of the elderly in potentially important ways. We find it

useful to think of three conceptually distinct influences.

### *Decomposing change*

Ageing effects are considered to be those invariant changes, in mid- and later life generally decrements, which the average organism experiences with passing time. Being fixed they provide the given element in the ageing trajectory.

Cohort effects are due to the accumulated lifetime differences between successive generations. To the extent that these experiences become crystallised properties of an age cohort, they can form a reasonably firm basis for predicting departures from earlier experiences. Changes due to cohort differences once fixed, will be present over a long period, affecting illness patterns as any particular cohort moves through the age structure.

Period effects are, in the nature of things, less predictable. They are not present to be observed in the patterns of past health, but are due to external "environmental" influences. Who could have predicted AIDS and who can read the mind of a Minister of Health? Unfortunately, while these three effects appear to have conceptual clarity, it is much more difficult to identify their relative importance in observed data.

### *Change and research designs*

Typically, in a cross-sectional study, most measures of morbidity or functional limitation rise with age. Older groups will be consistently worse than younger groups. We might therefore conclude that these deteriorations are an inevitable concomitant of ageing. It is equally possible, however, that on some or all of the measures, the older groups had a shared set of experiences, which affected them adversely and caused them to experience worse health in old age. This cohort property is not shared by the younger

groups and they will not follow the same path of decline, but will be healthier in old age.

The problem is, of course, that any observed gradient might consist of a combination of both these influences and unless we have other information which allows us to quantify one of the effects, we cannot decompose the observed gradient into the two constituent components. This matters, since, as we can see, they lead to different expectations for future health.

In a longitudinal design any changes we observe could again result from a combination of two factors. The respondents have grown older and have been subjected to ageing experiences, but the measurements have been made at different points of time and the changes we observe might be due to causally relevant secular changes occurring during that period.

In trend data where we look at the same age group but at successive time points, changes in the data confound cohort and period effects, since we are comparing data on different cohorts measured at different historical moments and either or both could affect any differences we see. Conclusions from the trend data presented above need to be thus qualified.

### *Applying APC models*

A very large amount of effort has gone into devising statistical methods of disentangling these three effects, these cannot be described here. Complex designs which embody elements of cross-sectional, longitudinal and time-series observations can help with interpretation, but unfortunately, as Schaie, Palmore and many others have shown, under any research design the changes we observe will always be a combination of these underlying effects and there is in principle no method of separating them out except by making simplifying assumptions, however complex a statistical model is employed (Palmore 1976; Schaie 1965; Goldstein 1979).

A handful of brave souls have attempted to apply APC analysis directly to morbidity data and make predictions about the relative importance of each of these effects and their implications. Haug and Folmar (1986) analyze data from two waves of the *Cleveland GAO Study* of individuals over 65 in three age bands. One of their aims was to investigate whether "cohort membership or the ageing process (is) more likely to account for variability in quality of life among subgroups of the elderly."

Using indicators of cognitive impairment, psychological distress, self-assessed health, interviewer-rated health and activities of daily living, they come to the following conclusions. Both cognitive functioning and psychological distress show ageing declines, there is some indication of cohort effects on cognitive functioning for the oldest age band and males show more age decline than do females on psychological distress but without cohort differences being apparent. Self-assessed health, interviewer-rated health and Activities of Daily Living (ADL) measures show both ageing and cohort effects. The overall conclusion they reach is that, "while cohort differences exist, the ageing process exerts the main influence on quality of life." It is hard to know how much faith to place in this conclusion since their analysis is ad hoc, relying on simple comparisons of the observed cross-sectional and longitudinal changes, and ignoring the confounding due to the underlying effects described above.

Palmore (1986) applies APC analysis to data from the *U.S. National Health Interview Survey* for persons over 65 years old. He takes as indicators: days of restricted activity, days of bed disability, injuries, acute conditions, mild visual impairment and hearing impairment. Between 1961 and 1981, injuries, visual and hearing impairments increase, while bed disability, acute conditions and severe visual impairments decrease. By taking the ratio of the occurrence of each indicator in the elderly only to the occurrence at all ages, Palmore argues that period effects are controlled. He can therefore separate age

and cohort effects in the data, since each observed change is the result of only one effect. All the ratios show a downward trend over the period and since he believes he has controlled for period effects, this can only be a consequence of relative cohort changes. For those indicators where the absolute trend is also downward, it is possible to argue that the elderly are enjoying relatively better health. Where the absolute trend is upward, the decreasing ratios could only be produced by an even larger increase in the all-age figure. He dismisses this pattern as being due to artefacts of the data, since he believes that "it is highly unlikely that illness and disability among all persons actually increased over the past 20 years." On the basis of these findings he argues that: "this finding has profound implications for gerontology (...) professionals need not fear that the increasing numbers of elders will be compounded by increased illness and disability."

Again, it is hard to accept this conclusion. The majority of his data suggest that in absolute terms the elderly are getting sicker and the younger groups are getting sicker more quickly. Presumably, as they age they can only become worse than the current population of elderly. The analysis also points to the danger of analysis based only on selected indicators and two time-points. The Verbrugge presentation of the same data source clearly shows that the majority of a broader selection of indicators show decline and that most of the trend graphs show quite large year-by-year fluctuation, making a two time-point interpretation of small changes extremely unstable.

#### *Identifying the limitations of APC models*

Schaie (1981) provides a summary of decades of work on psychological functioning and personality changes in mid- and late life. He emphasises the different impression given by cross-sectional and longitudinal research. In general, fairly large age differences which appear cross-sectionally, are much less

evident in longitudinal research, suggesting that the apparent ageing effects are in fact cohort differences. He states that: "most age differences reported in the ageing literature can probably be more parsimoniously interpreted to be generational differences."

There are age-invariant changes in vision, hearing, perceptual speed, energy, arousal level and cardiovascular efficiency, all of which affect psychological functioning. There are also age declines in intelligence and cognitive functioning but these are variable for different components of intelligence and are relatively slight for most dimensions until late in the life span. Apparent changes in performance capabilities usually have more to do with secular changes in the relevance of acquired skills, than decremental changes in the individual, that is they are essentially period effects. He argues that: "much of the literature on intellectual change in adulthood in the past has been based on cross-sectional data that have exaggerated generational differences such as educational levels, nutritional histories and the like."

Equally importantly, he argues that most of the changes he discusses are sufficiently small to be within the adaptive range of the individual and can be expected to have little behavioural impact until the eighth decade of life. The following conclusions seem to be warranted:

1. We cannot ignore the problem of the confounding of APC effects in trying to interpret any trends in cross-sectional, longitudinal or time-series data. Most of us have a general perception of the problem, but we tend to gloss over it, often implicitly setting one of the effects to zero in order to interpret an observed change as being solely due to ageing or to cohort succession or historical changes, without explicitly considering how reasonable this is. We need to have these issues firmly in the forefront of our minds.

To take a single example, we would probably wish to argue that the apparent

dramatic increase in hypertension in the Verbrugge data is an artefact of changing medical practice. The data does not tell us this, and the figure might equally well contain real changes in the incidence of the condition. We need further information of a different sort.

2. The formal statistical models, which have been developed to deal with the problem, have, for the most part, run far ahead of the data sets to which they might be applied. Even the most sophisticated models are hedged with qualifications and subject to some variant of the confounding of effects described in simple terms above. Attempts to apply any formal APC analysis to general health and disability data seem to have been dismal failures. This is likely to be the case into the foreseeable future.
3. Careful consideration of a wide range of data utilising different data collection strategies within a general awareness of the APC issue, such as that carried out by Schaie, can, however, lead to useful generalisations.
4. Available evidence gives us no reason to echo Palmore's general optimism over the future physical health of the elderly, but if Schaie is correct then the elderly without pathology are likely to show more robust psychological profiles and as a consequence may be more able to adapt and adjust.

#### *Applying APC-models to morbidity data*

It is clear that we lack the sort of dense continuous information which would allow us to apply formal APC models to morbidity data. There are useful insights to be gained though from looking at mortality patterns where, with the usual caveats about death certification practices, good-quality information is available over a long period of time. We can, for example, make reasonably

confident predictions about the importance of cohort changes in the incidence of lung cancer. Inspection of age-specific mortality graphs in the U.K. clearly demonstrate cohort effects for men with little sign of period changes, while females show no such effects at this point in time (Alderson and Ashwood 1985). Setting this data along with trend data in smoking, we can make reasonably confident predictions about differential future trends for the two sexes. We can expect between a two- and fourfold decline for men over the next 30 years, with estimates for females showing at best an unchanged incidence and at worst a threefold increase over this period. This gives us some idea of the likely morbidity associated with the condition.

Lung cancer has a very clearly understood aetiology. Our ability to make specific predictions is usually critically dependent on both our knowledge of the relevant risk factors and the existence of reliable time-series data for these risk factors. It is generally held that changes in U.S. patterns of circulatory deaths are due to changes in a network of behavioural risk factors, including smoking, exercise and diet along with control of obesity and hypertension, although the exact relationships are contested. These are usually conceptualised as period specific changes in volunatistic elements of lifestyle, as such they are subject to extension or reversal within variable time spans. Hence arguments for the relevance of health education.

On the other hand, Barker (1989) has very recently published persuasive data showing strong relationships between birthweight and subsequent mortality due to ischaemic heart disease and chronic obstructive lung disease. If these findings are upheld, then it would appear that mortality from these causes is in part determined by cohort characteristics established at or before birth. The implication is that future patterns have already been partially set by influences which occurred a long time ago and are not subject to current modification. They could,

however, in principle be predicted since appropriate data on changing birthweight could be assembled.

Our understanding of the likely future is naturally affected by our changing understanding of the basic epidemiology of diseases. Unfortunately, as Brody (1985) points out: "... we must admit that we do not know causes of, and cannot prevent, most chronic disease. Only a fraction of the cancers, heart diseases, strokes, neurological diseases and arthritides are understood."

In the final analysis, the limits to prediction are set by events which are still to happen. Riley (1989) states that taking a historical perspective, "is to acknowledge that the past does not 'teach us' what the future holds, but that it does teach us that the future will be interesting because it will blend the expected and the unexpected."

In estimating future mortality from lung cancer, Alderson and Ashwood had to make best guesses as to future smoking behaviour. Looking around us we can identify a multitude of changes or possible future changes, which might have far-reaching implications. It seems that not a week passes without an announcement in the scientific press of a breakthrough in the understanding of dementia. Once it might turn out to be true, and the management of dementia might be transformed as Parkinson's disease was by Dopamine. The recent introduction of charges for eye tests in Britain has apparently reduced the number of tests by 40%. Who can guess what affect that is going to have on sight of the population?

### *Mortality and morbidity*

The final element we consider is the relationship between changing patterns of mortality and morbidity. The largest claims and the most vigorous debates about the future health of the elderly have centred on different models of this relationship leading to very different predictions. We cannot ignore the debate. As with the age cohort

and period issue, the underlying ideas are quite simple, but the elaborations, the complex and crucial parts of the data absent. We observe significant declines in mortality. The diseases that kill are often the same diseases which cause chronic ill health. Interventions, secular changes and cohort successions, which are bringing changes in observed mortality, must surely also be affecting morbidity, but how?

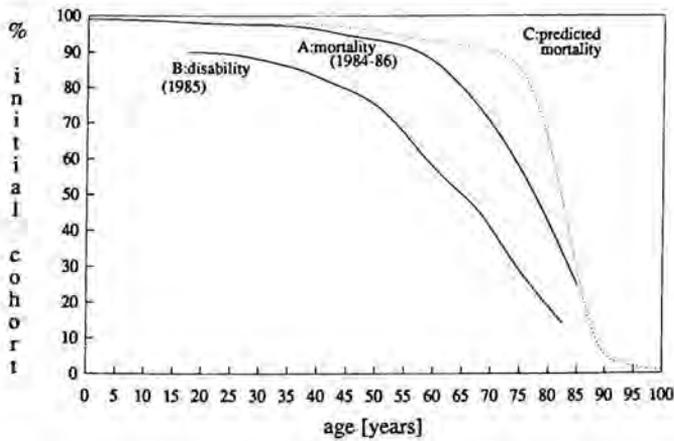
Manton and Soldo (1985) suggest that the issues can be most clearly understood graphically. Fig. 2 shows a synthetic life-table for a hypothetical birth cohort, subjected to the age-specific death rates observed in Britain in the period 1984 to 1986. The dotted part of the line is a projection into extreme old age. Beneath that we have graphed the proportion of the survivors at each age, suffering from chronic limiting illness from the 1985 *British General Household Survey*.

The total area under the upper curve, line A, therefore gives a realistic representation of the total person years of life allotted by fate to the cohort. The area under the lower curve, line B, represents the part of that total which is free from limiting illness, while the area between the curve shows the proportion of the cohort life-years spent with limiting illness.

We can consider the implications of various changes in mortality and morbidity in terms of this graph. We are primarily interested in the quantity of morbidity as indexed by the area between line A and line B. This is affected both by changes in the relative positions of the two curves along the age axis, a general change in life expectancy or in the onset of chronic illness, and by changes in the shape of either curve, changes in the age-specific pattern of death or morbidity onset.

If there were a general increase in life expectancy at all ages, without any change in morbidity, then line A would be displaced to the right and the area under the curve would increase, implying an increase in total morbidity. Quite simply, people live longer in

Fig. 2:  
Age-related changes in disability and mortality



Sources: disability-1985 UK General Household Survey  
mortality-1986 OPCS mortality statistics

a morbid state. A postponement in the average age of onset of chronic illness would move line B to the right and by closing the gap, would imply a reduction in overall morbidity. These are self-evident observations.

Equally, we might observe changes in age distribution of death or first onset of disease. Line C represents the future mortality pattern as predicted by Fries (1983). He argues that premature deaths in middle age will be prevented, but that there is a biological upper limit to the average life span, such, that the mortality curve will be increasingly "rectangularised" rather than being simply displaced to the right. Without any change in morbidity this would inevitably lead to an increase in total years of ill health (the area between the curves). In fact, Fries also argues for a parallel change in the age of onset of morbidity, giving a similar "rectangular" shape to the morbidity curve. This would increase the total area under line B, that is, extend the total quantity of disease-free life and "compress" morbidity into a shorter period later in life. It is easy to see that predictions about the different possible changes in the relationships of the

lines within the graph give rise to optimistic or pessimistic visions of the future health of the elderly. Almost all possible patterns have been advanced at some time (Manton and Soldo 1985).

The current situation is that reasonably high-quality data exists on mortality changes for many advanced countries. We can make empirically well-founded statements about the shape and location of line A (this is not to say that interpreting the data is easy and that agreement is universal as to what is happening). As we have indicated earlier, there is little high-quality data which could cast light on empirical changes in morbidity. Thus far we have described the model as if mortality and morbidity vary independently. Intuitively we feel that this is unlikely.

#### *The rectangularisation debate: linking morbidity and mortality*

Almost everyone who has addressed these issues agrees that what we ultimately need is a good model, or good models linking mortality and morbidity (and probably also disability). If we had these models, prediction

would be possible. The best-known strong unifying model to date is that presented by Fries and Crapo (1981), and it is on this model that their particular predictions stand. They argue that many of the important chronic diseases begin early in life and progress slowly and asymptotically as part of a natural ageing process, till they reach some threshold beyond which they begin to cause the individual to experience symptoms and compromised health. Ultimately, they progress to a point at which they become life-threatening. Modifications to the risk factors for these conditions can reduce the rate of progression, effectively produce a shallower gradient of decline, thereby postponing the time at which the symptomatic threshold is crossed. At the same time, the second threshold beyond which they become life-threatening is also postponed, explaining observed falls in age-specific death rates for many causes of death.

The theory is essentially a straw man, a heuristic device to further a debate rather than a set of tight short-term predictions, and has been heavily criticised, perhaps inappropriately, for its lack of correspondence with current reality. Fries himself views it as a statement about the future and acknowledges that short-term developments might actually show an increase in morbidity. Can we then say a bit more about the real situation as it is now? The claim that death is becoming increasingly rectangularised has been widely contested. It is partly a matter of the time perspective used. Fries' and Crapos' analysis, based on simple visual inspection of successive survivorship curves over this century, does seem to show something like rectangularisation, but the picture is heavily dominated by changes to mortality affecting younger age groups early in the century, an earlier phase in the demographic transition than the one we are now concerned with. Manton (1982) has looked at trends only since 1962 and only for survivorship at older ages. He finds no evidence of rectangularisation. It looks as if line A on the

graph is slowly being displaced to the right. Bury (1988), reports a ninefold increase in the number of centenarians in England over the last thirty years.

The relationship between mortality and morbidity is simply much more complex than Fries suggests. It would be impossible to cover all the arguments in detail, but we can list some of the main issues. The Fries model applies only to certain types of chronic ill health. There is currently no reason to suppose that changes in mortality patterns from the diseases of middle age are linked in any way to arthritis, osteoporosis, dementia and many other of the common diseases of old age. If this is the case, then, unless the age-specific incidence of these conditions changes for unrelated reasons, an increase in longevity can only be accompanied by increased prevalence of these debilitating conditions. For most conditions, changes in observed mortality probably consist of components due to primary intervention through changing risk factors, but also to secondary intervention, to prevent the potentially fatal sequelae of currently symptomatic conditions and to changes in the case fatality, following potentially life-threatening episodes. Even for well-documented phenomena, such as the recent rapid decline in stroke mortality, the balance of importance between these components is unclear and contested (Manton and Soldo 1985). Whether reduced age-specific mortality goes along with reduced morbidity, will depend on the balance between these different components and the nature of the intervention affecting each. Some secondary interventions must imply increased survivorship with compromised health.

There are indications that early mortality might affect subgroups of the population with specific susceptibilities. Should they survive, they may be vulnerable to further particular conditions, generating different patterns of frailty in future elderly generations than those currently observed. While deaths in middle age have fallen substantially this century, they have by no means disappeared. Currently

18% of males and 9% of females are expected to die in the U.K. in the ten years between 55 and 65 (Bosanquet 1987). We know very little about the health profiles of these early fatalities or the likely implications should they survive. Manton has re-analysed data from the *Duke longitudinal study* and identifies a subgroup who die early with multiply compromised health. Feldman (1983) has argued that observed increases in work disability in the U.S. in the 70s were due, at least in part, to increasing survivorship in the group of middle-aged disabled.

Interestingly, another very recent attempt to take a broad view of historical change as a basis for prediction, uses some of the arguments above to arrive at a conclusion very different from that of Fries. James Riley (1989) undertakes a historical review of the relationship of mortality and morbidity over the last 400 years. On this basis he advocates a version of "insult accumulation theory." Risk of ill health at any age is a function of accumulated illness episodes at younger ages. As case fatality at younger ages diminishes, so the accumulated "morbidity risk schedule" at any age increases and the risk of illness increases. "The age-specific risk of being sick should be expected to rise when the death rate declines, because the people who do not die at each age under the new mortality regime, bear a higher risk of being sick than the average in their age group under the old regime."

The detailed implications of any change in age-specific death rates, depend on the specifics of the "winnowing" by premature death (just how selective it is) but, projecting forward into the twenty-first century, Riley believes that the pattern will be one of increasing morbidity.

Having considered a large number of papers adopting a variety of approaches, we do not consider that any of them arrive at an

informed and balanced account of the likely medium and long-term future. Most content themselves, as we have largely done, with a statement of the issues and problems. We therefore feel that any announcement of the "Age of Delayed Degenerative Diseases" should be postponed, pending further investigation.

It is clear that there is a very general absence of high-quality data to allow examination of trends in morbidity. All possible sources of such data have their inherent limitations. Population surveys carry all the problems of relying on self-reports, statistics from service contact are partial and differential in their coverage, screening and physical examination studies are expensive and therefore infrequent and likely to be of limited scope. On the other hand, we need to be very cautious indeed about making inference about morbidity prevalence from mortality statistics. Any initiative to extend and improve basic data, gathering from a variety of relevant sources, would be welcomed.

Most of the short term self-reported data which we have presented indicates a slight general secular increase in self-reported morbidity. At the same time, Verbrugge and many others have pointed to large and significant declines in all causes, and most cause-specific mortality. Something fairly dynamic is happening to affect mortality in at least some of the advanced societies. On the whole, models which propose as a common underlying mechanism the postponement of illness and mortality by a general improvement in underlying health and changing health behaviour, do not seem to square with the observation that reported increases in morbidity are common to both middle and old age. Even if we propose a secular tendency towards reporting more ill health, which might in fact mask an actual decrease in morbidity, we would expect to see a differential shift in the burden between age groups. We are left with something of a paradox which we cannot at present unravel.

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## Transformations of Health and Health Care in Ageing Societies

### Abstract

In the recent past, gerontological and geriatric research evidence has transformed our perception of the consequences of individual and population ageing. Four propositions assist in useful conjectures about the future of individual and population ageing:

1. Modern societies have accommodated ageing populations well and most individuals have aged well.
2. Older adults remain highly differentiated over the course of later life.
3. Some ageing processes are modifiable.
4. The future of ageing societies, therefore, will be determined substantially by public policies regarding resource distribution over the life course.

While these propositions provide a prologue to the future of ageing, the contingencies of social forecasting are stressed. Societies are large natural experiments in how different social arrangements affect the future of ageing individuals and populations.

Social policies have shaped and are shaping the future of ageing populations. The first revolution in public health and welfare was initially a triumph but has proved to be

bittersweet. Increasingly adequate sanitation, stable food supplies, and medical care in the nineteenth and early twentieth century, helped ensure long life as the current expectation of the average person in developed societies. As a well-known consequence, demographically the age composition of modern technological societies has been transformed. The average age of populations has increased, the proportion of the population of 65 years of age and upward has escalated predictably and, most importantly, the oldest and most impaired segment of the population (85 years of age and older) has shown a steady increase. Epidemiologically, the predominant pattern of diseases and impairments has also changed. As populations have aged and the capacity to sustain very impaired individuals has improved, chronic diseases and conditions have come to be the dominant concern of health care systems. Health care planners and providers are required to consider the prevalence and distribution of functional disability (not just of disease) and to focus on long-term care (not just on acute care).

Societally, population ageing has forced into public consciousness an awareness both of alternative ways societal institutions allocate resources over the life-course and of how, in the process of allocating, societal institutions themselves are changed. Over the past 50 years, gerontology and geriatrics have been in the forefront of consciousness-raising about the personal and social implications of individual and population ageing. This paper will highlight some insights from these disciplines regarding what has been learned about the ageing of populations and related transformations in health and health care and what these observed changes forecast for the future.

To some extent the past is always a prologue. A review of the recent past identifies some observed transformations in health and health care in response to population ageing which invite inferences about the near future. Conjecture about the longer-term future of health and health care

in ageing societies however, must be evaluated with great care and caution, because multiple contingencies are involved. At least three contingencies must be kept in mind in any forecasting:

1. the size and age composition of the population anticipated.
2. rates of impairments and related disabilities.
3. the organization, financing and utilization of health care services.

These are formidable contingencies even in the near term of the next twenty-five years (NCHS 1986) and two of the three contingencies are demonstrably modifiable by purposive personal and societal action. Consequently, our forecasting of transformations in health and health care in ageing societies even for the near term will be done with care and caution. Alternative futures for ageing populations can be invented and constructed.

Four propositions in current gerontology and geriatrics will be used to summarise some important basic information about ageing individuals and ageing societies as alternative futures for ageing populations are considered. These propositions provide a point of departure for conjectures about transformations of health and health care in the proximate future.

A gerontological view of health and health care stresses the usefulness of multidimensional and multidisciplinary perspectives. Therefore, in our assessment of the present and conjectures about the future of health and health care of older populations, we will feature in our analysis such behavioural and social variables as socio-economic status, education, lifestyle, social integration, social support, societal values, and the dynamics of political processes in democratic societies. This paper is not systematically comparative. However, illustrations from the recent experience of the

United States will probably have a recognizable counterpart in other developed countries.

#### Four propositions

##### *Proposition 1:*

*Modern industrial societies have proved to be both willing and able to accommodate to individual and population ageing*

Rapid social change always produces some pessimistic prophets. A half a century ago gerontologists produced some very pessimistic forecasts of the dire implications of modernisation for older persons. Older people in modern societies were forecast to experience a loss of family support, social isolation, low status, and deteriorating welfare. All of these outcomes occur to some degree in modernising societies, but they did not occur primarily or only among older adults or among more than a minority of older adults. And if they occurred, they did not persist as the modern welfare states matured (Maddox and Wiley 1976; Maddox and Campbell 1985). To contemporary gerontologists in Africa and Latin America, this optimistic interpretation of social change probably appears far too facile. They still tend to see societal development as it was seen by some gerontologists in Europe and the United States a half century ago. In pre-modern and modernising states, older adults, among others, are vulnerable in the absence of resources and established mechanisms for social welfare. The issue and contingency of importance however, is the development of the welfare state, not population ageing per se. A vivid illustration of different perceptions of the social implications of ageing over a continuum of societies is illustrated by a recent international symposium on ageing around the world. Although in the minority, pessimistic prophets are still heard (Silverstone 1989). In the symposium, the view of ageing from both Africa and Latin

America is decidedly and predictably pessimistic. The view from Singapore is optimistic. The view from Europe is confident that difficult problems of ageing in post-industrial societies can be managed.

Societies are large-scale natural experiments in the life course effects of the differential allocation of social and economic resources. In the United States, where ageing issues have had rather high public and professional visibility for a long time, the evidence is clear. Older adults are socially integrated to a substantial degree. Currently, young children are unexpectedly at greater risk for poverty than older adults. There is no pleasure in that observation, but it does make the point that in the politics of resource allocation, ageing per se does not appear to be a special handicap. In fact, studies of welfare and health consistently demonstrate that gender, race and the socio-economic position of individuals produce as important or more important gradients of illness, disabling impairments and service utilisation than does age alone (Berkman 1988).

The point is that, while age matters, age per se is not the overriding determinative factor for welfare and health care as the United States, and probably modern societies generally, allocate resources. Moreover, while gerontologists earlier tended to be concerned primarily with the effects of societal institutions on older people, contemporary thinking in gerontology is more likely to turn the question around. What is the effect of population ageing on societal institutions, particularly societal allocations of health care, income and welfare services? This new question provides a better balance of issues in the discussion of the interaction of persons and societal institutions. An illustration will be useful.

Consider, for example, the schematic proposed by Hernes for conceptualising social change in general (fig. 1). On the left side of the scheme, the focus is on individual characteristics; on the right side, the focus is on population characteristics, resources, and institutional arrangements which embody

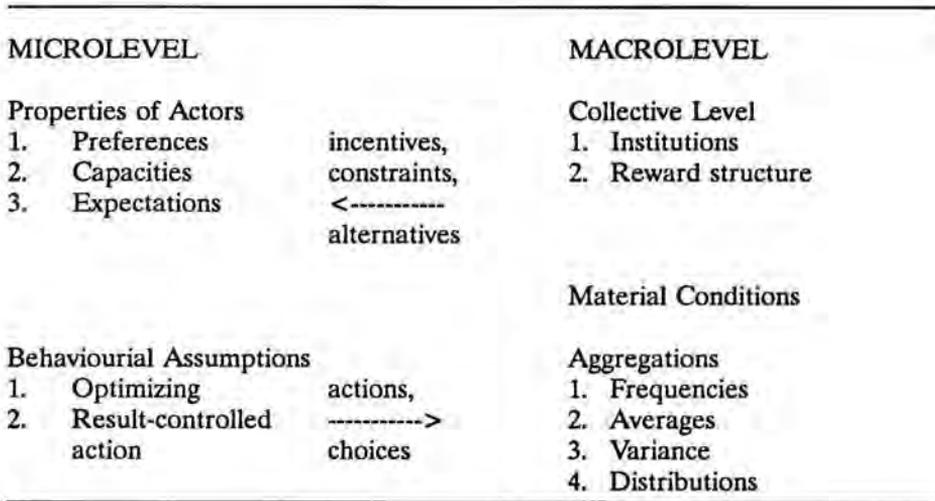
social values and incentives. Contemporary gerontological research is now distinctly interactive in its emphasis in just the way this scheme suggests. Individual capabilities, preferences, and choices are affected by and, in turn, affect societal arrangements for allocating societal resources. This is in contrast to a decade ago when most gerontologists, particularly those with clinical interests, focused on ageing adults rather than on the effects of older adults on the social institutions of societies with ageing populations. Debates about Disengagement Theory tended to focus on individuals, not on social contexts. Debates about Modernisation Theory tended to concentrate on societies, not on individuals. Contemporary research in gerontology tends to concentrate on the interaction of persons with social contexts (Maddox and Campbell 1985). A particularly good illustration of this interactionist perspective is research on cognitive performance and interventions to improve cognitive performance in later life (Standing et al. 1989). The intellectual performance of adults reflects experience in the workplace. Work experience that is high in opportunity for self-direction and for alternative responses is positively associated with high cognitive performance in later life.

*Proposition 2:*

*Older adult populations are and remain substantially differentiated in terms of a number of individual and social characteristics*

Individuals age differently. The persistence of references to *the* elderly in both popular and professional communication, is interesting precisely because it is so strikingly at variance with the evidence. Current comparisons of older adults across and within societies document important variations. Observations of older populations over time document change in composition as well as size. One can depend on it: any current cohort of older adults is not as it was a decade ago or as it will be a decade hence. Evidence of

Fig. 1:  
The dynamic relationship between microlevel and macrolevel variables in the study of human ageing.



Source:

Hernes 1985 in: G. Maddox & R. Campbell. "Scope, Concepts, and Methods in the Study of Ageing." R. Binstock & E. Shanas (eds.) *Handbook of Ageing and the Social Sciences*. Van Nostrand Reinhold, New York.

differentiation among older adults in personal and social characteristics has both theoretical and practical significance.

Theoretically, observed differentiation provides strong evidence of the modifiability of some ageing processes and of the experience of ageing. Ageing as observed and experienced is not simply the inevitable outcome of biological processes. Explanation of differentiation requires specific attention to both behavioural and social factors which mediate the expression of biological determinants of ageing.

Theoretical explanations of differentiation among older adults also have important practical application. Program developers may wish to identify and target specific sub-populations of older adults; for example, the frail and dependent at high risk for institutionalisation. Planners are appropriately warned that simple extrapolation of information of future older adults from

current cohorts of older adults is highly risky. This is why in contemporary gerontology so much attention is given to cohort analysis and to the implications of cohort succession as populations age. In all developed societies, successive cohorts of older adults tend to be better educated, to be in better health, and to have more secure retirement incomes.

Some years ago, Bernice Neugarten made a practical distinction among the "young old," the "old," and the "oldest old". She added the observation that the young old (65-74) were more like adults generally than they were like the oldest old (85 and older); she drew an obvious practical conclusion. The personal interests and service requirements of various categories of older adults are demonstrably very different. Consider these basic demographic and epidemiological illustrations. The first (see table 1) is about the age-distribution of disabling impairment. The data are adapted from the *U.S. National-*

Table 1:  
Disability, status, and institutional & vital status outcomes (since 1982) by age categories among older adults, United States, 1984, National Long-Term Care Survey

% Functional, Institutional and Vital Status

Age (% older)	Not disabled	Moderate or mild disability	Severe disability	Institutionalised	Deceased
65-74 (7.2%)	77.1	11.5	1.7	2.1	7.6
75-84 (4.2%)	53.4	19.3	3.4	7.8	16.1
85+ (1.3%)	19.9	22.1	6.4	20.1	31.5

Source:

Adapted from Manton, "Planning Long-Term Care for Heterogeneous Older Populations", 1988. In: G. Maddox and P. Lawton (eds.) *Annual Review of Gerontology and Geriatrics*, Vol. 8, Springer Publishing Co., New York.

*Long Term Care Survey* which estimated, in 1982-84, disabling impairments by age among those of 65 and older (Manton 1988). This longitudinal data set is technically and substantively one of the best sources of information about functional status of an older population currently available. The reported distribution of functional impairment is a benchmark for comparison with other populations across societies and across time. In Europe, for example, populations are typically older. Whether these older populations display different patterns of age-related disability remains to be demonstrated.

To put table 1 in demographic perspective, one notes that about 12.7% of the U.S. population is 65 and older; the sub-distributions within this broad age category estimated for 1990 are 7.3% for those 65-74, 4.1% for those age 75-84 and 1.3% for those age 85 and older. By the year 2020 the total older population in the U.S. is forecast to rise to 17.3%, with the oldest old almost doubling to 2.4%. It is imperative that the contingencies in such estimates be kept in mind. For example, in the 25 years between 1978 and 2003, the alternative assumptions about whether death rates among those 65 and older remain stable or continue to decline at the rate of the previous decade generate estimates of the number of 85 year

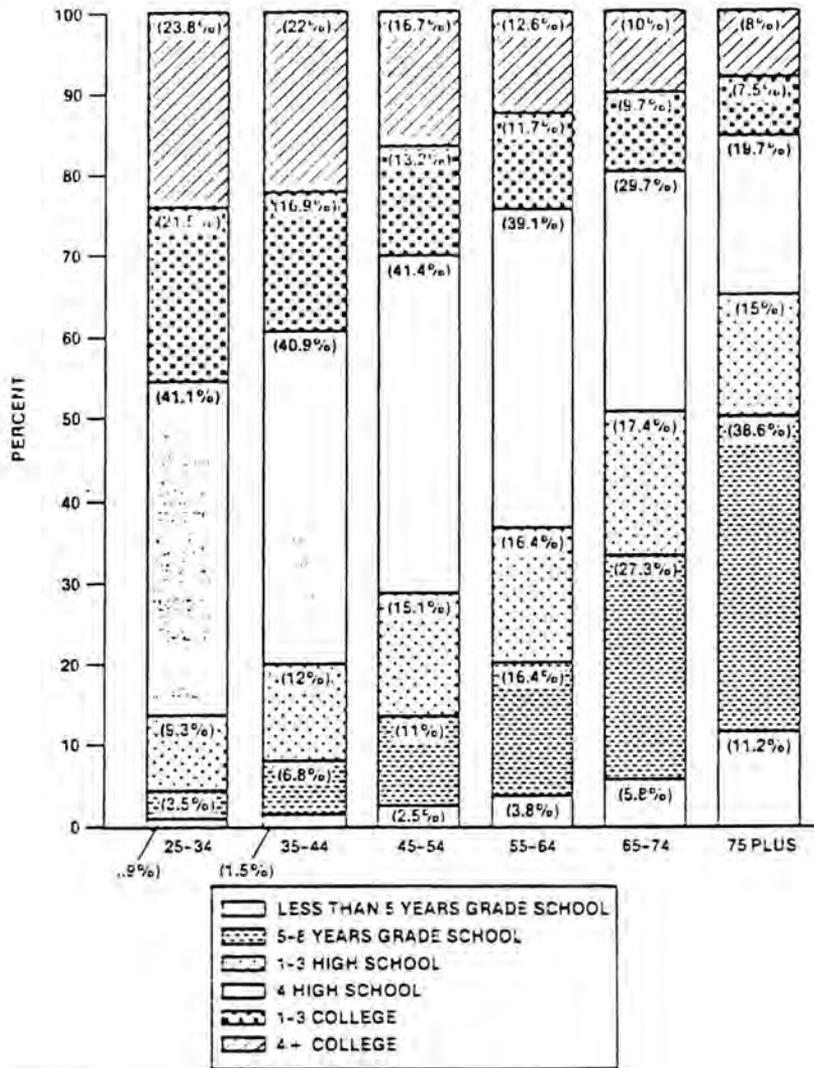
olds that vary by 70%. Or, if one simply extrapolates prevalence of disability in 1975 to year 2003, limitations in activities increase by 64%, physician visits increase by 58%, and nursing home placement by 213%. The magnitude of the numbers command attention, but they are based on modifiable contingencies.

In table 1, the age gradient of disability status is significantly steep, as is the risk of both institutionalisation and death. The oldest old (85 and older) in the United States were more likely than those age 65-74 to be disabled by a factor of almost 4; were more likely to be institutionalised in the subsequent two years by a factor of 10 and were more likely to die by a factor of 4.

Similarly, Sidney Katz and colleagues (1983) have illustrated the age gradient in active life expectancy (or active remaining years of life in which adequate self-care outside institutions is possible) decreases after 65 monotonically to the point where at age 85, the expectancy of remaining years of life being disability-free is 50/50. While these data on impairment and functioning are from the United States, my general impression is that the estimates from most developed nations would be comparable (e.g. Heikkinen et al. 1983; Fillenbaum 1984; Brody and Maddox 1988).

The economic differentiation among older

**Table 2:**  
**Educational attainment by age (1981)**



SOURCE: U.S. Bureau of the Census, Current Population Survey, March 1981, unpublished.

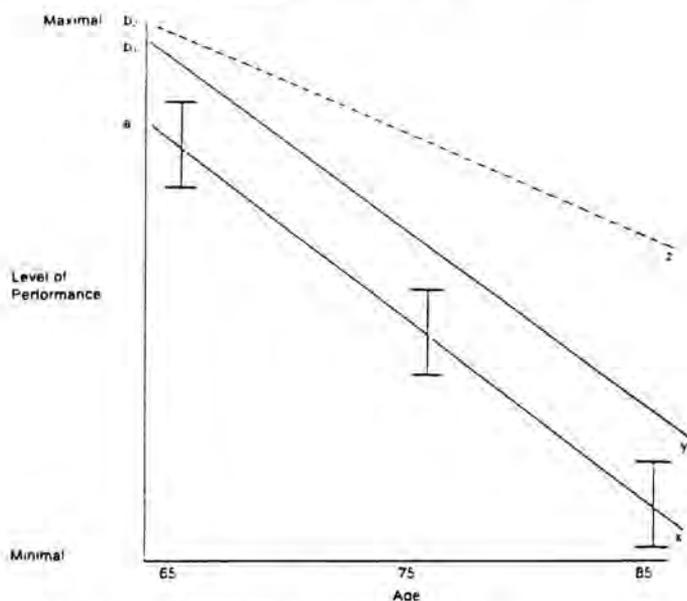
adults has also been documented longitudinally in great detail for over a decade in the United States (e.g. Moon 1988). The older stereotype of "old equals poor" in the United States is being replaced by evidence of extraordinary differentiation and of bifurcation. The proportion of older adults in poverty was halved between 1969 to 1986 (from 25% to 12.4%). The average income of elderly households in 1984 was substantially in the direction of the national average. We will have occasion later to note the potential importance of this change as income gradients of health, health risks, and care utilisation are reviewed.

The changing distribution of educational attainment among older adults is also particularly worth noting. There is a dramatically changing age gradient in education in the United States. Currently older adults have a lower attainment but the age differential will decrease as current cohorts of older adults are successively

replaced by better-educated cohorts (see table 2). Since final educational attainment changes little for persons beyond age 22, one can imagine moving any of the age-related distributions of educational attainment in the table to the right to approximate the effects of cohort succession.

Cohort succession in educational attainment is a reminder that older adults are not only not alike, they are also not as they were or will be in the future. Educational attainment is particularly important in thinking about the future of health and health care for two specific reasons. First, in epidemiology, the education gradient is as powerful as the income gradient as a positive factor in health (Maddox 1987). The powerful income gradient in health and health care utilisation is too common worldwide to require illustration (Bunker et al. 1989). Socio-economic status is a broad index of how societies allocate social and economic resources. As one moves toward the lower

Fig. 2:  
Observed and Hypothetical Decline of Performance Level  
Following Intervention



Slope a ... x: Observed decline, with variance noted  
 Slope b<sub>1</sub> ... y: Hypothetical intercept is higher, slope is parallel to a ... x.  
 Slope b<sub>2</sub> ... z: Hypothetical intercept is higher, slope is less than a ... x.

end of that continuum, morbidity and mortality indicators rise predictably. Why they are predictable is less clear and not an issue which can be resolved here. There is, however, one connection which warrants close scrutiny. This is the positive relationship among income, educational attainment, and adoption of healthful behaviour and lifestyle (e.g. Berkman and Breslow 1983; Bunker et al. 1989). Second, education has a positive association with cognitive strategies of environmental scanning, effective coping strategies, a favourable self-concept, and the perception of personal control of events - all of which have a positive association with health (e.g. Standing 1989; and Rodin 1989).

*Proposition 3:  
Some ageing processes and experiences of ageing are modifiable*

On first hearing or reading, this proposition may be dismissed as too obvious to require statement. Optimism about modifying ageing processes was evident in the 1950s, but was less evident in the 1960s and 70s as biomedicine began to document the negative slope of the regression line for every human biological function measured (see fig. 2). In Fig. 2 the regression line  $a...x$  represents the classic illustration of expected age-related decline in functioning and reserve capacity. The provision of the variance indicators is an addition since explicit interest in variance in gerontological research is relatively recent, particularly among biological and biomedical scientists. Dr. Nathan Shock, the intellectual godfather of the definition of ageing as the age-related progressive loss of reserve capacity, has told me he regrets having paid so little attention to variance in ageing processes documented in his own research. This neglect accentuated the incorrect impression of uniform age-related rates of individual decline in functioning. The impression of inevitable uniform age-related decline in physical functioning was often

generalised to intellectual and social role functioning. The evidence is quite contrary.

Individuals do not become less differentiated physically, behaviourally or socially over the life course and this documented differentiation is one of the most powerful arguments for expecting that some ageing processes are modifiable. In fig. 2, hypothetical regression line  $b1...x$  represents a possibility that at any age, on average, the intercept of performance might be raised. Regression line  $b2...z$  represents the possibility that the slope of the regression might also be changed. Research investigators in gerontology and geriatrics are likely to believe both types of modifications are possible and, therefore, to test research hypotheses about modifiability.

Change in functional status in later life is more than a hypothetical possibility. In the *U.S. National Long-Term Care Survey* which provided longitudinal data on the distribution of functional disability presented earlier in table 1, irreversible decline was contradicted by substantial improvement for some older adults. Of those who were most disabled, over a period of two years, 22% improved. Of those with moderate disability, 24% improved. These systematic data, which are relatively rare because longitudinal research on age-related disability is uncommon, show us how little is known about the dynamics of disability in later life (e.g. Manton 1988).

Two perceptions of the modifiability of ageing processes and the experience of ageing have changed dramatically in this decade. The first has been the documentation through research of the grand maxim of experimental and clinical sciences: if you want to understand something, try to change it. Acting on this maxim, investigators have documented the potential for substantial change in various areas of functioning in later life. The second changed perception is reflected in the attention given to the modifiability of the behavioural and social characteristics of older adults and their functional capacity, not just biological functioning and disease.

Gerontological and geriatric perspectives on beneficial modifiability of ageing processes and the experience of ageing have been transformed in a revolutionary way. The evidence illustrating this revolution and its attendant controversies are nicely illustrated by three recent publications (Riley and Riley 1989; Chernoff and Lipschitz 1988; Fries 1988). In an edited volume by Riley and Riley, the transformations in our thinking required by research evidence about the perception and activation of a sense of self-control over events is convincingly documented by Yale University psychologist Judith Rodin (1989) ("Sense of Control: Potential for Intervention"). While perceiving oneself as appropriately in control is not an unalloyed good, in general, an appropriate sense of control over essential aspects of one's life predicts better health and greater personal satisfaction. And the perception of being in control and, in fact, behaving as though one is in control, can be increased beneficially even in very old, very debilitated populations through known behavioural intervention technology.

Also reported in the Riley and Riley volume are beneficial interventions to improve cognitive functioning in later life from investigators at the Max Planck Institute for Human Development and Education, Free University of Berlin (Standinger, Cornelius and Baltes 1989, "The Ageing of Intelligence: Potential and Limits"). The article summarises the best cumulative research in Europe and the United States and documents differential cognitive functioning among older adults, a complex pattern of cognitive change with age, and mobilisable reserve intellectual capacity. Available research does not document ageing free of cognitive decline. It does, however, document the experimental demonstration of interventions which, with reference to fig. 2, can raise the intercept of cognitive functioning significantly and perhaps change the slope of decline. The change of slope, however, has not been demonstrated. To give only one hint of what these findings suggest,

cognitive functioning can be raised for some individuals, whose history of intellectual functioning is known, to levels recorded 14-17 years earlier for them.

In geriatrics, an edited volume by Chernoff and Lipschitz (1988) documents the basis for realistic therapeutic optimism about health promotion and disease prevention in later life which has emerged and is here to stay (see also Ory and Williams 1989). While it is premature to conclude that primary prevention of disease is routinely possible in later life, secondary prevention (reduction of disabling consequences) and tertiary prevention (reversal of disabling consequences) demonstrably are possible. Rubenstein and Josephson (in Chernoff and Lipschitz 1988) review the strong evidence from randomised clinical trials regarding the beneficial effects of comprehensive geriatric assessment and case management. They document improvements associated with adequate assessment and management in diagnostic accuracy, appropriate care placement, functional status, positive affect; appropriate use of medication, use of non-hospital care services, lower total cost of care, and survival. Ory and Williams (in Riley and Riley 1989) note the persistence but nevertheless the reduction of ageism (age-based prejudice and discrimination) in rehabilitative services in the United States. They review convincing evidence of the positive benefits of rehabilitative interventions with older adults, with particular attention to the management of stroke, hip fracture, and urinary incontinence. They also make an impressive case for conceptualising rehabilitative success in terms of effectiveness in coping, rather than in cure. In discussing the objectives of rehabilitative interventions generally, they propose setting modest but achievable goals. These hopeful observations from contemporary geriatrics about beneficial modification of ageing processes are, however, only a prelude to one of the most contentious debates in gerontology and geriatrics in the United States - the Fries/anti-Fries debate about the

compression of morbidity.

In 1980 when James Fries published in *The New England Journal of Medicine* his article on "compression of morbidity," he meant to provoke and he did. The substance of his argument can be neatly illustrated with reference to the three probability curves in fig. 3. The curve (C) on the far right is familiar to demographers, epidemiologists and gerontologists who have been documenting and commenting for a long time on the "rectangularisation" of the survival curve. More and more individuals are surviving to upper levels of age so that, currently in a more developed society, about 75% of individuals ever born can expect to live to age 65; 50% to age 75 and 25% to age 85.

In the first of two basic propositions, Fries argued that curve C will not continue moving to the right. Age 85 may more nearly approximate Nature's intended biological limit than we wish to imagine. This is not the time to argue this point but it is fair to say demographers have rather uniformly taken a contrary position. So much for what I call Fries' optimistic view that Nature is on society's side in limiting the years in late life which are at highest risk for disability.

The second optimistic assumption of Fries was that onset of chronic disease or impairment (curve A) may be delayed (moved to the right) and that the onset and level of disability (curve B) may be delayed or moderated. These propositions have not been tested and found wanting. We do not yet have the population statistics for a definitive test. In the absence of definitive evidence, strong opinions and personal preferences flourish. In a recent paper Fries (1988) cites the kind of evidence of modifiability of ageing processes reviewed above in his paper as relevant to his argument. In the United States, Fries believes, beneficial lifestyle modifications have been occurring over the past decade which will eventually be revealed in the delay of chronic disease or impairment (curve A) and moderation of the level of disability

associated with chronic disease or impairment (curve B). Also early therapeutic intervention (secondary prevention) and effective rehabilitation (tertiary intervention) can reasonably be expected to the delay onset of disabling impairments (curve B); and certainly therapeutic interventions can reduce the level of disablement experienced. This last point, in my estimation, is particularly critical and has not been adequately addressed with evidence in the Fries/anti-Fries debate. The issue is: Quality of Life.

In the dominant biomedical thoughtstyle in gerontology earlier, it was possible to conceptualise issues in binary terms: one is or is not diagnosed as having cancer, or cardiovascular disease or whatever. Diagnosticians were not inclined to ask about the timing of the disease onset in the life course, much less whether the risk of potentially disabling consequences might be modifiable. If one can accept the possibility of an acceptable Quality of Life because one can function in spite of the presence of disease or impairment, one asks a different question. With reference to fig. 3, that different question is: can the degree of disablement in later life be delayed or moderated through purposive biomedical, behavioural and social intervention? The answer is *yes*, but the limits of our capacity for beneficial interventions remain to be tested.

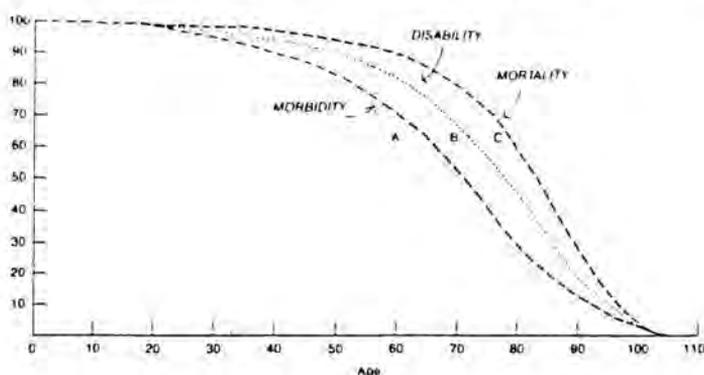
In noting the potential importance of focusing on the Quality of Life in late adulthood, I note in passing a brief relevant and readable monograph by Antonovsky (1987) which makes a case for focusing on health rather than disease and on the prevention of "breakdown", even if disease or impairment is present. His concepts of *coherence*, *resistance resources* and *breakdown* (briefly explained in Exhibit 1<sup>1</sup>) capture the

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<sup>1</sup> *Exhibit 1*

The sense of coherence is a global orientation that expresses the extent

Fig. 3:  
Factors in the Fries-Anti-Fries Debate about "Rectangularization" of Morbidity/Disability/Mortality Curves



essence of the points made by the gerontological interventionists described briefly above. Disease, impairments and stressful events do not have automatic outcomes in later life. The breakdown of individual defenses requires explanation, particularly the differential risk of breakdown among individuals facing similar challenges. Satisfactory explanations clearly must include multiple factors, prominently I would argue, cognitive capacity and also resources as variable as mobilizable social support, adequate income, knowledgeable caregivers, environments capable of compensating for

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to which one has a pervasive, enduring though dynamic feeling of confidence that (1) stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable; (2) the resources are available to meet the demands posed by these stimuli; and (3) these demands are challenges, worthy of investment and engagement. (p.19)

Source: Aaron Antonovsky, *Unravelling the Mystery of Health: How People Manage Stress and Stay Well*. San Francisco: Jossey-Bass 1987.

limited personal capacities, and effective coping strategies. This leads to my fourth and last proposition.

*Proposition 4:*

*The future of ageing, of ageing individuals, and of ageing societies will be determined by the alternative allocations of social resources that can be imagined and implemented effectively through consensus-based social policy.*

The evidence from contemporary modern societies with ageing populations is that we have produced current circumstances and will inherit a future substantially of our own making. Until now, societies have not appeared particularly eager to specify what kind of age composition of the population or what kind of life course resource allocation strategy they prefer. Recently in gerontology, popular biologising of ageing stressed unmodifiable processes and neglected an interventionist perspective emphasising the modifiability of ageing processes. This fatalistic perspective is largely behind us. We can now address realistically a broad range of issues related to constructing alternative futures of ageing processes and the experience of ageing.

Consider three of the powerful sociological risk factors - income, education,

and social integration - which epidemiology has demonstrably related to outcomes such as well-being, morbidity and mortality. How a society distributes income, education, and the experience of social integration over the life course has much to do with social values and social policy and little to do with the biology of ageing. Can contemporary modern societies maintain income adequately in the increasingly numerous years post-retirement from the work-force? The answer has been demonstrably *yes* in all modern industrial countries. In the United States, a relative laggard in income maintenance post-retirement, policy adjustments in social security and in payment for medical care resulted in dramatic improvement in the economic situations of older adults in a single decade (Clark, et al. 1984; see also Moon 1988). Successive cohorts of older adults are also better-educated in all developed societies. And, building on a large and tenacious reservoir of social support for dependent older adults, the issue is not whether essential social support is available, but how to maintain it, complement it, and mobilise it wisely. Social integration of older adults continues to be experienced in all modern societies.

Recent discussions in the United States regarding "age equity" in the distribution of societal resources may appear to be an exception. In any case, they are curious enough to warrant at least brief comment. While no one knows exactly what an equitable distribution of societal resources over the life course would be, Americans have been startled to learn that the risk of poverty is greater for young children than for older adults. However, enthusiasm for promoting generational conflict related to this observation has been small and most observers believe that the problem is at best misstated and unlikely to sustain interest. Resource allocation to children or to older adults is not a zero-sum game. The issue certainly does not appear to be a genuine threat to the social integration of older adults.

Health care systems in modern societies have not been easily moved to respond to population ageing, but they have moved and substantial challenges are yet to come. Comparative analysis of how population ageing has contributed to the transformation of health care organisation and financing in more developed societies is not possible here. We noted at the outset that population ageing shifted attention of health professionals generally from acute to chronic disease and impairment. Interest in functional disability as distinct from disease followed. Subsequently attention has been given to the merits of alternative organisation and financing of geriatric care and to special training of health personnel serving older adults.

For the sake of simplicity, further discussion here will focus on the United States, not just because it is more familiar to me, but also because it is perceived by many as the "odd man out" among developed nations, the only one without a national scheme of health care or health insurance. Even here, I will argue, the impact of population ageing on health care has been palpable and worth highlighting. The effects on health care organisation and financing have already been dramatic in the United States and in the near future may produce fundamental structural change. The power of population ageing to affect social institutions should not be underestimated.

The U.S. health care system, if it is, as I believe, a test case, has exhibited radical transformations over the past quarter century partially in response to population ageing. For example, geriatrics has been recognised as a sub-discipline. In 1988, board examinations for certification in geriatrics drew over 4,000 applicants, and some 80% successfully qualified. Geriatrics appears in the curriculum of most medical schools, although in many instances the penetration is shallow. Geriatrics has provided a needed and beneficial multi disciplinary perspective in American health care which recognizes the significance of behavioural and social factors

in maintenance of health and the quality of life.

The Veterans Administration Hospital system, the United States' single adventure in nationalised health care, is de facto largely a geriatric system. Medicare is this nation's only experiment with national health insurance. Both these ventures constitute substantial commitments of public dollars and therefore increase public concentration of interest in the outcome of those expenditures. Medicare, and particularly its companion Medicaid, literally financed a new private sector institutional form: the nursing home. From the beginning, policy analysts have agonised over quality assurance in long term care and have been convinced that there must be a more desirable, cost efficient and care effective alternative, hopefully in the community (Maddox 1980). This search for alternatives has generated endless demonstrations, which have generated consistently two relatively unpalatable conclusions in the United States. First, the only sure way to achieve economies in health care is by capping budgets. Having capped budgets, then one's worries can shift to quality of care and access to care. Second, if access and quality are assured, then alternatives to institutionalisation can achieve, at best, not cost reductions, but possibly better care at no greater cost (that is, quality with cost containment). The major lesson that has been learned is that alternative technical solutions to the provision of adequate geriatric health care are possible. The key issue then becomes finding a technical solution that is politically feasible.

Policy analysts too frequently continue to use crude extrapolations of the size of older populations, to conclude that all societies will eventually be overrun by hordes of disabled older adults who require high cost services. This is possible but not probable. Recall my initial advice about care and caution in extrapolations of current evidence into the future. Genuine contingencies regarding future death rates, disability rates and the effectiveness of health care exist.

The demonstrable age-gradient in

impairment, morbidity and the associated use of health care resources has generated some instructive evidence on the epidemiology of ageing populations (Brody and Maddox 1988; Maddox and Glass 1989). Since morbidity is associated with age, and morbidity is the major determinant of health services utilisation, policy analysts are always anxious as they project the implications of population ageing for health care expenditures. Research findings make clear that this way of conceptualising the issue is too crude to be useful. The average older adult does, in fact, increase utilisation of care services over time. The most costly care, however, is primarily and necessarily in three sub-populations: those institutionalised in nursing homes (5%); those in the last year of life (about 5%) and those in the community who are severely disabled, poor, and/or alone (about 1.5-2%). About 88% of the elderly population in the United States are not notably high users of health and public welfare services. The most urgent challenge to policy analysts in the United States is not "the elderly" but more likely a targeted 2% of that population. If there is a genuine crisis of care in the United States currently, it is a crisis of values as much as a financial crisis. Dominant opinion in the United States persists in asserting the primacy of individual responsibility for health care generally and long-term care in particular. Consequently, national health insurance and long-term care insurance are not serious options in public policy. The existence of 37 million uninsured or underinsured persons, many of them children, is now beginning to be recognised as unacceptable if not scandalous. Similarly for older adults, the high probability of impoverishment through personal economic responsibility for long-term care is increasingly getting attention.

About half the multibillion dollar cost of nursing home care in the United States is paid by Medicaid for the impoverished, most of the rest out of pocket. Although policy analysts are more or less agreed that private financing of long-term care is not feasible for

probably 7 of 10 individuals, no serious movement toward publicly assured financing is observed even on the near horizon (Rivlin et al. 1988). Long-term care is the single remaining contingency in life which remains uninsured for most older adults in the United States. This fact is very likely to be a major public policy issue over the next decade as the implications of this for the average middle-class elderly person is understood. A high level of affluence among older adults and health insurance provided by employers, continue to forestall a genuine sense of crisis.

The recent history of the Prospective Payment System (PPS) and the related Diagnosis Related Groupings (DRGs) is also instructive about American values and attitudes regarding regulatory interventions into health care organization and financing. The prospective payment system illustrated by DRGs was directed initially solely to medicare expenditures, but has subsequently suffused into private sector financing. The strategy was a decided break in the previous federal regulatory strategy in the United States and its implications should not be underestimated. The new strategy was acceptable, in part presumably because it did not propose to tamper with how physicians and hospitals did their professional work. Rather the strategy focused on capping payment for hospital episodes using reasonable cost associated with some 470 disease classifications. The practical problems associated with the full application are well known (not resolved, or likely to be finally resolved) and the effects on access and quality of care have not been clearly identified (Maddox and Manton 1989). We do know that average length of hospital stays for geriatric patients has decreased, although whether system cost has decreased is less clear and so is whether quality of care has suffered (that is "discharged quicker and sicker"). We do know that both public and private health care providers have become interested in vertical and horizontal integration of services to explore whether

rational case management within a complex integrated care system could achieve economies of cost without loss of quality or reduced access. Most importantly, the DRGs experience is a powerful reminder that the organising and financing of health care is certainly not an exact science. There is considerable room for political negotiation and alternative solutions to the organisation and financing of geriatric health care.

In sum, population ageing has stimulated critical attention to, and changes in, health care organisation and financing that are, by U.S. standards, revolutionary. And more revolutionary moves are visible in the wings. One source of potentially dramatic change is a reassessment of the differential pay for health specialists and a related interest in a DRGs strategy for paying physicians. The other potentially dramatic development is the first serious discussion in a decade about the feasibility and desirability of national health insurance. Geriatric health care alone does not explain the current sense of needed change. But it is a prominent part of the explanation.

*New England Journal of Medicine* (NEJM) editor Arnold Relman has recently focused attention on national health insurance for the United States with a two-part review of Allan Enthoven's seminal proposal in 1980 for a consumer's choice system of care designed to fit a really competitive market environment (Enthoven 1980; Enthoven and Kronick 1989). The re-statement in these articles, presumably intended to make medical markets more politically acceptable, makes it appear to this observer too complex to grasp politically.

Nevertheless, the case for fundamental change in the organisation and financing of health care has been restated. Further, a statement of 1,200 concerned physicians in the NEJM argues for national health insurance (Hummelstein et al. 1989), although critical details are missing which would permit assessment of its political feasibility. Finally, Canadian economist Robert Evans and colleagues (1989) have

restated the virtues of Canadian national health insurance with apparent approval of Dr. Relman (1989) who himself concluded editorially: "Universal health insurance: Its time has come." The proof of that pudding will be in the eating. Yet on the surface, Canadian NHI appears relatively compatible with U.S. values and preferences since physicians are self-employed and hospitals are privately owned. Canada insures long-term care. The governmental regulation of both physicians and hospitals appears relatively benign and, perhaps, increasingly ineffective, particularly in Canada's most populous province, Ontario. Population ageing has stirred the intellectual pot of health care leadership in the United States and moved the future of health care more clearly in the arena of public interest and perhaps of serious consideration of public solutions.

Unfortunately, the U.S. situation may only illustrate Robert Alford's concept of "dynamics without change" (1975). At the moment, the U.S. appears to be satisfied with complaining about the cost of health care, in which geriatric care is obviously implicated, and to make only marginal adjustments like fine tuning DRGs reimbursement or reformulating physician payment schedules. However, the issue of financing long-term care is being seriously considered, as is the very large number of uninsured and underinsured persons in the United States. The increasing uneasiness with the uninsured may prove to be important. In the case of the estimated 37 million Americans who are uninsured or underinsured, older adults do not figure prominently, but planners with a cohort perspective will not be fooled. Poor health among children and young adults today produces older adults with poor health tomorrow.

In summary, gerontology and geriatrics have made an enormous advance in demonstrating the beneficial potential modifying age processes. They have demonstrated that some of the most serious problems in later life are less the biological problems of

ageing and more the political problems of achieving consensus about the future of ageing we wish to construct. Health care that is adequate for older adults may prove to benefit everyone.

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