

Demographic change, generations and the life course

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April 2009

This report forms a synthesis of the 10 Challenge papers listed in the appendix and should be read in conjunction with the fuller material there described.

1. Introduction

Challenge One *Demographic Change, Generations and the Life Course* comprised a multi-disciplinary team drawn from demography, anthropology, sociology, philosophy, economics, neuro-science, education and social policy. The evidence was drawn from commissioned reviews which were commented on and revised, discussions and a formal review workshop. This report takes the key challenge questions as its focus and draws on the evidence to address them. It summarises the papers in support of the identified factors, trends and certainties and uncertainties. It should be noted that Sections 2 and 3 draw heavily on the writings of Harper, Howse and Leeson; Sections 4 and 5 on the writings of Leeson, Demireva, Hoff, Mann, Lee, and Jessel; Section 6 on the writings of Lee, Hoff, Mann, Leeson, Lauder, Kelan and Jessel. Full references are provided in the papers.

2. Trends in the challenge area of Demographic Change which we can reasonably confidently expect to continue to 2025

2.1 Fertility

The return to high total fertility rates in this country is considered possible but extremely unlikely. The most likely trends are therefore declining or stable.

The causes of these trends are unclear.

- Standard *demographic transition theory* explains fertility reduction as a result of infant and juvenile mortality. Fertility reduction is thus *an equilibrating response to maintain population stability in the face of changing mortality regimes*.
- *Capital-investment theory*, suggests that the need to invest in education as skill-based labour markets arose during the industrial revolution resulted in parents

lowering fertility to invest more in fewer high quality children. This thus explains fertility decline as a response to changing economic systems.

- *Cultural theories* suggest that fundamental norms and values with regard to the need and desire to have children have changed radically as societies and their members have become increasingly hedonistic. Thus self actualisation, freedom of choice, emphasis on quality of life and leisure, and a retreat from commitments, may all act against the notion of investment in offspring.
- *Relative economic status theory* proposes that fertility is influenced by generation size and relative economic status. This would mean that the baby-bust generations as they enter adulthood would enjoy increased relative economic status thereby giving rise to increased levels of fertility – in theory at least. Easterlin's models did not take into account the influx of women into the workplace since the 1970s, and the high opportunity costs of leaving the workplace to have and bring up children should lead to declining fertility. Indeed one of the driving theories behind fertility fall focuses on increased female labour participation, suggesting that increased female education and autonomy, increased desire for consumption requiring second incomes and increased female investment in careers have all led to increased female economic activity and subsequent decline in childbearing.

2.2 Mortality

There is general consensus that mortality across the life course is unlikely to show a significant long term increase. Much of the uncertainty around falling mortality and life extension occur at the oldest ages. The most likely trends are therefore declining or stable across the life course until late age.

Understanding these trends is complex. Within the United Kingdom, mortality levels declined throughout the post-war period at almost all ages, and with the exception of decreases in infant mortality, the mortality decline at around age 40 was the most significant in the 1970-1990 period. Life expectancies at birth in the United Kingdom, for example, increased throughout the period and for both sexes as mortality declined at almost all ages. In fact, in the United Kingdom, it is particularly the scale of the decline in adult and old age mortality which contributes to the observed increases in life expectancies at birth. Infant mortality, although declining, is already so low in this country that the contribution of this decline to the increase in life expectancy at birth is modest. Towards the end of the 20th century, almost all of the increase in life expectancy at birth in the United Kingdom was due to decreases in mortality at relatively high ages. However, late-age mortality is an increasingly important component of overall mortality and it is changes in these mortality levels that could still confound population forecasts, as they have done in the recent past.

It was originally thought that social class differentials in mortality were understood mainly in terms of material deprivations and environmental hazards such as inadequate nutrition, overcrowded living conditions, poor sanitation and personal hygiene, and hazardous working conditions, all strong associated with poverty. By the 1980's however it was evident that despite the considerable improvements in the standard of living of the lower socio-economic groups, there was still a large gap in life expectancy. Attention thus turned to the *social gradient* in mortality risk, whereby lower income groups with a society have a higher mortality rate, despite being well above the poverty line. Socio-economic status (SES) rather than poverty has become the central concept for investigating social inequalities in mortality.

Key theories at present focus on:

- Life style factors (Van Rossum *et al* 2000; Balia & Jones 2008) particularly smoking and alcohol (Law and Morris (1998)).
- Psychosocial stress: from having a subordinate status in social and occupational hierarchies of power and esteem (Marmot 1994).
- Neighbourhood deprivation or deficiencies in social capital (Smith *et al* 1998).

2.3 Migration

There is consensus that migration patterns will most certainly change with the UK, as with most countries, becoming a stepping stone as part of international migration flows for self-enhancement. We thus discuss this in more detail under uncertainties.

Currently, however, the foreign population in European countries amounts to approximately 23 million persons comprising approximately 5 % of the total European population (i.e. residents outside their country of origin). Bearing in mind the unreliability of such data in Eastern Europe, it is estimated that Eastern European countries accounted for less than 1 million of this total. Since the middle of the 1990s, the size of the foreign population resident in Western Europe has increased by almost 12 %. Three countries account for more than 60 % of the total foreign population resident in Western Europe outside their country of origin: Germany (35 %), France (15 %) and the United Kingdom (12 %). In Eastern Europe too, three countries, namely Estonia, the Czech Republic and Hungary account for approximately 60 % of the foreign population resident in that region.

Prior to enlargement, within the EU15, approximately 19 million foreign residents were living in a country, which was not their country of origin, and approximately one third of these were from other EU15 member states, with 17 % from Africa, 12 % from Asia and 17 % from Central and Eastern Europe (Salt 2003). The diversity in foreign population composition across Europe is striking. In Ireland and Belgium, for example, over half of the foreign population resident is from other EU15 countries; in Spain, France, the Netherlands, Sweden and the UK, the proportion of foreign population from the EU15 is between 30 and 40 % (closer to the EU15 average of 30.6 %); while for the rest of the countries, the large majority of their foreign populations are from countries outside the EU15.

Central and Eastern Europe provides substantial shares of the foreign populations resident in particularly Finland (46.8 %), but also in Germany, Greece, Italy and Sweden and to a lesser extent Denmark. Africa is a key source of the foreign populations resident in Portugal and France and a significant source for Italy, Spain and the Netherlands followed by Belgium and the United Kingdom. Finally, Asia is a key source of foreign population for the United Kingdom (mainly from the Indian sub-continent), Denmark, Italy, Greece, Sweden and Finland. The immigration of foreign-born workers and their families to the UK is a trend which appears set to continue in some form.

2.4 Population Ageing

The population of the world aged 60 years and over increased from 205 million and 8 % in 1950 to approximately 688 million and 11 % in 2006. By 2050, the number will have increased to around 2 billion and 22 %. By 2030, half the population of Western Europe will be over 50, one quarter of the population of the developed world will be over 65, and one quarter of the population of Asia will be over 60. This is historically unprecedented. Indeed, it makes the 20th century the last century of youth, the 21st century heralds a new demography- that of maturity.

These dynamics are the result as much of falling fertility as of increasing longevity as across the world women are choosing not to have large numbers of children, to delay or even reject first childbirth. This coupled with increasing longevity sees ageing flood out across the globe. Indeed the scale of ageing over the next 50 years is immense. According to the United Nations forecasts, the population aged 60 years and over is expected to increase from 20 to more than 30 % by the year 2050 in the more developed regions, from 8 to 20 % in the less developed regions, and from just 5 to 10 % in the least developed regions. And these are projections from incremental longevity. What will be the demographic consequences if radical longevity becomes a possibility for entire generations? The prospect of a relatively long and healthy life is real for most of us and there lies the challenge and the opportunity for every individual, country and government in a world of increasing longevity.

For the UK, as for most other countries in Western and Northern Europe, the demographic situation is defined principally by the combination of three dominant trends: a fertility rate that has been below replacement level for several decades now and is thought unlikely to rise above it; unprecedented and continuing declines in late-life mortality; and relatively high levels of inward migration. This has already resulted in a UK society which is characterised by a decline in the proportion of younger people (through falling fertility), an increase in the proportion and number of older people (through both falling fertility and mortality), and a more ethnically diverse composition (through increased migration).

The challenges posed by these trends can be grouped into four main categories: those that arise from the changing age structure of the population – specifically the increase in the proportion of older people and the decrease in the proportion of younger people (i.e. changing dependency ratios); those that arise from the ageing of the older population (i.e. more people surviving in 'late old age'); those that arise from inward migration and the growth of migrant communities within the host society; those associated with persistent below-replacement fertility (i.e. population decline as opposed to population growth). It is evident that these challenges are not independent of each other, and furthermore that trends in one driver of demographic change may offset or compound the impact of trends in another. For example, changes in the age structure of the population are driven partly by the ageing of the older population and partly by below-replacement fertility. Large-scale inward migration is likely to have a temporary effect on the age structure of the population and will delay the trend towards natural population decline inherent in below-replacement fertility. Policy makers need to have an understanding of the challenges and opportunities of population change that fully integrates all three of the main drivers of change. Furthermore, the challenges that demographic change poses for the UK cannot be understood however solely in terms of the demography of the UK. In an increasingly globalised world, we cannot suppose that the UK will be immune from the impact of global patterns of demographic change. Nor can the demography of the UK be understood apart from these same patterns of change.

The UK's past experience of mortality, migration and fertility is written into its age structure. Like the rest of the EU, it has moved from positive demographic momentum (growth) into negative demographic momentum (shrink), (though in practice mediated by inward migration). This *second demographic transition* is being mirrored in other parts of the world, particularly Asia as fertility falls from the replacement levels of classic demographic transition theory. A *third demographic transition* driven by international migration is also beginning to change regional and international population structures. It is currently uncertain how low fertility will fall in Europe and some of the more advanced Asian countries. A combination of further declining family size ideals, continued postponement of childbearing and bio-medical factors affecting both men and women may well lead to fertility levels so far below replacement level as to have dramatic consequences for the social and economic structures of society. The recently proposed "Low Fertility Trap Hypothesis" assumes a bifurcation among industrialised countries

under which the lowest fertility countries would see further fertility declines while another set of countries would experience stable fertility only slightly below replacement level. Alongside these lie new perspectives on mortality forecasting, which acknowledge that there is much greater scope for reductions in mortality at higher ages than previously acknowledged.

UK population change also needs to be seen in the wider context of globalisation. It is essential therefore to understand the ways in which global patterns of demographic change are likely to present both policy challenges and opportunities for the UK. A key question, for example, is whether we should expect demographic convergence to accompany socio-economic convergence and the role that migration has to play in this process. Yet, globalisation also needs to acknowledge the powerful dynamic of global ageing. As restrictions on the movement of human and financial capital around the world are eased, demographic change becomes a potent force for change in the global economy. Exactly how these changes will play out remains poorly understood, though some of the outlines are clear. Large shifts in national age distributions are likely to affect national saving patterns, capital requirements and international capital flows, particularly between the more and less developed worlds. The demand for health and social care workers in more developed countries is already increasing, and is set to increase further at the same time as the supply of younger workers will tighten. The implications for the host and source countries' welfare systems, and for the family and social support structures in the source countries, are considerable. National provision of education, health and social care, housing, transport, and basic infrastructure will all be affected.

The future promises many similar scenarios across many different sectors of the national economy, with skilled labour being pulled out of the country as well as pulled in. The whole question of UK identity becomes important here. For example, the tension between multiple identities with allegiance to both source and host country, and between ethnic and national sentiments. Broader questions include to what extent can and should immigration mitigate certain negative effects of demographic ageing; what policies should be developed for better integrating these migrants, in particular young people?; how could the legislative and financial frameworks and incentives combat discrimination and promote integration of immigrants?

As the UK demographically ages, one of the main policy challenges is to enable individuals to maintain their health and productive capacity for as long as possible. We need to consider how the organisation of work be best be adapted to a new distribution between the generations, with fewer young people and great numbers of older workers, to take into account the specific needs of different age groups; how parents' integration in working life can be facilitated and how they can achieve a balance between flexibility and security to bring up their children, to train and update their skills to meet the demands of the labour market. We need to decide what is an appropriate balance between investing in early education and in adult and life long training schemes. There is also concern over the intergenerational contract and changing patterns of intergenerational solidarity as societies age.

3. Uncertainties in the challenge area of Demographic Change

3.1 Uncertainties around the drivers of fertility

- **There is uncertainty about the future of human fertility** – especially in those countries which already have fertility rates below replacement level – as to whether it will continue to fall or to ‘recover’ and then stabilise at the kind of level that the UN assumes in its medium-variant projections.
- **It is uncertain how low fertility will fall** in Europe and some of the more advanced Asian countries.
- **Will low fertility countries fall into the Low Fertility Trap?** The “Low Fertility Trap Hypothesis” proposes that a combination of further declining family size ideals, continued postponement of childbearing and bio-medical factors affecting both men and women may well lead to fertility levels so far below replacement level as to have dramatic consequences for the social and economic structures of society. Some demographers (Lutz 2006), for example, have suggested that countries with very low fertility could get stuck in a low fertility whereby social and economic adjustments by institutions and individuals would make it difficult for fertility to rise to replacement levels again.
- Do the new patterns of fertility in Europe suggest that we have moved beyond the former **relationship of fertility and female employment**? Cultural change has resulted in young women prioritising economic employment over child bearing, so that given the choice, a growing number will remain childless. Thus those countries which make it easier for a women to combine economic activity and child bearing are seeing a rise in fertility, those in which it is still difficult to combine the two, are seeing a dramatic decline.
 - For example, Southern Europe has both low fertility levels, and relatively low female labour force participation. In part this is because it is difficult for mothers to maintain economic activity and thus many withdraw. In Italy, for example, where total fertility is approximately 1, only 60 % of females aged 25-49 are active in the labour force.
 - This compares with the Scandinavian countries where compared 84 % of women 25-49 are in the labour market in Denmark where fertility is 1.73. The experience of Sweden shows that extensive social policy measures to reduce the opportunity costs of having children, and help women to remain in employment after giving birth, maintains or even increases fertility levels.
- How important a role is the postponement of childbearing? **This operates in two broad ways.**
 - Firstly is the argument that current low fertility cohorts will eventually increase their cohort level though late reproduction.
 - Secondly it is asserted that postponement of childbearing reduces the actual number of children born. In England and Wales, almost 10 % of the 1946-generation of women were childless by age 40. This had risen to almost 20 % for the 1960-generation.
 - Lesthaeghe’s detailed analysis of 5 western European countries (Germany, Switzerland, Netherlands, Austria, Belgium, and France) examines the influence of postponement on cohort fertility rates. This study points out that all 6 countries reached period total fertility levels of 2 or below (that

is replacement) by 1975. From thence onwards a new pattern of fertility emerged, characterised by postponement at younger ages, with varying degrees of catch-up at later ages. Indeed, those countries in which current cohorts postponed first birth, had a rapid catch-up during their 30's, while those who had earlier first births, had a much lower rates of births post-30. This thus accounted for the very similar period total fertility rates of between 1.3 and 1.7 for all 5 countries.

- **How does fertility relate to desired family size?** The European Commission in 2004 reported that Europeans would like to have 2.3 children on average, but they are in fact having only 1.5 children. In 2005 a second communication from the Commission states that European families do not find the environment in which they live conducive to child-bearing (European Commission 2005).

3.2 Uncertainties around the drivers of mortality reduction

- **There are many uncertainties around the relationship of socio-economic status (SES) and mortality**
 - Is the association between SES and well-established lifestyle risk factors for cardiovascular disease and cancer the key to understanding differential mortality rates?
 - Are differences in lifetime access to the rewards and privileges of social life independent determinants of the mortality gradient? And;
 - At what stage in life are these various causal factors operative?
 - How important are childhood influences on future health or development in-utero when compared with adult socio-economic status?
 - Does the social gradient in mortality persist into retirement and old age?
- **There are many uncertainties around the relationship of gender and mortality**
 - Although most scientists take the view that biological factors play an important role in explaining this sex gap in life expectancy there is as yet no consensus about the nature of the biological mechanisms involved (Austad 2006, Luy 2003).
 - Gender differences in lifestyle may be a strong contributor. For most of the century men were more likely to be heavy drinkers or smokers than women. It has been estimated, for example, (Waldron 1986, 1995) that about 50% of the sex differences in mortality in heart disease can be explained by differences in smoking behaviour; and more than 90% of the differences in lung cancer mortality.
 - However Rigby and Dorling's (2007) study of mortality data for 22 countries over 150 years suggests that although cigarette smoking may account for the rise in excess male mortality for cohorts born in the first decades of the 20th century, it cannot account for the relatively slow improvements in mortality in younger males across all the rich countries of the world in recent decades.
- **There are uncertainties around the contribution of various diseases**
 - What is the role of decline in CVD/circulatory disease? The contribution of declining mortality from CVD/circulatory disease to overall mortality decline has been significant over the past few years. It has been estimated, for example, that reduced CVD mortality added more than 5 of the 8.8 years added to life expectancy at birth in the USA since the middle of the 20th century (Cutler 2004). In Germany, between 1962 and 2002,

reduced CVD mortality accounted for about 60% of the increased expectancy life of both men and women aged 65 years (Klenk *et al* 2007). In the UK, over the last ten years (1995-2005), the age-standardised mortality rate for CHD fell from 94 to 48 per 100,000; with death rates falling by about one half in both the 55-64 year age group and the 65-74 age group. However a recent analysis of trends in CHD mortality in younger adults – they appear to be flattening out – suggests that increases in obesity may be starting to offset the decline in other risk factors among younger cohorts (O’Flaherty *et al* 2008).

- What is the role of decline in stroke? Ten years ago there was not much evidence of declining incidence of stroke. Now, however, there is an accumulating body of evidence of reductions in age-specific incidence rates for both CHD and stroke (Goldacre *et al* 2008). Certainly some of the decline in stroke mortality is caused by delayed onset, and reflects reductions in pre-morbid risk factors (Rothwell *et al* 2004). In Japan, a dramatic reduction in stroke mortality is the main contributor to the increase in life expectancy at birth between 1970 and 2000 (Yoshinaga 2005). Stroke mortality in the UK has been declining more slowly than CHD mortality in recent years.
 - What is the role of decline in cancer? Taken as a whole, UK age-standardised mortality from cancer changed very little in the second half of the 20th century (Quinn *et al* 2001). More recently however, mortality rates have declined substantially (10-15%) among both men and women (Westlake & Cooper 2008). Cancer incidence, however, declined by only 1% between 1993 and 2004; and it actually increased among women (with breast cancer accounting for much of the increase).
 - If cancer incidence continues to increase will mortality still fall? The fall in mortality from lung cancer is due mainly to fall in the incident of disease. The fall in mortality from breast cancer in women and from prostate cancer in men has occurred in spite of increasing incidence. The fall in mortality from colorectal cancer is occurring against the background of stable incidence. Much of the fall in the incidence of lung cancer in men has been offset by a rapid and substantial increase in the incidence of cancer of the prostate.
- **What is the changing impact of healthcare on mortality?** Will it continue to have an impact? How much life expectancy can we expect to gain in rich societies without the intensive application of scientific medicine? It is argued that modern medicine is now the main contributor to ongoing mortality decline; and it is as a result of continuing improvements in medical care that we should expect mortality reductions in the future (Cutler *et al* 2006). This was not the case in the recent past when emphasis was placed on nutrition and public health.
 - **What is the role of drugs?** One recent analysis of the relationship between national variations in levels of pharmaceutical expenditure (within the OECD) and mortality estimates that a doubling of drug expenditures adds about one year of life expectancy to a 40 year old male (Shaw *et al* 2005). The effect, they reckon, is comparable to what may be achieved by modest changes in smoking behaviour or in the consumption of fresh fruit and vegetables.
 - **How much of the gains are due to cohort effects?** Sceptics about the likelihood of repeating over the next 50 or so years the reductions in late life mortality that were seen in the second half of the 20th century ask whether or not we should regard some of these gains as ‘one-off’ effects (Carnes & Olshansky 2005). Willetts (2004) is one of several researchers who have looked at UK data and found strong evidence to suggest that people born during the

period 1925-1945 have shown higher rates of mortality improvement at all ages than the cohorts born before them or after them. They are, on this view, a lucky cohort; they appear to have benefited from various social changes in a way that is unlikely to be repeated.

- **Can we ever eliminate cause of death altogether?**
 - Olshansky et al (1990) estimated that hypothetical cures for all circulatory diseases, diabetes and cancer would increase life expectancy at birth in the USA by 15.8 years for females and 15.3 years for males (beyond 1985 levels) – equivalent to a 75% reduction in mortality from all causes.
 - It was the sheer magnitude of this requirement that led Olshansky et al (2001) to reaffirm that life expectancy at birth was unlikely to exceed 85 years.
 - Olshansky & Carnes (2004) argue that “a repetition of the large, rapid gains in life expectancy observed during the twentieth century is extremely unlikely” in this century without the technological capability “to slow the rate of aging”.
 - Alternatviely Oeppen and Vaupel (2002) have insisted that with the mortality data now available to us it does in fact seem more likely than not that we will see a repetition of the gains in the second half of the of the 20th century.

- **Can the gains in human longevity be maintained?** Will the increase in active life expectancy continue throughout this century? Are we reaching the point of diminishing returns? Mortality reductions in the oldest-old – the population over 85 – have shown no sign of slowing down in recent years. In Japan, annual mortality among female centenarians declined from 50% to 35% between 1975 and 2000 (Robine et al (2003)).

- **Does the data on the oldest-old show any signs of a compression of mortality?** In an analysis of Japanese mortality from 1950 to 2000, Cheung & Robine (2007) show not only that there has been a strong and linear increase in the modal age at death over the last 50 years, but that the standard deviation of ages at death above the mode stopped decreasing in the mid-1980s for women and the 1990s for men. In other words, data from the country with the lowest mortality in the world show no sign of a compression of mortality.

- **Are there limits to longevity?** There remains a widely accepted common belief that there exists a maximum human life span of around 120 years. This has if anything been confirmed in the public imagination by the death in 1997 of Jeanne Calment, a French women of 122 years - the world’s reliably verified oldest living human. The fact that the reliably verified oldest man died around the same time at 115 also confirms another widely held belief that women are in some way programmed to live longer than men. There are thus a number of questions concerning this pace of increasing life expectancy, and whether there exists a limit to the span of a human life.

3.3 Uncertainties around the drivers of migration

The United Kingdom had a net immigration of approximately a quarter of a million annually at the beginning of the 21st century. There is an inherent attraction for potential immigrants to the economically affluent countries of most of Europe, which as we have seen have relatively low levels of fertility. There are considerable uncertainties, however:

- It is uncertain as to whether migration for work will result in increased immigration or out migration of labour
- The role of environmental refugees in the migration flows to the UK are uncertain

- The ability of migration to mitigate the effect of population ageing over the next twenty years is uncertain

In particular, the migration flows to/from/within the Central and Eastern European countries remain difficult to register, which is particularly frustrating as since 1989 there have been dramatic increases in migration flows within and from these countries. In the period 1960-1990, it is estimated that the annual average number of net migrations (officially recorded) from Central and Eastern Europe to western countries was less than 450,000 (Frejka 1996; Okolski 1998). By the early 1990s this figure is estimated to have reached approximately 850,000 (Garson, Redor and Lemaitre 1997).

Similarly, there are dramatic differences between countries in terms of levels of immigration and emigration but also between the levels of immigration and emigration for individual countries and this is likely to continue. For example as we entered the 21st century, immigration levels exceed emigration levels in each EU country giving positive net migration in all cases. Only four countries – Germany, Italy, Spain and the United Kingdom – had annual immigration levels in excess of 250,000, with France at around 120,000 and all other countries less than 100,000. Only two countries – Germany and the United Kingdom – had significant levels of annual emigration with Germany losing approximately 500,000 persons and the UK just less than 200,000. In all other countries, the level of emigration amounts to less than 50,000 persons.

- **What is the role of migration in mitigating other demographic effects?** Many authors have considered the demographic impact of immigration in populations with below replacement fertility levels.
 - For example, Lesthaeghe et al (1988) show that for the twelve members of what was then the European Community overall population decline in the first part of the 21st century could be averted if immigration levels of approximately 1 million per annum could be attained.
 - Ulrich (1998), however, showed that even with relatively high levels of immigration, the German population would begin to decline in the near future.
 - Wanner (2000) revealed that without migration the Swiss population would decline to 5.6 million in 2050 rather than the projected 7 million.
- To what extent can and should immigration mitigate certain negative effects of demographic ageing?
 - Le Bras (1991) explored the consequences of post-war migration on the populations of a number of OECD countries and concluded likewise that only modest rejuvenating effects on the population could be observed. The average age of the population in these selected countries had been lowered by between 0.4 and 1.4 years as a result of immigration.
- **What is the role of migration on the labour force?** It is often assumed that international immigration rejuvenates the labour force and offsets age-related dependency costs, simply because immigrants are young economically active persons. However, contemporary migration experience does not support this assumption.
 - Coleman (1995) states that the cumulative effects of migration alone on the population's age structure had been rather limited because the age structures of immigrants and emigrants were quite similar and because the level of migration after all is quite small in relation to the size of natural change in the population.
- Will skilled labour be pulled out of the UK as well as pulled in?

- Migration flow data are problematical especially with regard to emigration, which if registered at all is often underestimated (Salt, Singleton and Hogarth 1994; Salt, Clarke and Schmidt 2000).
- In the case of the United Kingdom, for example, Coleman (1995) showed that post-war immigration simply neutralised the previously dominant pattern of emigration. Furthermore, without this immigration from the Commonwealth countries, and without the additional births of these immigrants, the population of the United Kingdom would have been 3 million persons less than was the case in the early 1990s.
- What are the ways in which global patterns of demographic change are likely to present both policy challenges and opportunities for the UK? A key question, for example, is whether we should expect demographic convergence to accompany socio-economic convergence and the role that migration has to play in this process.

3.4 Uncertainties around population ageing

- **What will be the impact of population ageing on the intergenerational transfer of resources?** Most countries in the world have developed public institutions for transferring resources and support between working generations to dependent younger and older generations. Population ageing is bringing about such large changes in the relative size of these generational groupings that policy-makers have to re-consider the operation of the institutions that channel public resources and support between generations. In addition, declining fertility affects the collective capacity of society to provide these goods and assist with the problems that face the ageing individual.
- **How will these trends develop over the course of this century?** In the developed world, for example, there are relatively large birth cohorts now in mid-life, that are longer-lived and have lower fertility than their parents. These three factors mean that their entry into old age will generate what is sometimes described as an 'age wave' or 'demographic shock' that will subsequently subside as smaller cohorts take their place. Old age dependency ratios will increase sharply as the consequences of rapid and large declines in fertility work themselves through the population. However, the continued increases in longevity, including potential radical increases due to new generation technological advances, accompanied by persistent falls in fertility, mean that the population structure of both the developed and developing regions may well dramatically alter over the course of this century.
- **There is considerable policy-relevant uncertainty.** Current assumptions on longevity, for example, may turn to be too conservative due, for example, to the speed of technological advance in biomedicine, or indeed, too optimistic due, for example, to the increasing prevalence of obesity. The extreme scenarios we now have to consider include the possibility that biomedicine will enable young children today to remain active and healthy as centenarians as well as the possibility that their life expectancy will be less than that of their parents.
- **What adjustments have to be made to a low-mortality and low-fertility future?** While policy makers recognise that they have to help their societies adjust to a low-mortality and low-fertility future, they are unclear as to how large these adjustments will have to be. The adjustments required in order to finance

the additional consumption of longer-lived population under conditions of declining fertility clearly pose major allocation and distributional challenges.

- As individuals we may be required to reconsider the way in which we allocate consumption and resources between different stages of the life course.
 - As societies, we have to decide how to allocate the burden of adjusting to demographic change across (i) different parts of the life course and (ii) different generations.
- **How will the powerful dynamic of global ageing affect globalisation?** As restrictions on the movement of human and financial capital around the world are eased, demographic change becomes a potent force for change in the global economy. Exactly how these changes will play out remains poorly understood, though some of the outlines are clear.
 - Large shifts in national age distributions are likely to affect national saving patterns, capital requirements and international capital flows, particularly between the more and less developed worlds.
 - The demand for health and social care workers in more developed countries is already increasing, and is set to increase further at the same time as the supply of younger workers will tighten.
 - The implications for the host and source countries' welfare systems, and for the family and social support structures in the source countries, are considerable.
 - National provision of education, health and social care, housing, transport, and basic infrastructure will all be affected.
 - **How will governments and employers enable individuals to maintain their health and productive capacity for as long as possible?** The labour market will face increasing skills shortages and a large proportion of older workers, and adapt to train and retain older workers. New cohorts will expect and demand increasingly flexible working patterns. Home is likely to develop as a place of work, education and health care.
 - We need to consider how the organisation of work be best be adapted to a new distribution between the generations, with fewer young people and great numbers of older workers, to take into account the specific needs of different age groups;
 - How parents' integration in working life can be facilitated and how they can achieve a balance between flexibility and security to bring up their children, to train and update their skills to meet the demands of the labour market.
 - We need to decide what is an appropriate balance between investing in early education and in adult and life long training schemes.
 - There is also concern over the intergenerational contract and changing patterns of intergenerational solidarity as societies age.

It is clear that population ageing will lead to hitherto unseen consequences:

- More generations will survive next to each other than ever before; people will increasingly pass income, care and support down as well as up through the generations. What will be the new forms of intergenerational solidarity as intergenerational transfers and justice move to the fore of policy concern and will influence the new ethics of our societies?
- How will individual life courses change, both professionally and personally, as we recognise our personal longevity? Individuals will have to re-think their own personal life courses and when and how they wish to mix education and work.

- How will societal structure and organisation change to keep up with the new demographic reality? We will move increasingly into second, third and even fourth partnerships with extended families of a complicated and demanding nature. The family as a supportive environment will change, though how is unclear. Communities will change both spatially and socially.
- How will social and economic behaviour adapt? Consumption will vary between ages, groups and generations and will not be the same as previous generations. People's disposable income will need to be distributed between increasing leisure, education, health care, mobility, and other demands.
- How will infrastructure and services, such as housing and transport, education and health care provision, adapt to a large percentage of older adults' needs and capacities?

4. Trends in the challenge area of Generations and the Life Course which we can reasonably confidently expect to continue to 2025

In recent decades, Britain, like many countries across the developed world, has witnessed an evolving pattern of change in the nature of family structures, roles and relationships. In particular, there are significant demographic changes taking place that are having a direct influence on patterns of family formation, as well as on relationships between family members.

These include shifts towards fewer marriages, more cohabitation and more births outside marriage; increases in divorce, remarriage and reconstituted families; and an increase in the proportion of lone parent and smaller families.

In addition to these broad trends, population ageing and the extension of the life course, point to a renewal of multigenerational family relationships, particularly regarding the role of grandparents.

It can be argued that *the* major trend on current 21st century families has been transformation in relation to marriage. Today's family picture reflects a shift away from the married couple family that dominated for much of the 20th century. While it remains that over half of adults still live as married couples, their percentage is declining. Census figures over the second half of the 20th century show marked declines from 68% in 1971 to just over 50% in 2001. Alongside this, and as in many European countries, the average age of marriage has increased. Parenthood is also occurring later. Kiernan (2004:118) has shown that in the mid-1970s, the average age of first time brides in Britain was clustered in the 22-24 years old range, whereby by the year 2000 they were clustered in the late 20s, predominantly at age 27. It should also be noted that this masks considerable variation in the age of first time mothers by social class and education.

One of the important drivers behind these trends is the concomitant rise in cohabitation, which doubled between the 1991 and 2001 censuses. While men and women living together outside marriage is certainly not new, there are clear rises in incidence since the 1980s in young people living together for sustained periods either as a precursor or instead of marriage. A proportion of cohabiting couples are same sex couples. Since the Civil Partnership Act came into force in January 2005, there have been over 20,000 such partnerships. The number of people living alone has also more than doubled between 1971 and 2005, from 3 to 7 million (Social Trends 2007).

One change which has received much political and media attention, and which also forms a central aspect of arguments around family breakdown, relates to patterns of divorce. In Britain, rates of divorce have increased steadily since the 1970s culminating in the current disbanding of around 40% of marriages (Harper 2003). Although, as Harper (2003) goes on to state, this is counterbalanced by the fact that those marriages that do not end in divorce will be longer because of increased life expectancy for both women and men. Accordingly, divorce, along with the greater degree of children born outside marriage, has contributed significantly to changes in household and family composition. On one hand, the proportion of children living in lone parent families in Britain more than tripled between 1972 and 2006 to 24% (Social Trends 2007). On the other hand, is the rise in the number of step- and reconstituted families. Although precise figures are difficult to come by, there is little doubt that numbers have been growing as a consequence of divorce and remarriage (Allan and Crow 2001).

Demographic changes along with new family forms are also impacting upon the position of older people within families. It is increasingly argued that families will be increasingly characterised by multigenerational bonds beyond the household, particularly between grandparents and grandchildren. Recent UK figures suggest that around a third of the population are grandparents and will remain so for an average of 25 years (Harper 2005). Moreover, three-quarters of the UK population will at some stage attain grandparenthood (Dench & Ogg 2002). With the expansion of the grandparent role across the span of an individual's life, it is likely to occur while people are still engaged in numerous other social roles including work, associational and other family roles. In the United Kingdom, this context is reflected by current policy concerns over the role of grandparents (Dench & Ogg 2002), particularly around childcare (Wheelock & Jones 2002) and as a resource allowing lone mothers greater participation in the labour market (Harper et al 2004).

Taken as a whole, these trends illustrate the point that ever less and less people live in a household characterised in terms of a "simple" nuclear family comprising of a heterosexual couple and their two dependent children. In attempting to make sense of the increased diversity and fluidity in family relations, at least two key ideas from family sociology emerge – "individualisation" (Beck & Beck-Gernsheim 2002) and "negotiation" (Finch & Mason 1995). According to the individualisation thesis, individuals, over the latter half of the 20th century have been gradually emancipated from traditional norms and, as a result, are able to exert a greater degree of control over their lives. This may be reflected in changing normative understandings about when the "right" age to marry is, about greater sexual freedom, challenging gender norms, and increased opportunities for educational, labour market and social mobility for women. Evidently there is much more flexibility in becoming a couple and whether people co-reside. Younger people are marrying less and are doing so at older ages. There also appear more choices around family and work, albeit choices which are gendered. People are far more able to choose the kinds of intimate relationships that are important to them, and are more likely to end them if they no longer accord to their personal preferences and objectives.

Increasing numbers of families live with the reality of their members being dispersed across a wide geographical area. Research has shown that geographical distance between older parents and their adult children has on average grown over the past decade or so, in response to growing demands for a geographically mobile workforce in the wake of globalisation (Hoff 2006b). Young families move where jobs are – from rural areas across Britain to the metropolitan hubs London, Birmingham, Manchester, Glasgow, or Edinburgh. Although still a rare exception when seen in relation to the total population, growing numbers of highly-qualified workers have moved abroad.

4.1 Families will continue to change in size and extent.

The relationship between household and family will continue to evolve; family roles and relationships will continue to evolve and be substituted by both kin and non-kin.

- Postponement of life transitions; A combination of factors has resulted in contemporary Europeans delaying a number of life transitions, which has knock-on effects for other life transitions. Young adults are on average leaving the parental home later than in previous cohorts, forming their first stable adult unions later, are getting married later, and postponing the birth of their first child.
- Marriage/divorce: Parenthood has become increasingly detached from the institution of marriage. Marriage rates have steadily decreased in England and Wales since the early 1970s, from about 420,000 in 1970 to 275,000 in 2000. The declining popularity of marriage was accompanied by a trend towards postponement of marriage. Not only have the absolute numbers of marriages declined over that period. An increasing number of existing marriages were prematurely dissolved through divorce and this is likely to continue.

The above-described changes in the age structure of the population and in family formation have resulted in subtle changes of intergenerational relationships within the family.

- The combination of an extended lifespan and the existence of fewer family members due to lower fertility have resulted in a narrowing of the more recently born generations and a verticalisation of family structures, which were dubbed 'beanpole families' (Bengtson, Rosenthal and Burton 1990). "Individuals will thus grow older having more vertical than horizontal linkages in the family." (Harper 2006: 181).
- Children and parents can now expect to live in very long-term relationships, spanning half a century or even more. Recent research found a number of positive effects of increasing longevity on intergenerational solidarity (Bengtson 2001; Silverstein 2006).
- On the other hand, the above-described trend towards increasing geographical distances between ageing parents and their adult children diminishes the potential for instrumental support (Shelton and Grundy 2000; Hoff 2006b).
- Grandparenthood has been influenced by these changes in a complex manner. On the one hand, longer life has heightened the likelihood of grandchildren having four living grandparents at birth, as well as at the transition to adulthood. The percentage of Americans having at least one grandparent when the grandchild reaches the age of 40 has increased from 1 % in the year 1900 to 21 % in the year 2000 (Uhlenberg and Kirby 1998). The other side of the coin is of course that grandparents see their grandchildren growing up, in many cases having children of their own.
- On the other hand, declining fertility has resulted in fewer grandchildren: in the US, the number of grandchildren per woman has declined from about 12 in the year 1900 to about 6 in the year 1980, with a further declining trend (Uhlenberg and Kirby 1998). The combined effects of rising life expectancy (more years spent with grandchildren) and falling fertility (fewer grandchildren) may even have unexpected side effects, such as fit and wealthy grandparents competing for the attention of fewer grandchildren (Uhlenberg 2005).

4.2 The complex adaptations required at both individual and social level as reconstituted family structures become the norm will continue;

- Plurality of family forms: 'new' family forms include lone parents, cohabiting couples with children, families 'living-apart-together', and so-called 'patchwork families' or 'reconstituted families'. 'Patchwork' or 'reconstituted' families provide an excellent example of the growing complexity of family life – they refer to the

combination of more than two family networks following separation/divorce. Individuals may end up having children with partners from different relationships, with each adult union adding a new set of relationships with members of another family network while (at least to some extent) trying to maintain contact with those from previous relationships.

- These trends towards plurality of family forms have influenced the relations between ageing marriage partners, old parents and their adult children, and between grandparents and grandchildren. Although couples may have the chance to grow old together, there is a higher percentage of divorce at advanced age than before. Consequently, relationships with children have changed as well. Older parents may have relationships with biological as well as with stepchildren. This may result in a larger variety of parent-child relationships, but could also imply decreased reliability of support at times of need. Grandparents may become more important to grandchildren when parents separate. Grandparents' rights to maintain the relationship with their grandchildren after divorce has become a hot legal issue, arguably to be considered in divorce settlements (Ferguson 2004). The rising proportion of single parent families has led to more responsibilities for grandparents in respect to financial transfers and (grand-)child care provision.
- Childlessness. Another challenge to family life is the growing prevalence of childlessness. As many as a fifth of Americans aged 65 years and over is without spouse and child and this looks set to continue. (Dykstra and Hagestad 2007a). Although childlessness has become less stigmatised than in the past, people without children still have to justify themselves for not having children. "Stereotypes suggest that those who remain childless in marriage are avoiding social responsibility and are being self-indulgent." (Dykstra and Hagestad 2007a: 1284). The pathways leading into childlessness vary. People can be without children for very different reasons – involuntary or as a matter of choice and the timing of life transitions is crucial for having children. Postponed lifetime transitions have knock-on effects and effectively blocks second chances for having children. In addition, childlessness makes more of a difference in men's than in women's lives, i.e. the differences between childless men and fathers are more pronounced than those between childless women and mothers.

4.3 The immigration of foreign-born workers and their families to the UK is a trend which appears set to continue in some form.

As a consequence, transnational family relations have become a reality of family life in Britain. Long-distance relationships between ageing parents and their adult children, as well as their grandchildren can still be maintained thanks to communication technologies (telephone, email, VoIP, etc.). But such relationships are different from face-to-face contact and cannot substitute physical contact. Moreover, long-distance family relations change the nature of family solidarity. Whereas financial or emotional support do not require physical presence and can be provided across long distances, instrumental assistance can no longer be given by the family.

4.4 Generations

- The eroding of conventional intergenerational superiority will continue as children as well as young adults question the rules laid down by older adults, in particular given possible differential cohort psychological development. Individualisation, the priority of the individual over the collective, enhanced by technological advances may well move down through the age groups to very young children.
- New digital technology will continue to enable and encourage individualisation and introduces a complex array of peer and other reference groups beyond the traditional hierarchy of parent and teacher.

- Generational cooperation and competition will continue in some form, though this will probably be modified as the blurring of boundaries between individual identities continues.
- Technology and communications, differential access to social capital, urbanisation, labour market factors and health technology, will continue to impact upon including intergenerational relationships in both the private (family) and public spheres.
- It is clear that future cohorts will continue to be different from present ones. However the influence of life course factors on modifying cohorts' behaviour is unclear.

4.5 Life Course

- The fixed boundaries between childhood, adolescence, young and older adulthood will continue to blur along with other identities, however scientific knowledge of development may introduce new boundaries.
- The increasingly complex worlds and the collapsing of life stages away from current chronological barriers will continue to allow individuals to adopt a more extensive perspective across the life course.
- Technology and communications, differential access to social capital, urbanisation, labour market factors, health technology, will continue to impact both upon individual life experiences and upon the contexts within which we experience these.
- The development of social and cognitive skills in childhood is likely to remain crucial as a foundation for all other types of learning across the life course.
- Our understanding of mental capacity, development psychology and how this is being affected by interaction with the new digital world from a very early age, will increase in the light of new scientific advances.

4.6 Identity

- Identity boundaries - gender, cohort, generation, age, race, ability, health, capacity - will continue to blur.
- At the other end of the spectrum, poverty and social inequality may increase for those groups unable to access such capital, or new technologies may eradicate the social inequalities we see today.
- Inequalities drawn along new lines – gender, cohort, generation, age, race, ability, health, capacity - may arise, or be removed.
- Adulthood will continue to be a time of luxury to delay transitions into responsibility. This gives more time to explore and expand each life stage and the demand for education to help fulfil these desires may increase.
- Negotiation will continue. Coupled with the notion of "individualisation", is the idea of "negotiation". Relationships between men and women, parents and children, to a greater degree involve negotiation. Families are not simply "givens" but need to be worked at, particularly when who is and who is not "family" is fluid and subject to change over time.
- Relations between parents and (adult) children will continue to be increasingly characterised by democratisation, mutual agreement, respect and reciprocity and disclosure of information. Like individualisation, the breakdown of ascribed social norms, provides a degree of space within which to negotiate.
- Multi-generational relationships will move to such patterns of negotiation. The current generation of grandparents are healthier and wealthier in their later life. This provides opportunities for them to develop meaningful and reciprocal relationships within children, not least around education and learning. However, these bonds, whilst strong, still require negotiation. Most grandparents want to help out, but they do not necessarily want to be providing childcare on a full time basis. This is exemplified in recent debates around grandparents' rights as well as

grandparent support groups offering advice as to how establish ground rules with parents around childcare.

- Despite the differences between them, all ethnic groups, including South Asians, are viewed as moving towards the “modern individualism” end of the continuum, with lower rates of marriage and higher rates of cohabitation and single parenthood, albeit at different rates. Berrington (1994), over a decade ago, found that whilst almost all Asians do get married, the second generation are marrying later than their parents, suggesting some assimilation in patterns towards those of the white population. Arranged marriage is a common form of marriage amongst South Asian groups. However, these patterns are also impacted upon by “western” notions of individual choice, with the individuals who are marrying being given more opportunities to influence partner selection than previously (Crow and Allan 2001: 60).

4.7 The Role of Science and Communication Technology in Shaping Contemporary and Future Family Relations

Developments in communication networks and information technology are already shaping family relations, not least amongst minoritised families dispersed by international migration. The rising availability (and affordability) of air travel, telecommunications and other new digital forms of communication are further encouraging the development of transnational ties on a global scale. This is occurring however, not just amongst those with a history of migration, but amongst a wider range of families whose children, siblings, parents and/or grandparents are living and working for varying amounts of time abroad.

- In some families, we will see the internet and other new and advanced telecommunication systems acting as a principal means by which family members and friends establish frequent and regular contact. Recent developments such as SKYPE and VONAGE may be responding to, as well as normalising, these demands. SKYPE claims to have 309 million registered members worldwide and 12 million users at peak times (BBC News 2005). Like SMS messaging previously, SKYPE is becoming part of the everyday terminology of family and friends. Again the availability and affordability of this software is key. Increasingly these facilities will be used by both children and parents to contact each other.
- One tangible impact of technology on family life is the shift in the work-home relationship. For example, as a result of digital forms of communication people are increasingly able to take their work home, and to combine working from both office and home to suit their family and caring obligations. This has become a particular trend within dual earner families. It conversely may lead to a colonisation of family space and time by work space and time. For example in “mum is working” times or working during the post-bedtime shift. At certain moments, the space between working and not working becomes blurred, for example, internet searching, reading newspapers and magazines. Work and family domains are also blurred by the expectation, generated by these technologies, that individuals are, and should, be available all the time.
- There will also be transformations in the relationship between emotional closeness and physical contact. Family members scattered across continents will view themselves as emotionally close because they are making the efforts to stay in touch despite their considerable spatial barriers. In turn, the possibility of Video calls, which already account for a quarter of all traffic on SKYPE, could change the way in which family members perceive and understand intimacy and the link between physical contact and emotional closeness. It is interesting to note that people who use these facilities regularly will use terms and phrases like ‘intimate’, ‘close’, ‘just like being in the same room’ to describe these forms of communication.

- The rise of more democratic forms of parent-child relationships means that children are having an even greater interest and input in decision making. New forms of digital communication will represent a key medium through which these decisions are made. For example, parents may already be encouraging the purchase and use of mobile phones by their children at a young age to the extent that they allow them greater control and monitoring of the children's activities and whereabouts. They may allow parents to act as "virtual chaperones", monitoring activity and safety within an increasingly "risky" environment. On one hand they imply more equal partnerships. On the other, the control and monitoring of children's behaviours may be extended, beyond the physical, at the virtual level.

5. Uncertainties in the Challenge area of Generations and the Life Course.

Inevitably, visions of possible futures will draw selectively from the range of evidence available. Any predictions around the particular direction that families will take are questionable to the extent that they overlook the scope for diversity. Furthermore, the degree to which current trends represent sharp qualitative breaks with the past is highly questionable. In focusing primarily upon change, we risk overlooking significant consistencies and continuities that would be equally important in understanding how families in the future will unfold. However many questions remain;

- **How will the different trends interact?** While there is more scope for ethnic diversity within families, the cultural effects are not certain. It is not certain, for example, to what extent immigrant groups will become assimilated and acculturation will take effect so that the values, the culture and the customs merge with the majority population with time. Conversely, some communities might retain a strong heritage cultural identity. There may be further tensions in retaining identity if family members are dispersed geographically because of economic demand and globalisation. How will family members continue to balance conflicting demands and will families remain as coherent cohesive units? We do not know whether grandparents will continue to have the time for childcare and that special bond and, for that matter, whether grandfathers rather than grandmothers will have to play a greater role.
- **Will the move to individualisation continue?** Future generations of families may not continue to move towards "modern individualism". This is especially the case with minority populations who may not continue to assimilate to the norms and values of the host society. As has been noted, close transnational links may actually be increasingly sustained by both the greater social mobility of young Caribbeans and South Asians in Britain, as well as by further developments in communication technology.
- **Will families continue to be rooted in a local place?** If these trends around the globalising of family relationships continue, then one would expect individuals and families to be less rooted around local place, and in relation to the communities in which we were born or grew up. They will involve the maintenance of ties across greater distances between Britain, Europe and the world.
- **What will be the impact of globalisation?** There has also been a parallel rise in importance of the local, the increase in ethnic group solidarity and different forms of project identity which emphasises active family and community

togetherness, not free floating individualism. In this sense, physical contact may become even more rather than less salient in the form of family gatherings, celebrations and the passing on of traditions and rituals. The global fascination with genealogy and family trees may stem from the need for self-understanding and belonging in a globalising world where identities can become easily blurred and where choices seem overwhelming.

- **Will there be a decline in the importance of family?** That family responsibilities based on ascribed traditional norms of responsibility can no longer be assumed is only one side of the story. What all the research evidence shows is the considerable hard work, time and effort people put into maintaining their connections to other family members across boundaries and differences and who may live in other countries. Rather than changes driving people apart, making the family more fragile and people more self-focused, we see people continuing to invest considerable energy and value into their personal relationships. As the boundaries of family life become more complicated, we see a greater emphasis upon the communication and “display” (Finch 2007) of ‘familyness’, as the means by which families are established. We also see more attempts to seek out family histories through genealogical software and historical societies, and an interest in resemblances and heritability (Mason 2008).
- **Will mainstream changes in British society also impact upon minority families? Is their influence more or less similar or different to that identified within majority families?** Currently those families headed by a person of non-white ethnic background are much more likely than white families to have children living with them. Nearly 80% of Bangladeshi families had dependent children compared to just 40% of white families. Bangladeshi and Pakistani families tend to be larger than families of any other ethnic group. Mixed, Black Caribbean and White families with dependent children had the largest proportion of cohabiting couples, but cohabitation is less usual amongst Asian and Chinese populations. In turn, over 45% of Black Caribbean, Black African and mixed families were headed by a lone parent, compared with 25% of white families. According to the 4th National Survey of Ethnic Minorities in Britain (Modood et al 1997, Berthoud 2005), only 39% of Caribbean adults under the age of 60 are in formal marriages compared to 60% of white adults under 60. Conversely, South Asians are characterised by higher rates of marriage with around three-quarters of Pakistani women in partnerships by the age of 25, compared with about two-thirds of Indian women and just about half of African-Asian and white women (Berthoud 2005).
- **Will minority ethnic families follow the path of “individualisation” (rising patterns of cohabitation, divorce, less children, lone parenting) that is seen to be characterising white majority families?** Berthoud (2005) for example posits a single scale running from “old fashioned values” to “modern individualism” as a way of interpreting ethnic variations with Pakistani’s and Bangladeshi’s at the traditionalistic end and Caribbean’s at the individualistic end and ahead of whites. Berthoud goes as far as to say that “the Caribbean family, in the traditional sense of a Caribbean man married to a Caribbean woman, may be dying out” (2005:249). In contrast, South Asians remain strongly adhered to “old-fashioned values” with very few people cohabiting from an Asian ethnic background. This said, whilst South Asian adults are less likely to be living outside marriage, there is and has been a good number of Indians, Pakistanis and Bangladeshis living alone temporarily due to migration processes which go unreported in surveys. For instance, men may be separated from their families by lengthy immigration procedures and in these cases women may become *de facto* lone parents for several years and, as a result, not in receipt of the support and benefits available to them.

- **Will ethnic minority families continue to differ in relation to norms of responsibility towards older family members?** Currently among some of Britain's Asian population in particular, greater priority is given to parental ties in adulthood than to partner and children. There is much more sharing of the home across three generations, often in the form of common housekeeping. Multigenerational ties, both within and beyond households, have particular resonance amongst south Asian families, and to an extent Chinese families, in which couples continue to live with their parents after starting their own families. For example, around two-thirds of British resident Indian elders live with one of their adult children, compared with just 15 % of white elders (Berthoud 2005). However young Asian families tend to live more often with the father's rather than the mother's family, meaning that, unlike the dominance of maternal grandparents commonly observed amongst whites, it is the widowed paternal grandmother who is most likely to live with the family.
- **How will technology affect family relationships?** While we know that technology will form an increasingly important role in how family members communicate, there remain uncertainties as to the extent of this change, how it will affect the nature of relations and the meanings people ascribe to family life. How will potential technological developments by Google around live satellite pictures at street level shape this? How are new forms of communication shaping the democratic openness of how monitoring and supervision works in families?
- **What role will technology play in how people form relationships?** Do they produce necessarily more fragile relationships? Will they enable people to sustain relationships that would otherwise breakdown and end? Families are creating a 'networked' sense connectedness, for example, by making and sending videotapes and emailing distant relatives, family histories recorded and distributed across the globe. These are already occurring, but we see them happening on a much grander scale, leading to more fundamental shifts in what being intimate and being close means.
- **How will work patterns affect what goes on within families?** Apart from the possibility of a longer active life having career implications, the demands of the labour market in response to shortages of particular skills will mean that patterns in work, training and education will change when viewed from a life-long perspective. The blurring of boundaries between living, working and learning currently experienced may continue to progress; particularly as new technologies and mobile communications and global business practices can keep people electronically connected at all times of the day and night regardless of whether they are at a place of work, home, or on holiday (Harrison, 2008). Perhaps the biggest challenge to families in relation to this context is managing the balance between work and leisure – or, indeed, a new order of family life. Although flexible working patterns could assist this process there is also the possibility that the more traditional opportunities for family and intergenerational interaction, such as in the evenings and at weekends, may disappear.
- **How will developments in flexible working conditions impact upon family life?** On one hand, they may provide people with choices in order to resolve work and family conflicts, allowing more and more people to work from home and in locations that allow them to combine responsibilities. On the other hand, they may encourage employers to put even more pressure on workers to work further away and spend more time away from home. These developments will undoubtedly impact upon domestic gender divisions and decision making processes within the family. Time pressures can lead to stress for working

parents and how people negotiate work and family roles becomes an increasingly important issue.

6. The potential future challenges or opportunities these trends and factors might present for education.

The 'knowledge society' produces new knowledge at ever-increasing rates, within ever-shorter periods of time. As a consequence, previous knowledge is getting outdated and is devalued at a rapid pace. Skills and knowledge have to be refreshed every couple of years. Professional qualifications obtained two or three decades ago do no longer guarantee a job. Increasing global competition adds to uncertainties about future career prospects. The emergence of these new risks demands new solutions.

The best coping strategy to survive in this uncertain social environment is life-long learning. Life-long learning is required to continuously adapt one's skills and abilities to a rapidly changing environment. Life-long learning also helps to adapt to changing labour market demands, which may make certain qualifications obsolete and offer opportunities for others.

Therefore, early education in the parental home as well as in nurseries and pre-school facilities lays the foundation for future success or failure. Failure to acquire basic educational skills, including learning how to learn, will result in reduced life chances, and ultimately deprivation and social exclusion throughout the life course. A forward looking educational policy should therefore invest maximum effort at the early stages of life to equip everybody with the tools for life-long learning. Furthermore, people who did not get this opportunity during their school years need to be offered specific training for acquiring these skills. This is precondition for realising the full benefit of life-long learning as an adaptation strategy throughout the life course. Educational investments in the early years of life will reap the highest returns throughout the life course, eventually also working to the benefit of older people.

The internet is an example that shows how new technologies can be used to the benefit of older adults, if they are educated and trained in using it. The internet has the potential to smooth the transition into older adulthood, and much more so than the invention of the telephone, since it "...allows expanded opportunities for communication, accessing information and resources, and performing routine activities such as shopping." (Czaja and Lee 2007: 241) The internet can help to mitigate social isolation – particularly for people from isolated rural areas and with transport issues – by making communication with friends and family easier, as well as engaging with internet communities. A recent European study shows that grandparents are partly using the internet for keeping in touch with their grandchildren – but only if they live a long distance away (Quadrello et al. 2005).

Moreover, the internet can enhance educational and employment opportunities for older workers by enabling them to access work-related information without physically being in the workplace, thus offering new options of working from home. The internet gives easy access to health care information, and to infrastructure (e.g. banking, shopping, or libraries) not easily accessible otherwise, which would particularly benefit people living in remote areas or suffering from physical impairments. In short, educating older people to use the internet carries all the hallmarks of 'successful ageing', in particular in rural areas.

6.1 Intergenerational Learning

Another form of learning – intergenerational learning – can become part of the answer as well. Until today, most intergenerational learning still takes place within the family, where thanks to ever rising life expectancies grandparents and grandchildren can engage in leisure activities very different from the past. What is new, however, is the idea that intergenerational learning works in both directions (Luescher and Liegle 2003). Not only do parents and grandparents educate their children and grandchildren – children teach their parents and grandparents too. Common examples refer to the use of internet and computer technology, mobile phones and how to write text messages, how to download music from the internet and to transfer it to a MP3 player, etc. But the exchange of skills and knowledge goes well beyond such everyday examples. Grandparents were identified as guardians of family history (Reitzes and Mutran 2004) who pass on this knowledge to the younger generations. Grandchildren, on the other hand, share their view of the world with the older generations, thereby helping grandparents and parents to keep up with new developments in our rapidly changing societies.

The emergence of new family forms and increasing numbers of single and childless households have resulted in public concern about the future of intergenerational relations. Intergenerational projects run by voluntary sector organisations can play an important role in educating older people in using the internet/computer technology. As examples from all across Europe show, young people are only too often happy to volunteer teaching older adults these skills (examples of such projects can be found in Hoff 2008).

Life-long learning has become the key to continuous adaptation of people of all ages to ever-changing demands in the labour market. Precondition for success are specific skills – the skills of learning how to learn. It is one of the main challenges of our dynamic knowledge societies to transfer such skills to older and younger workers alike to avoid the persistence of old or the emergence of new social inequalities. Intergenerational learning can make a significant contribution to the transfer of such skills – in families, in the voluntary sector and in formal education. What is needed in future is intergenerational co-operation rather than intergenerational conflict. In the workplace, age-integrated work teams of older and younger employees working together appear to be best suited to provide the required mix of skills and knowledge (Boersch-Supan et al. 2005).

Intergenerational learning is also an essential precondition for the preservation of local knowledge, such as local history or rare craft skills (Hoff 2007). Such local knowledge can be re-vitalised and used to a local community's advantage, for example, by creating tourist attractions. But it also helps scientists to better understand the evolution of domestic animals or technologies – to mention only a few examples. In some cases, this can lead to new employment opportunities. Yet the relationship between local, traditional, lay, and expert knowledge is a very complex and dynamic process, as the local knowledge is embedded in the local context.

In short, education policy will have to be adjusted catering for the needs of an ageing society. This implies a change in the ways of teaching for all generations, not just for the older ones. Learning how to learn would enable individuals to help themselves throughout their lives, thus reducing reliance on state support and public expenditure.

Additionally, teaching curricula for students of all ages will have to be changed in the light of the current transformation of Britain into an ageing society. Among many other things, this could include information on older people's specific needs, the benefits of intergenerational interaction, the reconciliation of employment and care for older as well as for younger family members. Education in an ageing society would also mean making sure that professionals working with older people are appropriately trained in using state-of-the-art technologies like the ones described above. Likewise, people working in care for many years already should be offered the chance to update their knowledge and

skills on a more frequent basis than commonly practice. In the long run that could – and ought to – result in caring becoming a more highly-qualified occupation.

Intergenerational learning, the intergenerational *exchange* of knowledge and skills, as well as adjusting school and training curricula to the needs of an ageing society can become a vital adaptation strategy for young and old in the knowledge society. A mix of experience and openness toward new developments is most likely to generate this adaptability. The young, the middle-aged and the older improve their employment prospects by learning from each other and by teaching each other, thus sharing their specific strengths. This intergenerational exchange influences the employment chances/choices and the working capacity of all generations, individually and at the workplace, and thus the potential of our societies for generating economic growth.

6.2 The family and intergenerational learning

The family can be a hub of mutual support, influence and learning in a multitude of ways. Although some of these may be systematic and intentional, much of what may influence each family member can be informal and incidental. Shared values, expectations, aspirations, knowledge, beliefs, skills, behaviours and the language we use develop around the variety of domestic activities that family members engage in. These activities can range from playing together and talking to each other about each other to more specific pursuits such as sport, gardening, reading, shopping and watching TV. We are also living at a time where new information and communication technologies are finding their way into homes and lives at many different levels.

In one sense it is easy to characterise the role that older family members can play in handing down knowledge and wisdom as if these are fixed entities that can be passed down through generations. While certain skills and knowledge may be passed from one generation to the next, other things are continually changing. Not only are we living at a time of rapid scientific and technological development but we are also living at a time of rapid social and cultural change. In turn the demands made by society change in relation to these and what is valued and seen as relevant can influence how each individual develops.

The phrase 'intergenerational transfer of learning' carries with it the idea that learning results from something that is transferred from one generation to another or, at least, a series of such acquisitions. Taken on its own this, of course, reduces learning to a quantitative increase in knowledge or procedures familiar to behaviourists; a one-way transaction thereby ignoring the agency of the learner. Constructivist or socio-cultural approaches are well known in that they allow for learners acting on what they receive in their own way; building modifying and often discarding earlier mental structures so that learning can also become a way of seeing and understanding things differently; a qualitative change (e.g., Fosnot, 1996; Wertsch and Tulviste, 1996). Acknowledging this creative potential in the learner not only transforms the idea of learning and what can go on amongst family members but also what society contributes to families as well as what families can contribute to society.

Family members respond to each other; each in their own unique way. In view of this there is a contribution that all family members, regardless of their generation, can make towards each other's development as well as to the family as a whole. Even if a more experienced other plays a scaffolding role (Vygotsky, 1978) so that with this assistance a task can be carried out by a learner that would otherwise not be attempted successfully alone there is still scope for mutually helpful collaboration. This is, for example, inherent in Rogoff's (1990) use of the term 'guided participation' which suggests a more active role played by children so they can collaborate with, as well as be guided by others.

Intra-generationally, research carried out amongst siblings by Gregory (2001) suggests an evenly balanced interplay or 'synergy' where understandings can be developed mutually rather than primarily in one direction. If the idea of transfer is to be considered more generally in the family setting then, firstly, its scope as a multi-way intergenerational phenomenon should be taken into account and, moreover, its relationship to learning considered in relation to a creative interplay or synergy.

The scope for intergenerational exchange and support between families can be seen to be compromised for children with lone or working parents, migration and economic relocation. In view of this there have been developments in provision aimed at purposeful extrafamilial support that do not rely on the family. Newman and Hatton-Yeo (2008), for example, characterise these in terms of either educating the young or being concerned with the welfare of older adults. In particular they focus on the teaching and learning roles that can be played by bringing together the different age-groups. The perceived benefits of this enterprise include shared learning positive attitudes among generations and social cohesion (ibid.). The underlying theory is drawn from Erikson's (1963) idea that parallel developmental needs of young and old result in a special kind of synergy between these generations. In view of this participants in intergenerational programs are usually populated by those who are younger and older while missing out a middle generation. The idea that a generational synergy can be developed outside the family setting is, of course, fundamental to such programs.

Dissatisfaction with the idea of learning as acquisition has been expressed by Hodkinson and his co-workers (Hodkinson, 2005; Hodkinson et al, 2007) who see this as separating the learner from the process of learning and what is learned. In particular, they argue that 'the processes and products of learning are deeply intertwined, and neither can be understood without considering the positions, dispositions, and identities of [the] learner' (Hodkinson et al, 2007: 14) with no clear separation between learning and identity. For some people, each is part of the other with learning not just about becoming but also about being. A more recent characterisation of this has been cited by Plumb (2008) in the phrase 'learning as dwelling'. Here it is also argued that learning is not about the intake of external knowledge into the mind of an isolated individual but a 'process through which learners forever weave themselves into the fabric of their natural, social and cultural worlds' (ibid.: 62).

A view of learning occurring as part of practice and the social interactions that take place in the associated settings has been developed by Lave and Wenger (1991). They argue a distinction between the approach to academic learning taken in schools or other education institutions and learning that occurs more naturally as part of day to day social activity. Academic approaches towards learning focus on representations of the world that have been abstracted from the real life setting where they would normally occur. These representations can then be manipulated theoretically and can be helpful in developing explanations and predictions about the world. As McCormick (1997) has noted, knowledge derived in this way is applicable more generally to a variety of situations whereas practical knowledge is limited to particular situations. While academic approaches can focus on more conscious systematic forms of teaching, by way of contrast learning may arise within the practice occurring in an everyday setting (Lave, 1989). In this way learners engage less formally from their own perspective rather than from an external perspective that might otherwise characterise a teaching curriculum. In this way learning is situated within rather than isolated from the practical setting and the social relations that form part of this (Lave and Wenger, 1991).

Learning also occurs within a community comprised of participants who make a range of contributions. A key point is that the contributions can be at different levels depending on those who happen to be participating in an activity where understandings and purposes are shared. Lave and Wenger (1991) use the term 'community of practice' in

relation to individuals who participate in a common purpose and share understandings about their actions in relation to this.

The family can be likened to a community of practice in the sense that there is mutual support with members playing complementary roles in the practice of day to day living without any external systematic learning agenda. Even with children growing up as part of a family in business their early experiences of the social practice within the family and the knowledge and skills associated within this are inextricably linked (Hamilton, 2006). On some occasions what is shared and learnt can be more systematic and focused while in many other respects learning can be incidental and informal.

Families are not formal learning institutions and although they are populated in part by adults the learning space can be very different from the more uniform and target-driven demands that have to be managed within the confines of a learning initiative. If intergenerational programs and extrafamilial paradigms (Newman and Hatton-Yeo, 2008) are being implemented in response to a perceived deficit in some children's lives then a key challenge for the future is to preserve some of those qualities of the family learning space and the associated diversity.

In contrast to parents who are working and busy with a variety of day to day responsibilities, grandparents can spend more time with their grandchildren and develop a special bond (Weissvourd, 1998). Children and their grandparents each have their own vulnerabilities and are able to offer mutual support for each other. There is scope for a more relaxed and hands-on relationship when engaging in activities (Jessel et al., 2004). The home setting, can offer scope for a more evenly balanced learning relationship, or 'synergy' (Gregory, 2001) than might occur in more formal educational contexts. In particular, synergistic learning relationships may occur between children and their grandparents. This may give scope for reciprocal social relationships and joint interaction in learning and contrasts with the role of the teacher as controller rather than as learning partner (Bruner, 1985). In the context of the family, mutual trust and respect for each member's perspective (Rommetveit, 1974, 1979) is important to this process. The value given to an activity within a culture in which learners identify can also influence learning interactions (Goodnow, 1990).

Families can play a key role in the development of literacy. A parent reading books to children is an everyday part of life in many families. Although this can involve both mothers and fathers, it has been found that mothers tend to do this more (Nichols 2000; Connie and Sharen, 2004). Grandparents also make important contributions to their grandchildren's education (Strom and Strom, 1995) and with regard to literacy performance, grandparents' reading skills and practices are reflected across generations (Parsons and Bynner, 2006). This was also evident from the work carried out by Kenner et al, (2005). A further focus on the story-reading within Bangladeshi families revealed how the multiple worlds inhabited by a grandchild during story-reading were transformed 'syncretically' on a number of levels (Gregory et al, 2007). The idea of syncretism as a creative process where people reinvent culture, drawing on familiar and new resources is argued to be of central importance in that it allows for cultures to develop rather than remain frozen. This was evident within the books that were used, such as through the pictorial illustrations, as well as linguistically in the story reading (ibid.).

6.3 Ethnicity and Intergenerational learning

The increasing amounts of time children spend with their grandparents raises direct questions about education and its relationship to intergenerational learning that takes place within families as well as in schools (see also Gregory et al 2007, Kenner et al 2007). The role of grandparents can often alleviate the time pressures faced by working parents, and in certain situations may substitute parents' time investments in promoting

children's education. While intergenerational transfers of time, care and money tend to work downward – from grandparents to grandchildren – the nature of intergenerational learning is a reciprocal one. There has been anecdotal evidence for some time regarding how children teach their grandparents to use computers, internet and other technological developments.

We know that the family provide opportunities for frequent interaction between young and old, and this has become an important aspect within debates about age segmentation and segregation. A key area to consider is the role of schools in fostering this. Evidence from intergenerational programmes also suggests that schools need to be more aware of the opportunities available for mutual learning between children and older people, and the wider societal benefits this provides. Changing attitudes towards older people, including grandparents, need to be recognised within educational and learning paradigms – not as conveyors of out-dated traditional forms of knowledge but as agents with skills and knowledge that compliment children's formal education.

Intergenerational learning also has particular implications for minority ethnic families and citizenship. Previous conventional understandings of citizenship had assumed that acculturation of minorities to the host society values was an inevitable process. The orientations of 2nd and 3rd generation migrants would be firmly orientated to the host society as opposed to the country of origin. Most of the UK research evidence has shown this to not be the case. The mutual learning that occurs between grandchildren and grandparents can also act to promote citizenship amongst older people. The current government has initiated a number of policies aimed at citizenship education and the better integration of new citizens to the UK.

Schools represent the key domain through which the state is able to actively foster national values to its citizenry. Yet as patterns of migration change, for example, people migrating during middle and later life, then citizenship education needs to be broadened, in order to form part of lifelong learning. To what extent will previous migrants, such as those who came during the 1950s and 1960s act as role models for more recent migrants of a similar age group? The adaptation of new migrants also requires a much broader notion of citizenship education – not simply with regard to civic values, democracy and Britishness – but less abstract forms of knowledge which impact directly upon their mobility – e.g. qualifications, labour market issues, entitlements and service provision, and issues to do with intercultural communication.

Globalisation has extended and intensified the flows of migration between societies and this has been met with concerns over the integration and needs of the new and diverse migrants. A good deal of their societal adaptation can be learned from previous and existing migrants, thus there needs to be spaces for mutual learning within civil society, for example, through community and adult education centres.

6.4 The role of new technologies

Although the parts taken by human beings as key players in family life have been outlined, there is another element that is finding its way into people's relationships: new information and communication technologies (ICTs). If we regard these solely in terms of such functions as storing and retrieving information and communication to others then they may not appear to be so new. However, what marks out the present day developments in this field are their portability and accessibility and affordability

New technologies and family communication: The number of older as well as younger people using mobile phones and the internet to communicate has increased in recent years (Haddon, 2004; Age Concern, 2002; Mobile Data Association, 2005).

Attitudes amongst elderly towards internet use have been found to vary from the 'users' who were open to learning something new regardless of their age and 'non-users' who did regard age as an obstacle (Blit-Cohen and Litwin, 2004). Health factors such as deteriorating eyesight also marked out users from non-users. Active social communication was found to take place over the internet. The extent to which people own and use technology also has a bearing on the availability of social support. From their European study Mante-Meijer et al. (2001) found that in countries where the technologies have penetrated less there was greater reliance on settings where the relevant skills could be learnt formally. Informal learning, more evident in high-penetration countries, was found to take place in a variety of contexts such as within families and between work colleagues. Although Selwyn (2004) has found that the extent to which children influence their parents' take-up of computers was slight, children were able to play a more active part in this with their grandparents. The situation has, of course, been rapidly changing over the last few years as new technology has penetrated and proliferated. More recently, Gatto and Tak (2008) have reported increasing use by older adults of computers for communication as well as entertainment and access to information.

New technologies and family learning: Based on a survey of the views of parents of children from 3 to 5 years of age attending nurseries in Scotland, McPake et al. (2005) have identified three types of competence developed through the use of ICT: technical (basic operational skills), cultural (understanding of the social roles that ICT plays) and learning. The latter, seen to be of particular significance to young children, refers to their ability to use ICT for social and cultural purposes, including communication, self-expression and entertainment as well as their work. ICT was used in the home to support early literacy and numeracy, communication and musical skills, as well as in helping children learn how to learn. Importantly, the degree of competence children had acquired appeared to depend on such factors as access to equipment, support in learning to use it, and the particular interests and aptitudes of older family members. The authenticity seen to be afforded by technological activities can aid learning (Murphy and Hennessy, 2001). This has been followed up in the family context by Jane and Robbins (2004) who have also reported on the potential benefit of such activities to grandparents in that it allows them to revisit and explore technology in a new and fresh way as a result of interacting with their grandchildren. Kenner et al. (2008) noted the role of the computer as mediating artefact (Crook, 2001) and participant in learning activities with grandparents and grandchildren. In this context, however, the importance of the role of the grandparent in structuring the approach to the activities was also noted (Kenner et al, 2008).

The implications arising from the possible blurring in chronological divisions of education (Harper, 2008) for intergenerational learning are widespread. Segmentation of education may be less distinct. For example, the role of the university could become a more continuous one where people remain connected as part of a life long learning community. With regard to children's learning and development, another challenge is for teachers to know more about the learning that goes on within families so that they can learn from this as well as allow their own institutional approaches (which will be different) to interface in a sensitive way. This is still an under-researched area. While studies such as the Teaching and Learning Research Programme's Learning Lives (Hodkinson et al., 2008) have begun to contribute to the literature on the kind of learning going on throughout people's lives both formally and informally, further attention will still be needed in understanding the different kinds of learning, cultural practices and development taking place in a variety of out-of-school settings including the family.

Older people, of course, are not fixed entities. The older people of 2050 will have been the younger people of today who will have taken with them not only the practices we associate with young people today but also some of the attitudes to change and

flexibility that we may consider a hallmark of our time. Assuming the infants of today will be the elders of the future then, to survive as a responsive and flexible community in a changing world, what they will take with them into that future will not just be the transferred remnants of yesterday but also the ability to play their part in creating the culture of tomorrow.

6.5 A new education agenda

Ageing societies require the transfer of educational resources between young and old. There is a concern that in using national resources for education and training for older people, we may penalize the young. However there are demographic and societal reasons for such a transfer in resources. As the UK, like the rest of Western Europe moves to over half its population aged over 50 by 2030, so there will be a general transfer of resources from younger to older populations, these will include health, education, housing, employment etc. This will be matched by changing societal needs, as individuals adjust both to the reality of longer lives, and to the fluid life courses which are emerging at the same time.

- Life long education of adults will move to the fore alongside early learners, and the division of education along chronological age lines will blur.
- Education is likely to be a mix of formal group teaching (akin to current early learning in schools and universities), self-promoted learning using information and media technology, community learning, work-place learning and skills development.
- It is likely to be pluralistically funded by individuals, communities, employers, governments, private enterprise.
- The separation of education to enable personal development, to enhance employability and career progression, to develop skills, and to successfully contribute to wider society is likely to disappear.
- Education is likely to continue throughout the life course enabling individuals to draw on a portfolio of options to personal development.
- The role of “qualifications” will need to be re-examined.

The new demography and new social forces are likely to result in life long education of adults to the fore along side formative learners. In particular the division of education along chronological age lines will blur. While there will always be a demand for formative education, it is now recognised that the education of adults, including older adults, is both intrinsically important and important for society as whole. Education gives people the chance to face the rapid changes in the society, in the labour market (particularly through skills upgrading) and in their personal and community life. It enables them to participate in complex democratic societies on all levels, and gives the society a chance to pursue its social and economic development supported by socially integrated adults of all ages. UK policy on education has been developed in the context of a traditional pyramidal population structure, and linear life courses, which result in a large investment by the individual in early year’s formal education, and a rapid decrease in such education in young adulthood. The population ageing identified above, resulting in mature societies and elongated active lives for a growing number of the population, leads to the challenge of devising education for the new demography – both individual and societal. A new framework is required to cope with the following issues:

There appears a clear distinction between formative and foundation education.

- formative education
- education as a lifestyle-choice
- education to enhance employment prospects
- education to enable full citizenship
- education as a public health initiative

The Challenge team proposed that as the demands for education across the life course grow, so foundation education will be available not only during formative education, but also as a component of other types of education which might be taken at varying times.

Formative education: there will still be a requirement for structured formative education, but increasingly here there will be a mix of “teaching” and “group learning” with self-promoted learning using information and media technology even for the very young. The relationship between state and private structures for determining access to social and economic capital will remain blurred. Inequalities drawn along new lines – gender, cohort, generation, age, race, ability, health, capacity – may arise, or be removed. At one end of the socio-economic spectrum we may see the rise of the buyer as parental purchaser power comes to the fore and families with high economic and social capital increasingly buy out a new education agenda. At the other end of the spectrum, poverty and social inequality may increase for those groups unable to access such capital, or new technologies may eradicate the social inequalities we see today. Changing ethnic and cultural norms will increasingly influence society with implications for the status of formal and family based types of learning.

Education as a lifestyle choice: new technology enables the blurring of leisure and education, education becomes a lifestyle choice enabling mental enhancement and enjoyment. As the relationship between mental capacity and physical health becomes clearer, so education will form a growing element of personal enhancement. Research indicates that mental development, brain capacity, and longevity are closely associated, so education contributes to active health life. Life long learning and adult education cannot be developed within standard models of delivery but requires more flexible approaches. Older adults are more diverse than younger adults. Alongside standard variables of gender, class, ethnicity etc, older people have accumulated a variety of other biological, psychological, historical and social attributes which are unique to their personal life histories. This will structure the resources they have access to (social, biological, cultural, mental and economic) and the frameworks within which they make decisions. The UK government policy has tended to think of demographic ageing as leading to large numbers of old people, rather than large numbers of people who are simply living longer. Many of them with increasingly active, healthy lives. Conceptualised in this way, mature societies provide the opportunity for the first time for multi-generations to live and work alongside each other, contributing their own experiences and expertise. As people age throughout their lives they accumulate a wealth of experience, knowledge, skills, memories, wisdom and creativity. Life long education opportunities provide for this wealth to be distributed throughout our society. Within this frame, education across the life course may become a social responsibility, either through enlightenment, or through evidence that life long learning is having significant health and well being effects.

Education to enhance employment prospects: Our traditional thinking of skills upgrading and employment will change. As new cohorts enter the workplace, they will increasingly be accustomed to regular/continual skills upgrading to keep pace with technological developments and demands. This form of education will become an essential requirement of the modern workplace, and its provision needs to be negotiated between employers, governments and individuals. Employment related education of the future will increasingly focus on language, life skills, and the global arena, to enable full mobility of highly skilled individuals in an increasingly open international labour market. Clearly the world economy will influence the demand for skilled and unskilled international labour and this will impact on the willingness of the state and the individual to purchase such training. One impact may be that that the expansion of global economic activity will increase the demand for educated labour, this will lead to greater upward social mobility for working class students via education but those with lower educational qualifications will need to re-educate and re-train for more cognitively demanding work Alternatively given a downfall in global employment, the middle class

will then come under increasing pressure as professional jobs are off shored, and we may find the skills divide is not between the middle and working class, but cuts through the middle class itself.

However, regardless of these two contrasting futures, Europe is now moving into a period of redefining late life work as governments, employers and workers begin to come to terms with the implications of demographic ageing and the far reaching implications this will have for institutions and individuals alike. There are now growing moves to recruit, retain and retrain that generation of men and women in their 50s and 60s who are increasingly being seen as essential to retaining Europe's economic competitiveness as the upcoming skills shortage washes across the region.

While some argue that the requirement for new skills, particularly abilities in information and communication technologies, increasingly excludes older workers, it is also clear that technological innovation and flexible working patterns will increase opportunities for older workers. Indeed, the inherent training component of new technological labour means that future cohorts of older workers will have experience of continual training and skills updating throughout their lives. Supplemented by vocational and life long learning, adult education and training, this will significantly enhance the employability of older people and address upcoming national skills shortages. It is important that such education and training is targeted, builds on previous experiences and skills and is properly evaluated. It is important to engage the business community in this, and to do this, far more research and evaluation of the effectiveness of different types of life-long learning and training is required from a business stance. There is likely to be a move from classroom training in workplace and already rapid growth in 'desk-top' training for all employees using CD-ROM, videoconferencing, the internet and electronic performance support. Also we will see a shift from trainer led training to employer led training with trainers as "enablers". Work related education shifting to create interventions that allow employees to decide what to learn and when to learn it, employing user-driven technology: multimedia training, training technology and performance support systems. There is already growing use of technology to provide training and (technology-based training) and to support workers' performance on the job through electronic performance support systems (technology-based support) – it is likely that both will play an increasing role, not just in the workplace but across all educational activities. In addition a wide range of technology now provides both technology-based training and technology-based support: computer software, CD-ROMs, videoconferencing, computer networks, multimedia training technology and performance support systems. The trainer's role is changing – trainers need to become supporters and enablers, particularly when dealing with an older, experienced workforce. There will also be a growing role for Human Resources to move to employee-dialogue approach, whereby employee is positively encouraged to identify training and skills updating needs.

Education to enable full citizenship: This will be required to enable people to cope with complexity of life, to plan their lives, and to care for others. Modern complex democratic societies will not be able to function without well education individuals at their centres. New inequalities will arise between those who are educated into modern living, and those who do not have the skills, knowledge or capacity to cope with these new demands and ways of interacting, contributing and behaving. There are current concerns over the role of migration and immigration and the special needs of new migrants: in particular there is current acceptance that people from different cultures may have very different expectations of what learning is from the traditional British experience. Education currently can play a key role in the arrival and integration of new migrants, employability, recognition and updating of qualifications, cultural and social adjustment, social integration and cohesion. However, given the likely tremendous increase in international migration for all, it is likely that many of these challenges will have disappeared and or changed by 2030 as we move into a mobile more culturally

integrated world. It is likely that individual preferences and experiences will dominate the learning experience, need and demand, as with other groups.

Education as a public health initiative: It is now widely accepted that keeping the mind active is as important to health and well being as physical activity. The role that education may play in keeping down national health costs, especially in older age groups, will increasingly come to the fore. Mental capacity does not necessarily decline with age, and almost certainly not until late old age for most adults. Research suggests that fluid intelligence (ability to carry out higher level cognitive functions) may decline from the mid-60s, though not at a standard rate, and possibly due to lack of use; while crystallized intelligence (acquisition of new skills through education) continues to grow throughout adulthood. Indeed, it may be that reduced mental activity among current older adults - in part due to lack of new mental opportunities and activities, and lack of focused training and educational opportunities - actually contributes to apparent decline in mental capacity. Indeed few physical capacity changes are directly related to age. Most are heavily influenced by environment and lifestyle. Those that are age related, such as sensory change, can be adapted for through aids (declining eyesight and glasses etc); others through a change in the physical environment. There is thus little which does deter an individual taking part in and benefiting from educational activities throughout their lives. And an implication would be that, if we want an active older population, we need to encourage such participation?

The role of digital and bio technologies: These will be significant. New technologies are already playing an important role in educating a diverse range of employees in the corporate world. These need to be considered as tools for enabling education across the life course for all in the community and home as well as the workplace. Technology and training delivery include electronic on line training with on-line certification; videoconferencing allowing simultaneous video and audio interaction between multiple participants across the globe; CD-ROMs providing interactive video and audio capabilities, easily used by all ages, and which enhance learning and retention; local area network (LAN), wide area network (WAN), or "Intranet" learning. Technology to enhance learning include electronic performance support systems (EPSS). These are electronic tools that enable individuals to access support, coaching or information to perform better. These systems have considerable potential in for other education activities. EPSS are being seen as making significant impact on productivity, performance and employee learning in the world of work. This area is likely to develop rapidly over the next few decades with real potential for education. There are several broad aspects of children's relations with technology that are likely to become increasingly significant in the coming years. These include the convergence of technologies and forms of communication; the ability to 'multitask', or engage flexibly with a diverse range of media; the individualisation of access to media; the potential for communication and participation in creative media production; the changing role of media in identity formation; the difficulty in establishing the credibility of online information; the growing influence of commercial forces.

7. Summary of evidence to support the identified factors, trends and uncertainties

Howse's review on Longevity sets the demographic scene for this challenge. As he points out forecasts of future life expectancy have been revised upwards *both* in the medium term *and* in the longer term. Over the next twenty years female life expectancy at age 65 is forecast to grow even more quickly than it has done over the last 20 years (3.4 yrs as against 2.6); and there will be only a slight dip in the rate of increase for men over the same period (3.6 years as against 4 years). However, he warns that it would be complacent to discount altogether the risk of a **pessimistic** scenario in which life

expectancy actually starts to fall as younger (and more obese) cohorts start reaching later life, say from 2030 onwards. Two key factors to consider are the gender gap in life expectancy, and the socioeconomic disparities in life expectancy. The worst-case scenario is that the relative difference in mortality rates between high and low socioeconomic groups will continue to increase. Of similar importance is to consider the issue of healthy later life or of frail later life, as this will impact upon demand and need for late life education.

- a **no change** scenario which assumes that the age-specific prevalence of disabling chronic disease will remain unchanged.
- a **poorer health** scenario assumes that current trends in obesity will continue (which means an increase in prevalence of about 2% per annum). This problem will be compounded by the ageing of large ethnic minority populations, which will add to the prevalence of CHD and stroke. Preventive strategies will only partially offset these trends.
- an **improving health** scenario, which is not that different from the **fully engaged** scenario for life expectancy. There will be a decline in smoking prevalence and obesity as individuals take their own health more seriously. Health services will be responsive to demand with high rates of technology uptake for disease prevention and excellent rates of diffusion of treatment. Mortality will decline quickly.

Howse concludes by combining these factors into 2 possible scenarios which could frame the demand for late life education.

- The *pessimistic* scenario assumes that the increasing prevalence of obesity in cohorts that are still relatively young or in middle age will have a very substantial impact on their mortality in later life, large enough in fact to reverse the long-term trend in life expectancy.
- At the other extreme there is what we might call a *super-optimistic* scenario, which reckons on our ability to develop and apply the means of overcoming whatever limits the process of biological ageing puts to human longevity *soon enough to have an impact on the evolution of human longevity in this century*. Should this happen, then we should expect to see a rapid acceleration in gains in life expectancy, and there is no reason why the average age at death should not exceed the maximum observed human lifespan (approx. 125 years) before the end of the century.

At the other end of the life course spectrum, Lee addresses future changes to childhood. The first section of this paper describes the child-centred social investment thesis which has had a strong influence on UK government educational and child-related policy over the last decade. He notes that the resulting policies have involved the increasing integration of health, welfare and educational resources in the common purpose of increasing children's social and cognitive capital. He then considers the guiding social, technical and economic assumptions currently made about the future need in the context of major global trends and signals. These include issues of demographic change in less and least developed world regions, climate change, energy and food security and financial conditions. He argues that despite an ageing of the population, childhood education remains critical as remedial interventions targeted at adults are unlikely to be effective unless these adults developed sufficient social and cognitive skills in childhood to make full use of them. Lee considers the future impact of climate change, resource allocation, market instability, and changing life course investment, concluding that childhood will remain "special" and a particularly wise site of investment in human potential for two reasons:

- The earlier the investment is made the longer dividends will be paid out
- The earlier the investment is made, bearing in mind that advantage accrues advantage, the greater compound interest effects will be

Burnett, Sebastian & Blakemore's review on understanding the changing adolescent brain also highlights that adolescents are a distinct sector of society with specific needs. They show how recent brain imaging studies have demonstrated that the human brain continues to develop throughout the adolescent years. Although there are differences between male and female teenagers in terms of the time course of neural development, similar brain areas undergo significant restructuring in both sexes. Research is currently exploring how the brain changes and how these changes might help to explain certain aspects of typically teenage behaviour, such as risk taking and emerging competence in interpersonal interactions. For example, research on decision-making and impulse control might influence questions of criminal responsibility and anti-social behaviour. These findings might contribute to improving the quality of education and pastoral care for this age group, and have implications for the way young people are seen in the eyes of the law and are treated by the medical profession. Future research might thus play a role in shaping educational and social policy, with a view to encouraging a more socially competent and responsible generation of teenagers.

Taking a different stance Michaels' work on adolescence points out that the family remains crucial to adolescence transitions, and that increasing rates of family dissolution may particularly impact upon adolescents. However, the role of schools, communities and peers also play a key role in this stage of development.

Leeson considers the role of learning across the life course and how this will change in the light of different futures. He argues that we are seeing a combination of forces which are resulting in the *ageing of some life-transitions*, with ageing societies displaying an increase of age at first marriage and at remarriage, at leaving the parental home, at first childbirth. While public and legal institutions may be lowering the age threshold into full legal adulthood, individuals themselves are choosing to delay many of those transitions which demonstrate a commitment to full adulthood – full economic independence from parents, formal adult union through marriage or committed long-term cohabitation and parenting. Leeson argues that this process is likely to continue with a blurring of chronological barriers to access to cultural capital including education. As individuals increasingly combine periods of economic and biological reproduction with rest, so learning for citizenship, social and self enhancement will become more commonplace. Following a review of current EU policy on life long learning, Leeson covers aspects of education for personal enhancement, employment, and citizenship, highlighting the ways in which these may evolve.

The impact of changing family structures both on investment in children and on individuals across the life course forms the key focus of the reviews by Mann, Hoff and Jessel. Both discuss white families and minority ethnic families. Mann lays emphasis on science and technology as a driving force behind aspects of family change. Developments in communication networks and information technology are already shaping family relations, not least amongst minoritised families dispersed by international migration. The rising availability (and affordability) of air travel, telecommunications and other new digital forms of communication are further encouraging the development of transnational ties on a global scale. This is occurring however, not just for those with a history of migration, but also amongst a wider range of families whose children, siblings, parents and/or grandparents are living and working for varying amounts of time abroad.

As both Hoff and Mann point out, one tangible impact of technology on family life is the shift in the work-home relationship afforded by these technologies. There remain several unanswered questions around how these developments in flexible working conditions will impact upon family life. On the one hand they may provide people with choices in order to resolve work and family conflicts, allowing more and more people work from home and in locations that allow them to combine responsibilities. On the other hand they may encourage employers to put even more pressure on workers to work further away and

spend more time away from home. These developments will undoubtedly impact upon domestic gender divisions and decision making processes within the family. Time pressures can lead to stress for working parents and how people negotiate work and family roles becomes an increasingly important issue.

Mann also argues that the rise of more democratic forms of parent-child relationships means that children are having an even greater interest and input in decision making. New forms of digital communication will represent a key medium through which these decisions are made. On the one hand they imply more equal partnerships. On the other, the control and monitoring of children's behaviours may be extended, beyond the physical, at the virtual level, for example, technological developments by Google around live satellite pictures at street level. Thus new forms of communication may affect the democratic openness of how monitoring and supervision occurs in families.

Jessel focuses his review on the actual delivery of education by the family. He points out an important distinction between the approach to academic learning taken in schools or other education institutions and the learning that occurs more naturally as part of day to day social activity. Jessel also considers in some detail the importance of new technology to both unite and distance families, and the possibility for the development of more complex relationships involving different generations. He points out that what we regard as a 'virtual' space today may take on a more tangible coherent and connected life of its own as we are able, through communication technologies, to maintain, sustain and develop relationships. The space in which we live and learn may no longer be defined by four walls and a roof. In this context the challenge for 'family' members may be one of identifying and contributing to a group identity, even if this identity is dynamic in nature.

He points out that with regard to children's learning and development, the challenge will be to combine institutional and family based systems of learning, increasingly influenced by varying cultural practices. The older people of 2050 will have been the younger people of today who will have taken with them not only the practices we associate with young people today but also some of the attitudes to change and flexibility that we may consider a hallmark of our time. He agrees with Lee that formative education will remain crucial. Assuming the infants of today will be the elders of the future then, to survive as a responsive and flexible community in a changing world, what they will take with them into that future will not just be the transferred remnants of yesterday but also the ability to play their part in creating the culture of tomorrow.

Hoff's review on families, care and work also highlights the importance of new technology and life long learning as an important mode of family adaptation to the changing demands being placed upon it.

- In addition he points out that faced with the prospect of a shrinking workforce, the British economy cannot afford to lose too many employees due to unemployment, early retirement or family care commitments if the UK is to maintain economic growth and to preserve existing levels of individual wealth.

As globalisation extends and intensifies the flows of migration between societies, concerns over the integration and needs of the new and diverse migrants will increase. Their societal adaptation can be learned from previous and existing migrants, thus there need to be spaces for mutual learning within civil society. Demivera, Mann, Leeson, Heath and Jessel all address the issue of ethnicity. Intergenerational learning has particular implications for minority ethnic families and citizenship. Previous conventional understandings of citizenship had assumed that acculturation of minorities to the host society values was an inevitable process. The orientations of 2nd and 3rd generation migrants would be firmly orientated to the host society as opposed to the country of origin. Most of the UK research evidence has shown this to not be the case. The mutual learning that occurs between grandchildren and grandparents can also act to promote

citizenship amongst older people. The current government, for example, has initiated a number of policies aimed at citizenship education and the better integration of new citizens to the UK. Schools represent the key domain through which the state is able to actively foster national values to its citizenry. Yet as patterns of migration change, with people migrating during middle and later life, then citizenship education needs to be broadened, in order to form part of lifelong learning. To what extent will previous migrants, such as those who came during the 1950s and 1960s act as role models for more recent migrants of a similar age group?

Heath provides an overview of current understanding of minority attainment in education. He suggests that at GCSEs Indians and Chinese tend to somewhat better than the majority, while students of Caribbean, Bangladeshi and Pakistani heritage do somewhat worse. Gender differentials though are the same among minorities as among the majority, i.e. girls do better. Some, but not all, of the ethnic disadvantages can be explained by social class origins. At upper secondary and beyond minorities tend to have higher rates of staying on after the end of compulsory schooling – including Caribbeans and Bangladeshis. Minorities are also over-represented in tertiary education compared with the majority group. Different explanations are probably needed at different stages of the educational system: at lower secondary, there are hints of the kind of 'oppositional culture' among some Blacks; at upper secondary, higher staying-on rates may be due to expectations (or experience) of discrimination in the labour market, making the 'opportunity cost' of staying in education lower. Traditional family structures and parenting styles may give some minorities advantages in the educational system. Heath highlights the intellectual challenge: while there is plenty of descriptive material of attainment patterns, convincing explanations, particularly for the diversity between minorities, are largely absent. In particular we do not really understand what part is played by actual or expected discrimination, and how much is due to properties (e.g. social capital) of the communities themselves.

Leeson raises a key point when he argues that increasingly migrants will see host countries as but a stepping stone in their life progression. The concept of providing citizenship education to enhance the acculturation of migrant populations will not work in a context when individuals increasingly see themselves as part of a global rather than national community. The adaptation of new migrants thus requires a much broader notion of citizenship education: not simply with regard to civic values, democracy and Britishness, but also less abstract forms of knowledge which impact directly upon their mobility such as qualifications, labour market issues, entitlements and service provision, and issues to do with intercultural communication and global issues. These however, will enhance the global community, but not necessarily the UK.

Kelan and Lehnert explore the changing educational needs and expectations of Generation Y, people born roughly between 1977 and 2000. Generation Y is a prime example of how changes in the economic mode of production are intertwined with changes in technology, society and education in that Generation Y demand different styles of teaching and learning. Generation Y has grown up in a world that has been transformed by new technologies that make new ways of communicating, working and exchanging information and creating knowledge possible. Generation Y has a unique vantage point on these changes because they are coming of age in a time when they still are faced with institutions shaped by the old model but their way of behaving is more in line with new ways of behaving. While institutions change slowly, Generation Y already lives the new lifestyle predicted by theorists of the information and knowledge society. Generation Y is said to be special, sheltered, confident, conventional, team oriented, achieving and pressured. It was highlighted how central technology is for Generations Y and that the learning style of Generation Y is said to be collaborative, multicultural, and visual. In the workplace Generation Y are assumed to work to live and not live to work and to value respect and judge people on merit. In the work context, flexibility is regarded as a key skill, and the transferability of skills is seen as a central personal asset

Generation Y's life paths are increasingly spent in a global networked economy, one in which information gathering is facilitated by new means of technology and bureaucratic organisations are replaced by network organisations, which require flexible and individualised labour. In conclusion Generation Y is said to be significantly different to previous generations, particularly in their understanding that jobs are not for life. Life-long learning is therefore not only a necessity for this cohort, but due to the integration of work and life, an enjoyable, challenging and achievement-oriented aspect of everyday life.

Another key factor will be that of class. Social inequalities in health and life expectancy have already been covered by Howse; Brown and Lauder take up the issue of social class divisions in education. After reviewing current knowledge on education attainment and class and social mobility, they turn to the future. The first scenario they consider is that by incremental policy measures social class inequalities in education and social mobility will be reduced. Crucial to this scenario is the expectation that the expansion of global economic activity will increase the demand for educated labour. This view suggests that the key to greater upward social mobility for working class students will be through education. By the same token, those with lower educational qualifications will need to re-educate and re-train for more cognitively demanding work. They point out that lifelong learning will contribute to this mobility as people change career paths at crucial times of their lives in order to remain upwardly mobile. Given that we can expect older workers to remain in work for much longer than is now the case careers will be extended and consequently this will require greater provision for lifelong learning. Secondly, Brown and Lauder consider a downfall in global employment. The middle class will then come under increasing pressure as professional jobs are off shored to China and India. Moreover the corporate strategy for creating an elite of the 'talented' while much other 'knowledge' work is routinised means that the middle class will be divided between the fortunate few and the majority who will not see their life chances improve. Indeed there may be a decline as what were once seen as middle class occupations both in the number of jobs on offer and polarisation in terms of income. In the third scenario, the state rebalances the economy to generate high end manufacturing in renewables. This creates the possibility of more high skills jobs, leading to greater upward mobility. This enables a high proportion of high earning taxpayers to fund state expenditure. It also creates the possibility that the values underlying education may change. In particular, as in the Nordic countries, there is a greater sense of collectivism as opposed to individualism. This means that the society will extend the concepts of worth and reward beyond the current labour market to funding careers for those in care giving. There will in effect be a citizen's wage which guarantees income in return for active participation in society.

8. Appendix 1

Process

Following the specification from the challenge team, this paper comprises a brief guide to the process and results and then a more comprehensive overview of material to date.

Process

Stage 1

The following 15 papers were initially commissioned for the **Generations and Life Course Challenge**.

1. Understanding the changing brain and learning processes
Sarah Blackmore, Imperial
2. Evolving family structures, roles and relationships in light of ethnic and social change
Robin Mann, Oxford
3. Ethnicity and social organisation: changes and challenges
Neli Demireva, Oxford
4. Families, care and work: changes and challenges
Andreas Hoff, Oxford
5. Life course and longevity
Kenneth Howse, Oxford
6. Migration and social integration: changes and challenges
Sarah Spence, Oxford
7. Childhood and education: changes and challenges
Nick Lee, Warwick
8. Adolescence, youth and education: changes and challenges
Bob Michael, Chicago
9. Adult skills requirements and education: changes and challenges
Ken Mayhew, Oxford
10. Adult lives and life long learning: changes and challenges
Stephen McNair, Leicester
11. Later Life and education changes and challenges
George Leeson, Oxford
12. Family structures and intergenerational transfers of learning: changes and challenges
John Jessel, Goldsmiths, London
13. Migration, ethnic diversity and education: changes and challenges
Cath Roth, QMW, London
14. Class groups and education: changes and challenges

Hugh Lauder, Bath (with Brown)

15. Life course, technology and education: changes and challenges
Clare O'Malley, Nottingham

The following instructions were given to each author;

Challenge Reviews: Generations and Life Course

The remit of this challenge theme is to understand:

1. *Key trends in demographics, family structures, intergenerational relationships and ageing 2025 and beyond*
2. *Key uncertainties and potential discontinuities in these areas*
3. *How these trends potentially intersect with developments in science and technology*
4. *What range of potential futures these trends might point to from the present to 2025-2050*
5. *What the implications might be for educational goals, structures, methods and resources*
6. *What evidence exists of interventions and strategies to respond to these different future scenarios*

Within this theme a series of papers are being commissioned which will cover the broad areas of family, generations, childhood, ageing, life course, ethnicity, social status and migration. All reviewers will be asked to consider the future implications of changes in science and technology and how these may impact upon their particular field. A small group, who have expertise in education, life-long learning and skills, will in addition be asked to also consider the possible impacts of these changes on trends and drivers within education.

Each paper should be between 5000-8000 words and should broadly follow the following framework.

- The first half of the paper should outline current knowledge and likely future developments in your field. In other words it should be a straightforward state of the art review of current understanding.
- The second half of the paper should be original and exploratory and draw on your own expertise and insight into how the future may develop over the next forty years or so.
- In particular it should;
 - indicate future directions and current signals within the field
 - describe the events or changes that would challenge these assumptions
- Throughout you should consider the future implications of changes in science and technology and how these may impact upon your particular field.
- If your letter has requested this then in addition you should also consider the possible impacts of these changes on trends and drivers within education.

The following briefing paper outlines the broad challenge to our theme and raises some example questions which you may like to consider if relevant. It can be found along with other material on <http://www.ageing.ox.ac.uk/otherpapers.html>

Stage 2

Following the initial commissioning processes, these were revised to 13 papers through combining

- McNair and Leeson and commissioning Leeson to write a paper on *Adult lives and life long learning: changes and challenges*, which included a specific focus on later life as one of its elements;
- Demireva and Spencer and commissioning Demireva to write a paper on *Ethnicity, migration and social organisation: changes and challenges*.
- O'Malley dropped out due to illness and personal circumstance.
- Michael dropped out due to illness and it was eventually agreed that Harper would review his work on adolescence.
- Roth and Heath asked to delay their paper *Migration, ethnic diversity and education: changes and challenges* until 2009 due to RAE. In the end Heath agreed to provide information but not a paper.
- Mayhew's paper on work was not pursued due to overlap with Work Challenge.

Stage 3

- A further paper was commissioned from Elizabeth Kelan, LBS on Different future generations: the needs each generation might have and how each may view education across the life course by 20th January.
- Harper was also commissioned directly by the team to write a review on demography.

Blakemore: Understanding the changing brain and learning processes, Burnett, Sebastian & Blakemore Imperial

Demireva: Ethnicity, migration and social organisation: changes and challenges, Neli Demireva, Oxford

Harper: Demography Challenge, Sarah Harper, Oxford

Heath: Migration, ethnic diversity and education: changes and challenges, Anthony Heath, Oxford

Hoff: Families, care and work: changes and challenges Andreas Hoff, Oxford

Howse: Life course and longevity, Kenneth Howse, Oxford

Jessel: Family structures and intergenerational transfers of learning: changes and challenges, John Jessel, Goldsmiths, London

Kelan: The Millennial Generation: Generation Y and the Opportunities for a Globalised, Networked Educational System, Elisabeth Kelan and Michael Lehnert, LBS

Lauder: Class groups and education: changes and challenges, Hugh Lauder, Bath (with Brown)

Lee: Childhood and education: changes and challenges, Nick Lee, Warwick

Leeson: Adult lives and life long learning: changes and challenges, George Leeson, Oxford

Mann: Evolving family structures, roles and relationships in light of ethnic and social change, Robin Mann, Oxford

Michael: A Lens on Adolescence, Robert Michael, Chicago

Challenge team members met in Oxford on 22nd January to review their contributions and address the five key Challenge questions;

Generations and Life Course Challenge Workshop

New Council Room
Somerville College, Oxford

Thursday, 22nd January 2009

P R O G R A M M E

9.30 - 10.00 Introduction
Sarah Harper

10.00-10.15 Life course and longevity
Kenneth Howse, Oxford

10.15-10.30 Childhood and education: changes and challenges
Nick Lee, Warwick

10.30-10.45 Understanding the changing adolescent brain and learning processes
Stephanie Burnett, Imperial

10.45-11.00 Adult lives and life long learning: changes and challenges
George Leeson, Oxford

Paper Different future generations
available Elisabeth Kelan, LBS

11.00- 11.45 Coffee

Paper
available Evolving family structures, roles and relationships in light of ethnic and
social change
Robin Mann, Oxford

11.45 - 12.00 Family structures and intergenerational transfers of learning:
changes and challenges
John Jessel, London

12.00-12.15 Families, care and work: changes and challenges
Andreas Hoff, Oxford

12.15- 12.30 Ethnicity and social organisation: changes and challenges
Neli Demireva, Oxford

12.30-12.45 Class groups and education: changes and challenges
Hugh Lauder, Bath – still not confirmed

Paper Migration, ethnic diversity and education: changes and challenges
available Anthony Heath, Oxford

1.00-2.00 Lunch - Reading Room

2.00-4.00 Discussion: Sarah Harper

Discussion Group (coffee to be served at 3:00 pm)

During the afternoon the group will attempt to summarise the evidence from the reviews and provide insights into potential educational responses.

1. What are the existing observable social and technological practices in this challenge area which we can reasonably confidently expect to continue to 2025?
2. What factors, for example events or changes in social values, might play a significant role in shaping future developments in this challenge area?
3. What are the key uncertainties in the challenge area that may lead to radically divergent future developments, and what might act as the lever for such divergence?
4. What potential future challenges or opportunities might these trends and factors present for education?
5. What existing educational practices or evidence might provide insights into potential responses to these challenges or opportunities?

9. Appendix 2

Evidence Review Papers

Blakemore: Understanding the changing brain and learning processes, Burnett, Sebastian & Blakemore Imperial

Demireva: Ethnicity, migration and social organisation: changes and challenges, Neli Demireva, Oxford

Hoff: Families, care and work: changes and challenges, Andreas Hoff, Oxford

Howse: Life course and longevity, Kenneth Howse, Oxford

Jessel: Family structures and intergenerational transfers of learning: changes and challenges, John Jessel, Goldsmiths, London

Kelan: The Millennial Generation: Generation Y and the Opportunities for a Globalised, Networked Educational System, Elisabeth Kelan and Michael Lehnert, LBS

Lauder: Class groups and education: changes and challenges, Hugh Lauder, Bath (with Brown)

Lee: Childhood and education: changes and challenges, Nick Lee, Warwick

Leeson: Adult lives and life long learning: changes and challenges, George Leeson, Oxford

Mann: Evolving family structures, roles and relationships in light of ethnic and social change, Robin Mann, Oxford

This document has been commissioned as part of the UK Department for Children, Schools and Families' Beyond Current Horizons project, led by Futurelab. The views expressed do not represent the policy of any Government or organisation.