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Reproduction and survival in an unknown world:
what drives today's industrial populations, and to what future?

D.A. Coleman

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Presented as a lecture under the auspices of the Social Science Council (SWR) of the Royal Netherlands Academy for Arts and Sciences (KNAW)

Amsterdam, 7 May 1998

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Graphic design: Harmine Louwé
ISBN 90-70990-78-4

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Preface

Jenny Gierveld, *Director NIDI*

In 1991, NIDI expanded its internationally oriented activities by establishing an International Research Fellowship in Population Studies as well as a related series of Lectures. The fellowship and the lectures are called the Hofstee Fellowship and Hofstee Lectures, to honour and commemorate Professor E.W. Hofstee's outstanding contribution to population research in the Netherlands, as well as his unceasing efforts to found and develop NIDI, inter alia in his capacity as the institute's first president. NIDI is honoured that the Hofstee Lectures, organised by the institute, have been held under the auspices of the Social Science Council of the Royal Academy of Arts and Sciences.

In the field of demography, changing attitudes and behavioural patterns and their underlying factors have been the subject of long-term research projects and of thorough theoretical debates. Apart from the well-known concept of the demographic transition, a new concept, that of the second demographic transition, has been introduced. Meanwhile, discussions about the processes and mechanisms underlying these processes continue. We know a lot, but many questions remain open. The 1998 Hofstee Lecture aims to fill one of the gaps in our knowledge. In this light, David Coleman was invited to present the Hofstee Lecture in 1998. Coleman has been a Reader in demography at Oxford University since 1996 and a Lecturer in demography at the same university since 1980. He has published several books about this theme, including Europe's Population in the 1990s (1996; Oxford University Press). The title of his presentation illustrates the nature of the remaining questions and their policy importance: 'Reproduction and survival in an unknown world: what drives today's industrial populations, and to what future?' Coleman's lecture indicates that demographers may ultimately have to explore unfamiliar territory in psychology and biology to explain these phenomena.

David Coleman's stimulating lecture was followed by a lively discussion, introduced by Dirk J. van de Kaa. Under the title 'Is low fertility postmodern?', he explored whether the term 'postmodernism' or one of its derivatives, could have a place in explaining the complex series of demographic changes highlighted by David Coleman. He argued that the concept of postmodernity may prove useful since it can be taken either to represent a new 'Zeitgeist' or to mark the beginning of a new historical era. In both cases, it establishes a firm relationship between value changes and the beginning of the second demographic transition. Application of the concept using data from the World Value Surveys also suggests, however, that postmodernity does not necessarily imply a preference for very low fertility.

The annual Hofstee Lecture Series offers ample opportunity to share the contribution made by the Hofstee Fellows to the national scientific community.

The Hofstee Lecture 1998

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1 | Introduction

The Low countries, for so long the cockpit of Europe thanks to the great wealth created there by their ingenious inhabitants, are now the focus of a different kind of turmoil; one of ideas born of the rich soil of Dutch demography. We must thank Dutch-speaking demographers for bringing to a world too long intimidated by microeconomics the notion that ideas, as well as money, drive demographic change. Here the second demographic transition was not only invented as an idea but has been enthusiastically put into practice by millions of people. At the front of this work is the NIDI, known internationally as one of the most distinguished demographic institutions in the world, the founder of which was the late eponymous hero of this lecture. I feel very honoured to have been invited to give this Hofstee Lecture for 1998.

2 | What is the 'unknown world'?

The 'unknown world' of the title of this lecture is tomorrow's population of the industrial and post-industrial countries. In these countries, in the richest environment of demographic data that the world has ever seen, our explanations of the mechanisms of demographic behaviour, and hence our ability to predict its future, remain poverty-stricken. In this new demographic terra incognita, we can see what is happening but we do not know why and we cannot tell what will happen next. This lecture is, for the most part, a confession of ignorance – as to what form the future will take, why people in some countries chose to have more children than others, why enlightened people ever choose to have any children at all. I will speak mostly about children; therefore about the first demographic transition and the second demographic steady-state which may follow it. The lecture is not primarily about the 'second demographic transition', which is mostly about sex. I do not blame demographers for being more interested in sex than in children. But children are more important. And the fact that the two can be so completely separated is both the great achievement of the 20th century and also one of our biggest problems.

In a recent learned essay, Dirk van de Kaa (Van de Kaa, 1997) put European demographic trends firmly into the broader context of European post-modernist intellectual thought, placing the importance of value shift in demographic change which he, (Van de Kaa, 1987), Lesthaeghe and others (Lesthaeghe and Meekers, 1986) have done so much to inspire, onto an even broader intellectual and cultural canvas. I take off my hat to this remarkable intellectual tour de force. But can I suggest that what matters is not so much 'post-modern', a no-

tion which may last no longer than the art and music which it inspires, but whether we are truly 'post-transitional'; whether we will see in future a succession of different demographic fads matching the intellectual mood-swings of literati, or instead something more enduring.
Last year in Peking, Caldwell described the transitions of the industrial and of the third world as being not two events but 'a progression of largely inevitable changes that could have been predicted' (Caldwell, 1997, p. 804). Can we take the same historicist view of the post-transitional phase of human development, and enquire what the President of the IUSSP will tell the General Population Conference in 2037 about the obviously predictable nature of post-transitional developments, which the demographers of the late 20th century so lamentably failed to see coming?

3 | Aim of the lecture

I want to address four related problems today.

First *After the demographic transition, what next? Can we envisage a second demographic steady state to replace the pre-transitional equilibrium of the early modern period?*

Second *to see if trends in today's industrial societies are converging towards the same future or pointing to diversity.*

Third *Whether we can discern the dominant mechanisms which drive demographic change, and thereby infer future demographic patterns.*

Fourth *Why literate people should ever want to have any children, and if so, whether by some great convenience of nature, it should happen to be two. By the end of the coming century of ageing, that question will be one which the whole world will need to answer.*

4 | Paradise Lost – The old demographic regime, transition and after

In the old West European demographic regime presided over by Malthus, we think we know what the mechanisms were which affected family size and population. Economy, (men's) wages, births and consequent population growth were all related through the accelerator of marriage, which was the focus of choice and regulation. A century of demographic transition has changed all that. The first transition to fewer babies and longer lives, still not complete, has been followed closely but in more patchy fashion by a second one, evident now for nearly four decades. The first, universal in all developed countries, was to do with survival and the control of fertility. The second, to do with sex, family, household and living arrangements has had more regional and uneven appeal. In the course of it, old certainties concerning relations between the sexes and their roles, on family and on personal realisation have likewise lost their power. That has presented a new burden, or opportunity of choice, to a billion people in the developed countries.

Half a century ago we could limit our families, indeed were already expected to. But we could not without embarrassment, difficulty or even without legal sanction divorce, cohabit, procure an abortion, live with a member of the opposite sex without being married, have children without a spouse, marry but choose not to reproduce. Now changing attitudes have muted criticism and diminished stigma, and welfare arrangements

have removed some of the material impediment to the new arrangements. The result has been a new diversity, maybe transient and unsustainable, in the way we live our lives, which distinguishes countries as a whole and individuals living next door in the same community.
A wide range of choices is on offer. According to some, the appropriate post-industrial demographic regime is not one of stability at all but of continuous change (Mackensen, 1982) with third and fourth and further demographic transitions succeeding each other. On the family, Roussel remarks:

> *"There are several ways of moving beyond the institutional model; the current phase is unstable because it is based only on tradition. Which one is what we need to know, but towards which new equilibrium we are heading is exactly what we cannot determine"* (Roussel, 1995, p. 62, this author's translation and italics).

5 | Convergence – Is everyone going to the same destination?

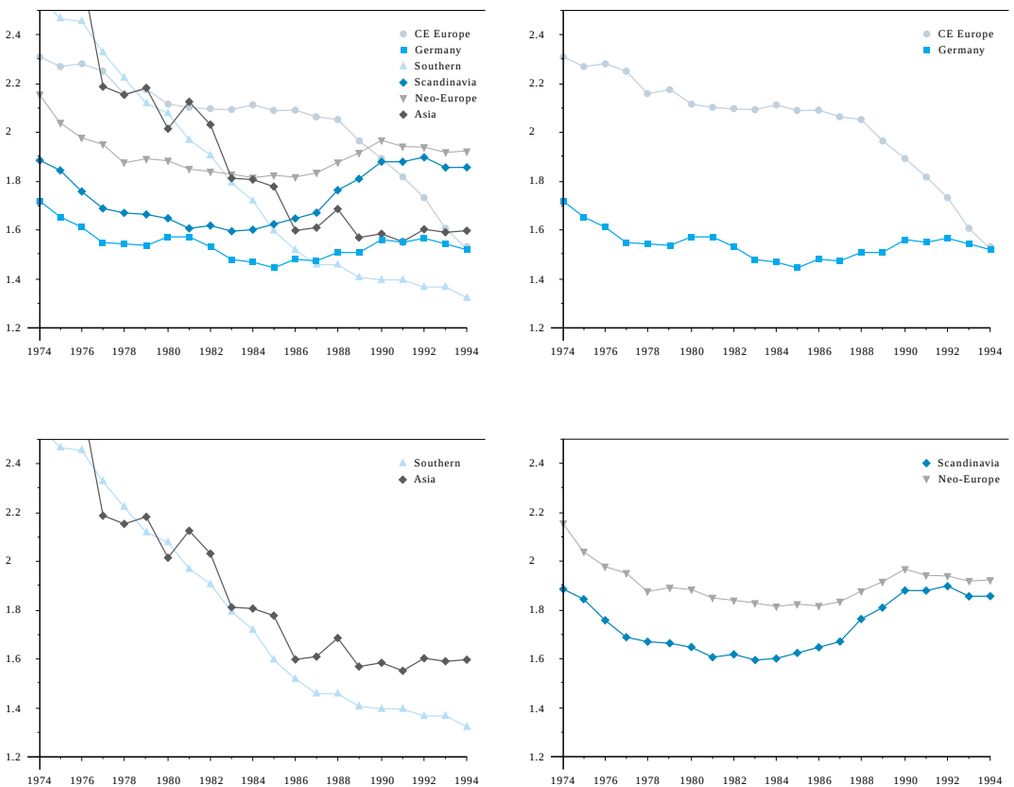
One obvious answer to questions about the future is to see if there is a popular consensus in the ways societies are changing, shown by the behaviour of their inhabitants, irrespective of mechanisms or tiresome theory. Convergence has been a major theme in social and economic theory for many decades, often taking a highly deterministic line. The economic rationality of modern free-trading open societies has long been supposed to exert strong conformist pressures both on the individual and family, and on national economic and social policy. The rationality and competitiveness of the industrial mode of production in a globalized economy, it is said, will force all industrial populations, in Europe and outside it, onto the same track of development in their social structure and politics, their labour relations and incomes, their work habits, income and occupational mobility (Kerr, 1962; Kerr, 1983; Goldthorpe, 1984; Erikson and Goldthorpe, 1993). With common institutions established in a global economy, further discontinuous change will not occur, especially if the European Union project succeeds. Other studies contradict the assumptions of convergence, in economic trends, in employment (Goldthorpe, 1984) and in health or welfare systems, the persistent diversity of which is held to reflect specific and durable differences in national culture (Field, 1989).

If economic characteristics and social institutions are becoming similar across the industrial world, and if demographic characteristics follow them, uniform and permanent demographic patterns should develop. Any persistent demographic contrasts and divergence would be accounted for simply from the occupation of different stages in the same sequence of development. Countries such as Sweden and the Netherlands which are both rich and 'progressive' set the example which the rest of Europe is certain to follow: of reductions in legitimate births, then increases in divorce, falls in nuptiality and increase in cohabitation which then becomes a more normal location for births and at least partly replaces marriage (Roussel, 1994).

6 | What do the facts tell us about convergence?

Well, never mind the theory. Are tendencies towards convergence or those favouring diversity actually in the ascendant in the industrial world today? Data on the 50 or so countries of the industrial world today certainly show a constrained variation. Nowhere is the birth rate much above two children; the average is about 1.6.

Figure 1 and 2. *TFR trends, groups of industrial countries 1974 - 1994*



Nowhere are extended family households the norm, not even in Japan or Singapore. Nowhere outside Eastern Europe is age at first marriage for women less than about 24. However, fertility within that limit varies almost twofold between countries and provinces. Average national levels of cohabitation, divorce, births outside marriage are divergent, although trends tend to be upward. Within countries where these rates are high, modern living arrangements have not become universal; different families behave in highly contrasting ways. Most communities and streets are now more mixed than they used to be. Most now contain both traditional and new forms of family, childless and family couples, broken marriages, fatherless children, in a way which was not true 30 years ago.

In the relative overall stability of the last 20 years, the high fertility countries of the Neo-Europe and Scandinavia –to which might be added the UK and France– have followed a distinctive parallel-convergent course, with periodic increases. The low fertility of the Germanic-speaking countries has been joined by that of its hinterland in Mitteleuropa. The southern European countries have followed an interesting rapid decline, parallel to that of Japan and the little dragons of East Asia. Childlessness and the distribution of family size remain quite different in these areas. The Swedish model is not so widespread; Bosveld notes at the end of a major fertility analysis

> ' *...one cannot simply conclude that countries follow the same trajectory in sequential fertility trends with certain time lags. ...the results of this study lead me to assert that a divergence in fertility trends has occurred.*' (Bosveld, 1996, pp. 253-254).

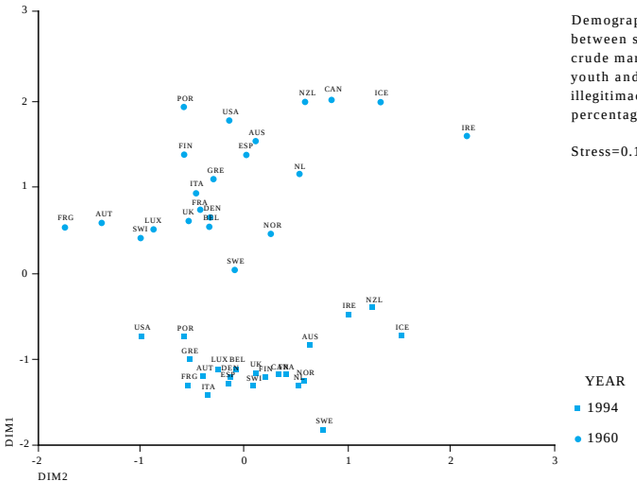
In matters of sexual and living arrangements and their consequences in terms of births outside marriage, and divorce, all is dispersion. Differences in proportion of births outside marriage vary by 50-fold in the industrial world. Southern Europe again shows some similarities with the Far East in its family arrangements, reflecting a similarity of view on family duties. To quote Anton Kuijsten:

> *'In the era of the second demographic transition the European family map has grown more diversified rather than more uniform, and ultimate fears of for a sort of McDonaldisation of European family structures, with people snacking at a take-away relationship store, seem completely unwarranted.*'

The revolutionary programme of modernization prescribed by Roussel (1994) shows little sign of diffusing to Italy, for example, where legal reforms and low fertility have not been followed by widespread divorce or illegitimacy even though marriage is now late and modern contraception widespread. Instead a different stable pattern seems to have developed which leaves the essentials of the family untouched (Castiglioni and Dalla Zuanna, 1994).

Omnibus summary statistics do generally show variation falling, but to some extent this is due to the modernisation of a few relatively backward areas. The national dimension is more important statistically in accounting for provincial variation across Europe than it was a few decades ago – provinces within countries have converged much more than countries themselves have (Coleman, 1997). Multidimensional analysis

Figure 3. *Multidimensional scaling of industrialised countries*

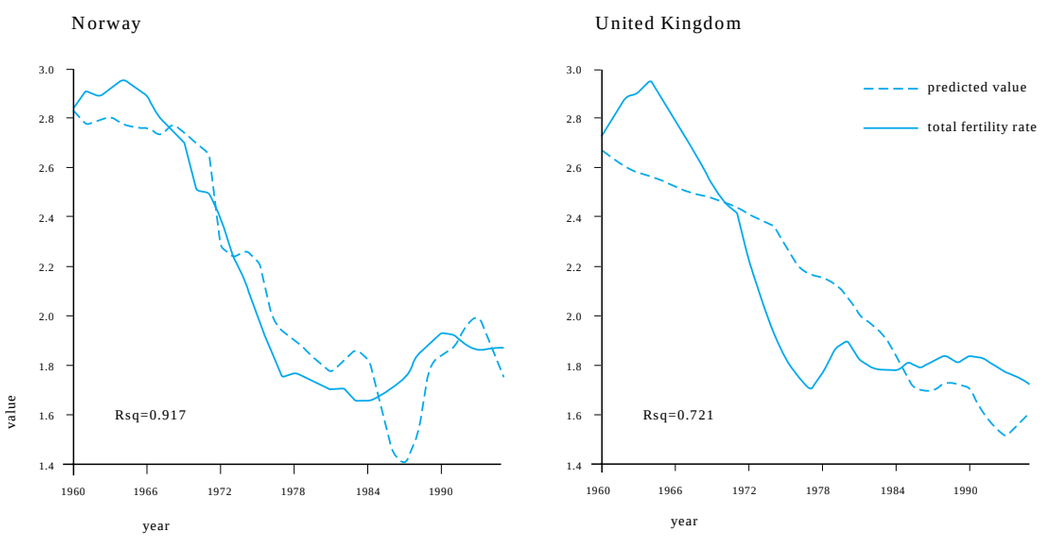


Demographic variables include median age differences between sexes, percentage of births to mothers aged 30+, crude marriage rate, crude divorce rate, dependency ratio of youth and aged, life expectancy at age 0 for men and women, illegitimacy ratio, natural increase rate, net immigration rate, percentage of popualtion aged 15-64, TFR.

Stress=0.16, Rsq=0.91

Figure 4. *An economic model of Norway's birth rate*

Regression of TFR with percentage of male unemployment and percentage of economically active females aged 15-60.



based upon numerous demographic variables shows that country groupings have remained relatively stable for decades (Figure 3). The industrial world, then, within quite broad limits, does not yet share a common form of demographic behaviour and does not point unambiguously to any particular future.

7 | Mechanisms

Mechanisms to explain modern demographic variety and change usually divide into rational choice (economic) models (Ermisch, 1996) or normative (cultural) accounts (Lesthaeghe, 1995). Few analyses bridge the gap; indeed to a considerable extent the culture and values have been conjured up to compensate the partial failure of economic models to account for demographic change (Cleland and Wilson, 1987, Murphy, 1992).

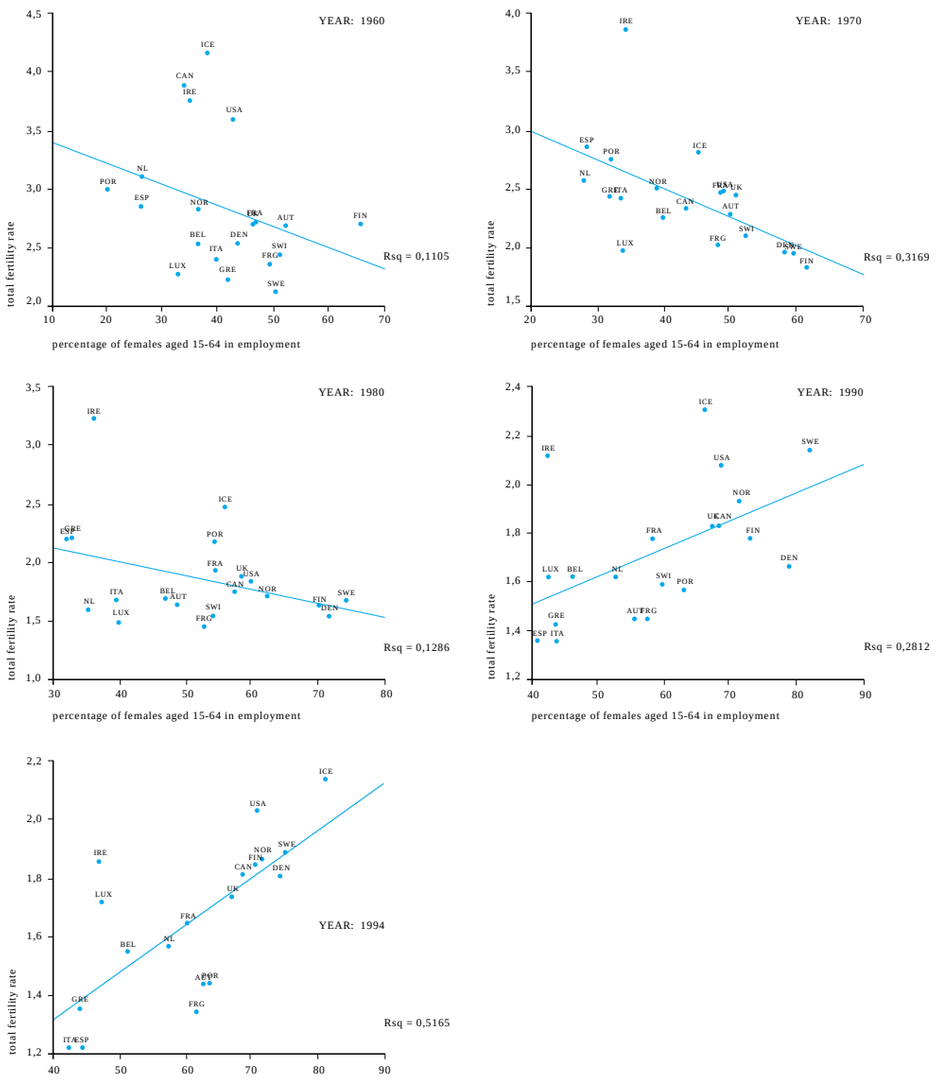
8 | Economic uncertainty

The achievements and problems of economic models, notably the dominant New Home Economics/Chicago school, are too well known to rehearse here in detail. Economic trends and relative workforce participation and wage rates of men and women can account, sometimes badly, sometimes well, for post-war trends in fertility and in marriage in individual countries (Figure 4).

At least the issue of economic change itself, and the rationality of individual behaviour on material matters, do not present major conceptual problems. Family formation as with other major decisions in human life, is demonstrably influenced by rational choices responding to material concerns. Malthusian or early Easterlin models, which could fit earlier patterns of behaviour, were confounded by the rise of a factor which they had excluded – women's contribution to work, family income and decision-making. But in turn the New Home Economic models, which incorporate such changes, have lost power as new actors, not included in the original cast, have moved onto the scene. Where female workforce participation rates are high, their effect on fertility becomes saturated and loses force. Work and childbearing, once thought to be incompatible, may be ceasing to be so. As elsewhere in Europe's economy, net costs of childbearing are not just influenced by the labour market but through subsidy – by welfare and tax arrangements and by legislation affecting employment, which can change the rules of the rationality of choice. In Sweden in the late 1980s simple social security reform had people scurrying back to marriage, even if only temporarily, to pick up the benefits (Hoem 1993). Hence the perverse cross-sectional relationship between aggregate national levels of women's workforce participation and fertility; in the 1970s the countries of Europe showed the expected negative relationship; by 1990 they had the answer completely wrong: countries with high female workforce participation, on the whole, have higher birth rates (Figure 5).

State intervention on welfare in ways that affect the birth rate –however unintentionally– move fertility away from the realm of the market and into the world of subsidies. With governments disposing of between 40 and 55 per cent of national GDP in most Western European countries it could hardly be otherwise. Until Europe has a Common Procreational Policy, we will have problems in making international comparisons. We may estimate the effects over time of welfare changes in one country, for example in Sweden. But because of the

Figure 5. *Female workforce participation by fertility, 1960-94*



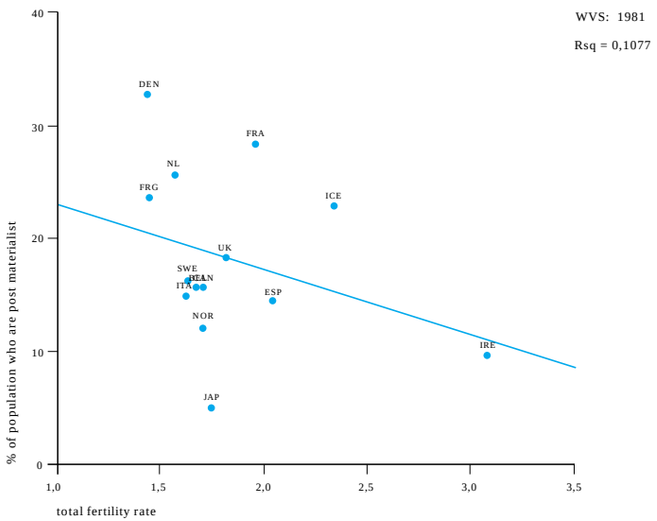
great variety of tax and welfare systems, unambiguous effects upon national fertility differences have been difficult to demonstrate, at least within Western Europe (Gauthier, 1996). A second complication is that levels of welfare and tax arrangements in democracies are not exogenous. They follow –however imperfectly– from the values and attitudes of the population itself expressed through elections and political consensus. These historical and political processes, generating characteristic and different welfare systems in different countries, and therefore different material incentives for family formation (Kosonen, 1995; Williamson and Fleming, 1996), take us straight back to values and attitudes.

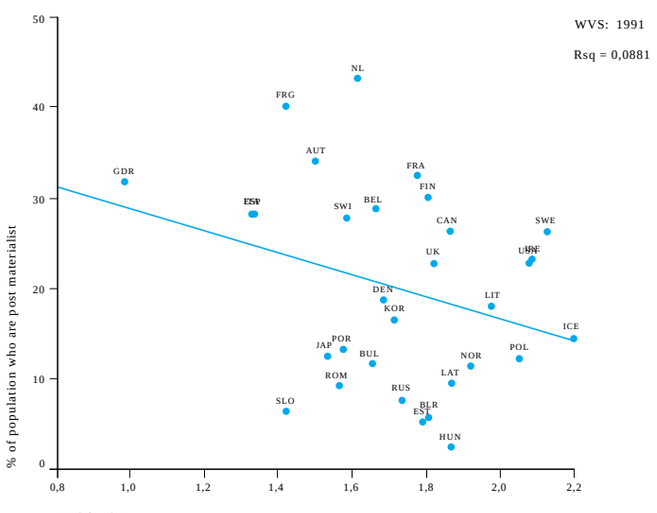
The inertia of values and of politics ensure that it takes time for demands by women for a new deal at work and at home to be reflected in appropriate institutional change. But 'maturation' of women's social and economic participation may eventually 'harmonise' institutions (parental leave and compensations) with these demands and reduce incompatibilities between them (Atoh, 1995). Sweden and Norway are now in such a 'mature' state, with women in employment just as likely to progress to a third child as those who keep house (Kravdal, 1992a). On this view, Southern Europe is not yet 'mature' and neither is Japan. There, respondents to surveys claim that higher income and wife's employment strongly depressed the likelihood of progressing to a third child but that an increase in child allowance or other measures to harmonize work and family life would make them think again (Kojima, 1993).

Mechanisms which work in Western Europe and Japan ought to work outside it. How then do we account for the parallel changes –at least up till about 1990– in Scandinavian and in Neo-European fertility rates –as well as similar high levels of divorce and cohabitation– given the much lower level of public sector welfare support for children in the United States, a country well-known also to be a madhouse of religion? But in the US it is the private sector which has responded to the pressures and demands from women that in the Scandinavian countries have been translated into public welfare change. In the US the service sector and shift work have become more prominent, the requirement that women care for their own children most of the time has weakened, having children when single is more acceptable, and with it a weakening of the male role. Together these have lessened the contradictions between childbearing and work. Private, not public sector child-care has advanced accordingly in a much more open labour market (Presser, 1989; Rindfuss, 1991). As women can earn more, they can afford to support more children through their own efforts via paid child care.

It may be that the private sector, in a flexible economy and labour market such as that of the US, can respond to new demands for services faster and more efficiently than the more sclerotic socialised systems of Europe. Furthermore private-sector systems might be more sustainable. The recent cut-back in the Swedish system, part of a global contraction, suggests that some public-sector systems of child support may not be sustainable, especially in the face of competing demands from an ageing population. Maybe that helps to account for the generally higher level of US fertility post-war. In Sweden the tight linkage of welfare benefits to workforce participation supported fertility when the going was good but amplified the effect of economic downturn when the Swedish full employment and benefits party ended in the early 1990s, provoking a sharp fall in the birth rate (Hoem and Hoem, 1997).

Figure 6. *Post materialism and TFR, selected countries*





9 | Attitude problems

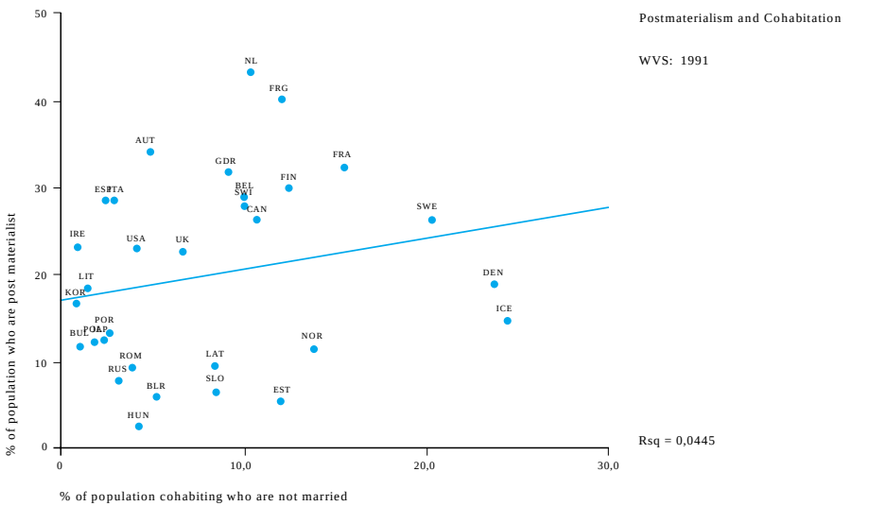
An alternative approach to explaining modern demographic patterns and trends through fundamental changes in values and attitudes has been more or less invented in the Low Countries. It has proved highly successful and in demography constitutes a form of ideological transition in its own right. Psychologists have suggested several independent dimensions whereby individuals, and national populations on average (Inkeles, 1997), differ from each other in ways that may influence economic and social behaviour. Ever since students of the demographic transition found to their delight that variation of the onset of transition was in many cases closely linked to the cultural or linguistic map of Europe, 'culture' and its associated differences in values and behaviour has offered an exiting but frustrating alternative to economic models of demographic differences and trends. Exciting because it promised to go where economics plainly could not reach. Frustrating because while offering at least a framework of correlation for differences in patterns of behaviour or the acceptance of new ones, it cannot account for its own change, nor easily provide a specific mechanism for its influence on demographically measured behaviour.

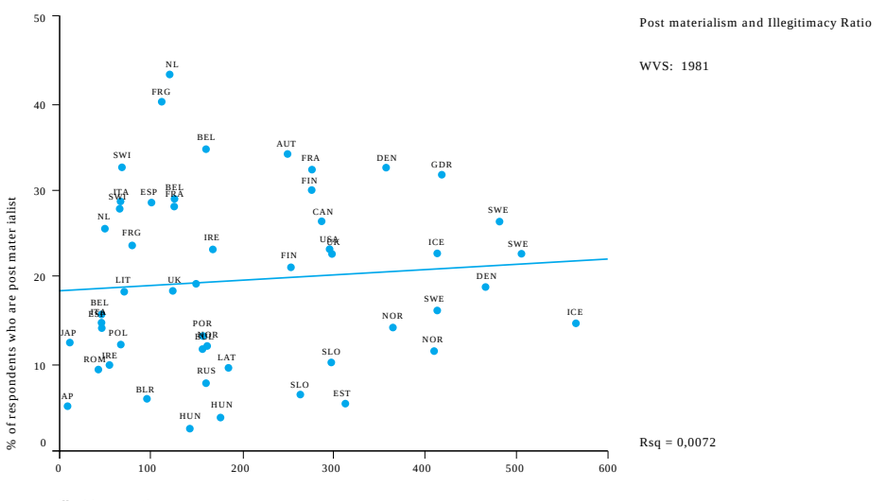
'Post-materialism' is just one of several models of value change which has been influential in demography. At their centre is a preference for individualistic self-realisation and the satisfaction of personal preferences, made possible by the emancipation from material concerns in modern prosperous societies (Maslow, 1954; Inglehart, 1977) and the growth of choice among an educated population more free from the power of traditional sources of authority (Inglehart, 1990, p. 7). Its genesis roots it firmly in the massive economic and educational advances of prosperous middle 20th century post-industrial welfare society and differentiates it from the earlier ideological and cultural changes –also iconoclastic but decidedly materially-oriented– which helped to propel the first demographic transition in fertility.

'Materialism' and other value dimensions (familism, religiosity) relating to family, religion, received authority and tradition are now widely accepted as helping to account for new directions in family life in modern Europe. Cultural patterns offer valuable correlations for the timing of vital events and differentials, even if they do not explain them. Explanations based on value change offer persuasive models of the recent flight from marriage and the adoption of new ways of living in Europe (Lesthaeghe and Moors, 1996). However there are problems. Across much of the range of human behaviour, attitude variables of all kinds tend to be statistically relatively poor predictors of individual behaviour. Critics point out that 'post-materialism' on the criteria of Inglehart may amount to little more than a position on a conservative/liberal dimension, and may only flourish because others pay the bill through taxation to pay for welfare systems. That variable has little to say about the trends or patterns of fertility at national aggregate level, accounting neither for the low fertility of 'familist' Southern Europe nor for high fertility among otherwise relentlessly progressive Scandinavians.

The spread of 'post-materialist' attitudes since the 1970s has certainly gone hand in hand with rises in cohabitation, childbearing outside marriage, delayed marriage, and high divorce rates. But birth rates have often not moved in the same direction. For example: in 20 industrial countries in 1993 there was a weak (r2=0.163)

Figure 7. *Trends in post-materialism and cohabitation*





but positive, not negative, association between total divorce rate and total fertility rate. Analyses are per force based on data going back no earlier than 1973. Because post-materialism has its supposed origins in economic change, all roads lead back to economics, and established attitudes may prove volatile in the face of economic downturns.

The message from the Eurobarometer surveys of EU countries is a familiar one. For example, averaging over all countries and all years from 1972, 'post-materialists' after suitable corrections for age, are about three times as likely as materialists to be cohabiting rather than married. Within most countries in the Eurobarometer survey, for example, there is a satisfactory simple relationship and trend between the increase in the proportion of the population who claim post-materialist attitudes and the proportion cohabiting from the late 1970s (Figure 7). However, in cross-sectional comparisons these attitudes may account for little of the international differences in actual behaviour. And the more disaggregated the data, the less that 'post-materialists' behave as they should. Looking at individual data, and correcting for age, only France among the EU countries showed a consistent connection between individual post-materialist sentiments and individual cohabiting behaviour both in 1980 and in 1992, although Britain, Greece and Italy also ended the period with a statistically significant relationship. The 'post-materialists' in the World Values Survey (WVS) also showed a rather patchy preference for cohabitation, by no means matching the Eurobarometer results, a pattern which seems to make no sense. Looking more specifically at questions on attitudes to marriage in the WVS, individuals favourable to marriage are, not surprisingly, substantially less likely to be cohabiting than others. However, even after correction for religiosity and other factors, national differences in attitudes to marriage cannot account for much of the substantial differences between countries in actual cohabitation.

There is a certain self-defeating aspect to 'post-materialism' and other measures of value shift. If materialists have more children, and if values cross generations, then post-materialism will die out like an ill-favoured gene unless it makes enough converts. 'Post-materialist' values also contain the seeds of their own destruction through economics. National values are reflected in welfare institutions and thereby with the economy. Some of the choices made by 'post-materialists' may be free of cost to them. But they impose costs on others. In some countries, lone motherhood depends substantially on state support – in the UK £4 billion per year not including subsidized public housing. Divorce generates three households where two existed before and in the UK is the fast route from owner-occupation to dependence on public housing. If post materialism lowers fertility (admittedly a dubious proposition) it contributes to the ageing problem of the next century, which will generate a certain tightening of belts and may provoke a different kind of value-shift. Certain kinds of 'post-materialist' attitudes, therefore, may not be sustainable in the long run for economic reasons, insofar as the behaviour which they encourage depends on welfare.

10 | The importance of women

Few studies control for economic variables when testing attitudes, and integrating the two approaches in other than verbal terms is difficult. The central position of women in all these changes may help reconcile the

Figure 8. *Childlessness, fertility and complex households*

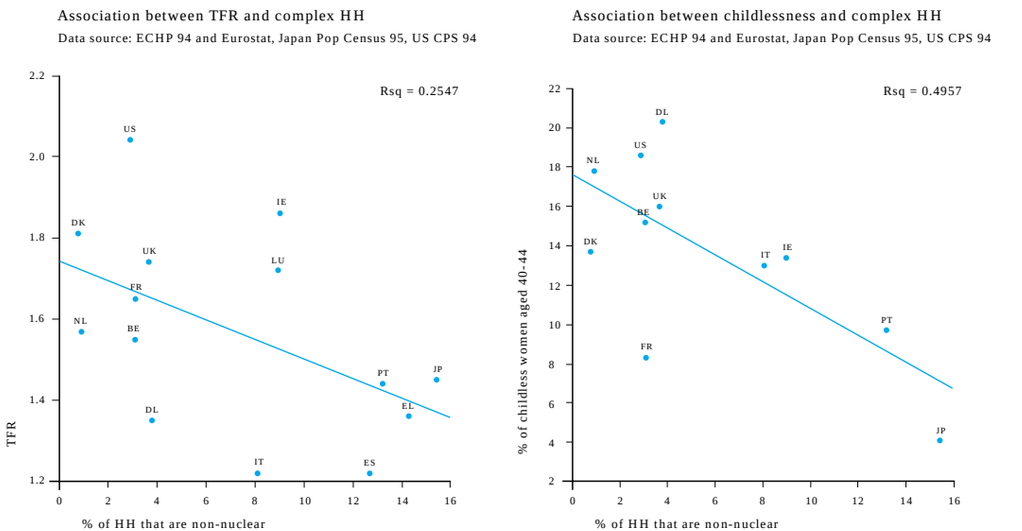
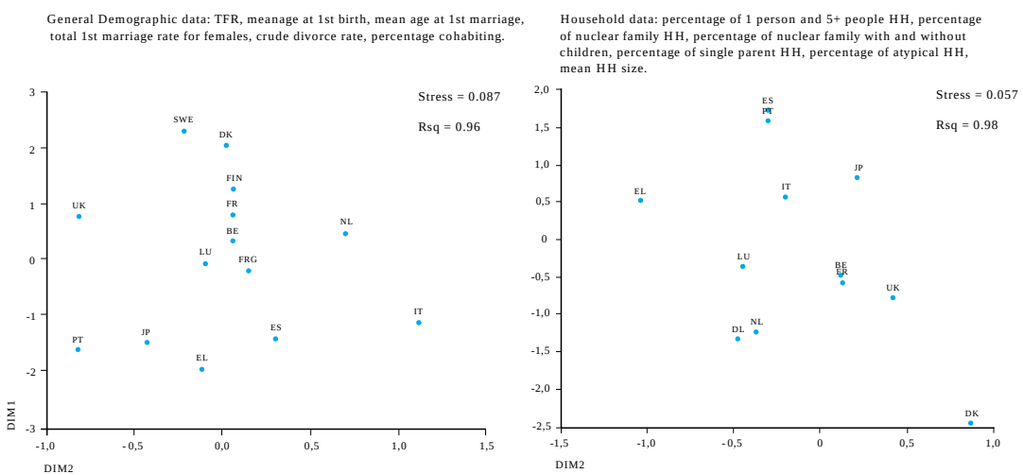


Figure 9. *MD-SCAL showing apparent similarity of Japan to Southern European countries*



mechanisms. The economic behaviour and opportunities for women in some societies (so-called 'economic gender equity') may not be compatible with that society's ideas about the importance of family and on differentiated sex roles. The attractions of the labour market, the welfare arrangements for young and elderly dependants, if any, the familial pressure faced by women to produce a child and consider parents may all pull in different directions. Low levels of fertility combined with low levels of childlessness, notably in Southern European countries, arise from an incoherence between unequal levels of gender equity in different social institutions of society. If women have opportunities similar to men's in education and work, but these are in practice curtailed by children and/or other obligations to the older generation as well, through 'familistic' values, then women, as Lesthaeghe points out, will satisfy the obligation to produce a family to the minimal extent, avoiding childlessness but restricting subsequent children severely (McDonald, 1997).

The Japanese and overseas Chinese in Asia (Leete, 1994) may be in a similar position in avoiding most of the 'second demographic transition' manifestations of marital breakdown, cohabitation, illegitimacy and so on, to an even more marked degree. They also resemble Southern Europe in having fertility within marriage almost as low and of course an even more marked level of 'familism' and an often multi-generational household structure. In Italy and Spain not only are there somewhat more three-generation families than in Northern Europe, but adult children are much more likely to be content to remain living with their parents than in Northern Europe, in conditions of considerable personal and economic freedom, rather than moving out to live in separate households or cohabiting (Castiglioni and Dalla Zuanna, 1994). Leete and McDonald both come to similar conclusions about the necessity of major policy changes to support working women if chronic low fertility is to be avoided in those areas.

11 | The fundamental question – The absurdity of reproduction

Most conventional theories of fertility address variation. Some basic average level of fertility is assumed. The models do not tell us what it is, or why fertility should not trend to zero, given that most of the factors of costs, negative utility, increasing individualism and the like all point downwards. The really fundamental problem is not the level of fertility and its trends and differentials over time and space, but the basic question of whether we will have any children at all (Hobcraft and Kiernan, 1995; Friedman, Hechter, and Kanazawa, 1994) and if we do whether there is any imaginable reason why the average should be two.

Not everything has to be of instrumental value, however. Psychologists have proposed many immanent values, inspiring behaviour for its own sake, just as psychologically powerful, which might demand reproduction, mostly to do with the creation of private social capital (Table 1, Hoffman and Hoffman, 1973).

Social surveys suggest that such social resource values of children are prime motivators of childbearing in low-fertility populations (Schoen, Kim, Nathanson, Fields, and Astone, 1997). Career concerns are important but fears about the costs of children do not seem to deter childbearing much; 'childbearing' is purposive behaviour that creates and reinforces the most important and enduring social bonds. Another possibility is that childbearing is a rational response to the need to reduce uncertainty in at least one of life's major arenas:

Table 1. *Immanent values*

Expansion of the self – immortality by proxy
Primary group ties – children provide a close community in an impersonal world, and a source of love.
Novelty and fun – children as pets provide amusement, novelty and surprise.
Creativity and accomplishment – children as indicators of adults status and creativity.
Power over others – children as pupils, disciples to be led, taught and be influenced.
Vicarious achievement possibilities – children as a second chance, replacements for own failure.
Curiosity – one should always try everything at least once.
Minimizing uncertainty in life's major areas

Sources: Hoffman and Hoffman (1973), Friedman *et al.* (1994), Schoen *et al.* (1997).

work, marriage and children. Persons who cannot reduce uncertainty through work (because of inadequate education or talents) will determine their life course through children; the extreme case being the unqualified teenage mother. A steady career will reduce the need for children; the less educated and qualified, the more divorce-prone will turn more to childbearing. But this model has many flaws and does not provide any fundamental reason why people should have either about two children or any at all (see critique by Lehrer, Grossbar-Schechtman, and Leasure, 1996).

These approaches imply that the fundamental motivation for having children has changed radically over the last century. In the past it seemed enough to show that children had instrumental value. When they ceased to be useful, we invent the primacy of social capital instead. If 'social capital' was always there, why do we need instrumental models? If not, why has it suddenly become important?

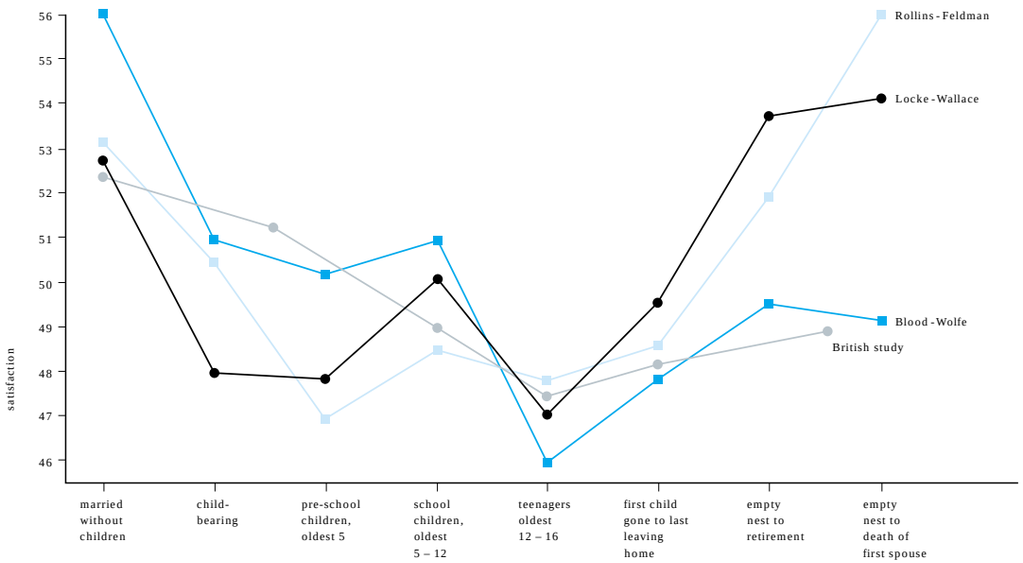
Demographers have done little better. A review of socio-economic theories of fertility (Namboodiri and Wei, 1997) failed to identify any theoretical reason for postulating a non-zero 'floor' for fertility. Only normative ideas, whereby for its own self-preservation every society has a profound minimal (non-zero) pronatalist norm to become a parent which it impresses upon its members, lead one to expect non-zero fertility (Blake, 1968). Such functionalist arguments are logically attractive and in tune with the apparently universal existence of such norms and pressures. Nonetheless they seem vulnerable to the same processes of individualistic social change which have eroded so many other social imperatives this century (such as the prohibitions on abortion, divorce, cohabitation and illegitimacy). It is difficult to think of a mechanism, outside the realm of psychological 'instincts', or of biology, how such norms could be permanently protected.

12 | Were children always useless?

Offspring are mostly useless to their parents in all other animal species, if not indeed actively harmful to their chances of survival as individuals. With the spectacular exception of social insects, only in relatively few species, mostly fish, birds and mammals (e.g. the Florida Scrub Jay, the African Black-Backed Jackal) do offspring of previous generations assist their own parents either in food gathering or other co-operative activities such as helping with the care of younger offspring (Emlen, 1991; Krebs and Davies, 1993; Woodroffe and Vincent, 1994). And yet parents divert enormous energies and take considerable risks in reproduction and in the care of young. Why should we be different?

It used to be assumed that children were in the past a positive material benefit and that the fundamental change in the demographic transition was their transformation from material assets into material liabilities. Now we are left wondering exactly when or where children ever were a substantial material asset. At most times in the past, population growth was close to zero (Wilson and Airey, 1997). On average, each couple could only have counted upon two children surviving to young adulthood. About 60 per cent of couples would have at least one male heir; about 20 per cent would have no male heir but at least one female heir; about 20 per cent would have no descendants at all (Wrigley, 1978). The image of a large private workforce of

Figure 10. *Marital satisfaction and the family cycle (Argyll, p. 20)*



Source: Walker, 1977.

young adults is a transient, relatively recent invention of the demographic transition (Cleland, 1996). Even in the third world, where high fertility is claimed most plausibly to be (economically) rational (Caldwell, 1982), that proposition cannot always stand close scrutiny. Actual measurement shows that children are often literally not worth the effort (Cain, 1982) in third world societies; they may not provide support in old age either (Vlassoff, 1982). As Dyson notes, 'Children work because people have children, rather than people have children because children work' (Dyson, 1991, p. 81). Other less directly material considerations, too familiar to need emphasis here, may outweigh direct transfers; the support of kin, the political importance of lineage, as elements of risk insurance (Cain, 1983).

But today even these apparently well-founded justifications for high fertility are falling apart as parents in rural areas of the poorest countries choose family planning. They have found out that it can be done, and that the sky does not fall in as a result. The evidence in simple societies of widespread infanticide of up to 15 - 20 per cent of births (Hausfater and Hrdy, 1984) also suggests that not all births were wanted in a variety of human societies, possibly back to a very early period.

We are on even firmer ground when considering the eccentricity of childbearing in the modern world. Numerous studies had documented the horrendous costs, both direct and indirect, of reproduction. Opportunity costs of two children in the 1980s, assuming some years taken out of working life full time and part time, and excluding welfare compensations, amount to about £250,000 (Joshi, 1990). The direct costs of a child up to age 18 –in a society where health care and education are free– has been estimated at about £90,000 (Middleton, Ashworth, and Braithwaite, 1998) and child care constitutes a sentence of partial house arrest for about 15 years. With no oxen to herd, fields to plough or clan warfare to prosecute, there is almost no return on this investment of a material kind to modern man and woman. Indeed, children usually inherit whatever of their parents' wealth that they have not managed to consume during their parents' lifetime. Parents today, even less than parents in the past, cannot expect much help –at least co-residential help– in old age from their children.

13 | Do children make you happy?

One of the most surprising findings of social psychology is the unhappiness that childbearing and child-rearing process can bring to parents, and how seriously the fruits of marriage can damage marital satisfaction. While most people think that children make their own marriages closer and endorse parenthood in general terms (Veroff, Douvan, and Kulka, 1981, cited in Argyll, 1987 p. 21), the detailed evidence of respondents tends to be negative. Children detract sharply from marital contentment as soon as they are born and progressively reduce it to a low point during the teenage years. Marriage only regains its lost content when the last child is safely out of the house (Walker, 1977 cited in Argyll, 1987, p. 20) (Figure 10). The wish for a child may drive marital happiness, the implementation of that wish reduces marital satisfaction (Willen and Montgomery, 1996). Sexual gratification also declines with every successive stage of family building, but here there is no late renaissance of passion after the nest is empty. There, it is downhill all the way (Tucker and Aron, 1993).

Table 2. *Childlessness, selected countries about 1995*

	Age-group of women around 1995		
	35-39	40-44	45-49
Austria	11	7	8
Canada	18	15	16
France	11	8	12
Hungary	8	5	12
Poland	10	6	7
Latvia	9	7	8
Lithuania	5	12	9
Netherlands	17	15	
Slovenia	4	3	2
Sweden	18	12	12

Source: Family and fertitlity surveys.

14 | Does a lack of children make you unhappy?

Does avoiding children make you happy? Here we find a marked asymmetry between voluntary and involuntary childlessness. About a third of involuntarily infertile women, and a fifth of infertile men suffer serious problems of self-esteem or health as a consequence (Vanbalen and Trimboskemper, 1993), especially those who adhere to traditional sex-roles (Cook, 1993). Actual psychopathology, however, cannot be shown to be more common among the involuntarily childless than among those who have children.

Much more difficult, how do we accommodate the question of the voluntarily childless? In the 1990s, between 7 to over 16 per cent of women in modern Europe are childless at age 50. Projections of current trends suggest that in many countries 20 to 25 per cent of women will remain childless throughout their lifetimes, back to the highest levels of the early modern period (Morgan and Chen, 1992) (Table 2 Childlessness). Only about five per cent of young women are unable to have children, although involuntary childlessness may follow intentional postponement of first birth, until the couples' circumstances no longer allow it (Rindfuss, Morgan, and Swicegood, 1988). Rising age at first birth is associated, not surprisingly, with higher rates of eventual childlessness (Beets, 1995). At least one study has shown that women who declared their intention to remain childless tend to be consistent and successful in keeping themselves so, but 30 per cent of those declaring an intention to have children were still childless five years later and ten per cent had declared that they now wished to remain childless, notably the better educated and the richer (Pol, 1983).

Childlessness is nothing new in Europe, of course. Up to 20 per cent of women and over ten per cent of men were lifetime childless in many European countries from the 16th century up to the 1930s, most notably in Sweden and in Ireland. Until the late 19th century, however, childlessness was high because a relatively large number of people never married, and marriage was relatively late. Despite that in most parts of Western Europe, childbearing outside marriage was relatively uncommon (seldom more than five per cent of births). Within marriage, childlessness then was about at the level expected from biological considerations. Voluntary childlessness within marriage was probably very rare; family planning is not thought to have been generally practised. So although the statistics are similar, the circumstances are different from those of the present day.

15 | Penalties of childlessness and the characteristics of the voluntarily childless

What penalty, if any, do the voluntarily childless pay for their restraint, or self-indulgence, depending on your point of view? Rather little, it would seem, even though voluntary childlessness is generally viewed negatively. Most respondents to Palomba and Moors' Europe-wide survey (Palomba and Moors, 1995) saw parenthood as a universal goal with no alternatives or replacement. But some clearly do not agree, and most studies (especially those with random and not self-selecting survey designs) do not show important differences in well-being or in many other characteristics among the voluntarily childless compared with parents (Connidis and McMullin, 1993).

Childless couples are different but not that different, the women more than the men (Baum, 1983; Campbell, 1985; Kiernan, 1989; Rovi, 1994; Schneewind, 1997): better educated than usual, professionally or career-ori-

ented and ambitious, less likely to be religious or to have been married in church (Heaton, 1992), individually more hedonistic, more likely to be an only child and to be emotionally distant from parents (Campbell, 1983) but no more neurotic, immature or selfish than others. A recent qualitative study showed a surprising lack of career-mindedness among a small sample of voluntary childless women (McAllister and Clarke, 1998). Voluntarily childless couples were neither unhappy nor pathological. Against these couples, pressures from parents (they all had parents, after all), the examples of the rest of society and the lure of immanent values apparently pressed without avail. The rise of voluntary childlessness exposes the weakness of relying upon arguments from 'social norms' derived from cultural inertia. In the course of what is called the 'second demographic transition', tens of millions of people have come to accept and to practice abortion, divorce, childbearing outside marriage. What was once sinful, forbidden or criminal has become normal, although interestingly not universal nor even, in most countries, practised by a majority.

16 | A biological imperative?

Perhaps we should look elsewhere for explanation. Looked at biologically, the central problem is the fracture of the connection between sex and reproduction. We can now take the sex and do without the babies. Biologists have had no difficulty in offering testable models to explain the persistence of high fertility in animals or humans, or certain aspects of fertility patterns and differentials, on the basis of fitness and the differential survival of genes (Betzig, 1988). High fertility, however, was not thought to be a problem for economic and social models of human populations either. Can biology cope with the question of low fertility and childlessness, given that its central models are based on maximising the representation of parental genes in the next generation? On the face of it, it seems not, not even the more sophisticated formulations of 'inclusive fitness' developed by Hamilton(1964) and others since the 1960s. These extend evolutionary models beyond the individual by considering that identical genes are also found in that individual's children, grandchildren, siblings, cousins and so on, whose survival that individual should encourage.

Evolutionary genetics can predict such human reproductive characteristics as the primary sex ratio, the longer expectation of life of females over males, the change in the sex ratio with parity and age at mother, and the expectation that higher status, more dominant, better off males acquire more wives (in polygamous societies) and generally produce more children (Trivers, 1972; Lumsden and Wilson, 1981; Wilson, 1985; Betzig, 1988; Coleman, in press). That is fine in simple societies, but the usually negative association between resources and reproductive success in contemporary human society (Alexander, 1988) makes no sense in these neo-Darwinian terms. People in modern developed societies deliberately fail to maximise their reproduction; quite the reverse, especially among the richer and better educated sections of those societies (Vining, 1986). However the frequent negative association between wealth, education social standing, and fertility in developed societies may just be an artefact of the earlier adoption of family planning among more educated and richer families in an imperfectly complete demographic transition. Social class differentials in fertility, marked in the early decades of this century have in fact become flatter over time, if not u-shaped (Coleman, 1990; Ní Bhrolchaín, 1993). Higher than average fertility among the most educated can now be found in a few advanced societies (Kravdal, 1992b), although usually as measured according to the status of men, not of women. It may be that Becker's consumerism satisfies the demands of Hamilton's genes.

17 | An instinct for childbearing?

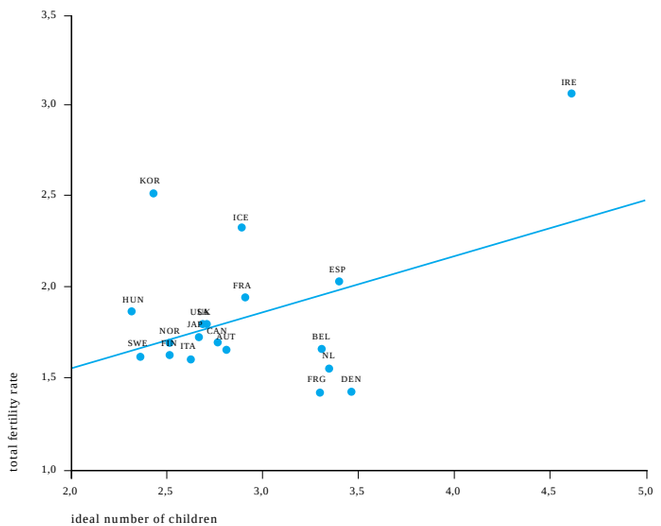
Do we need to cite 'instinct' (or 'innate structure' in modern psychological jargon) for childbearing/parenting to explain the failure –so far– of childlessness to become as popular as cohabitation or divorce? Most species may not usually need specific genes for reproduction. All that is needed is a strong instinct for sexual activity –seasonal in most species– and some mechanism to protect, rather than to eat, one's own offspring. Without contraception, everything else then follows 'naturally'. The perpetual selfish genes, the ultimate and sole permanent beneficiaries of all this strenuous activity, are assured of their own future as long as they provide the temptation of sexual pleasure and other gratifications to the unreflective and transient bodies which they happen to inhabit (Dawkins, 1976). Sexual pleasure is the bribe offered by immortal genes to mortal bodies to ensure their carriage across time.

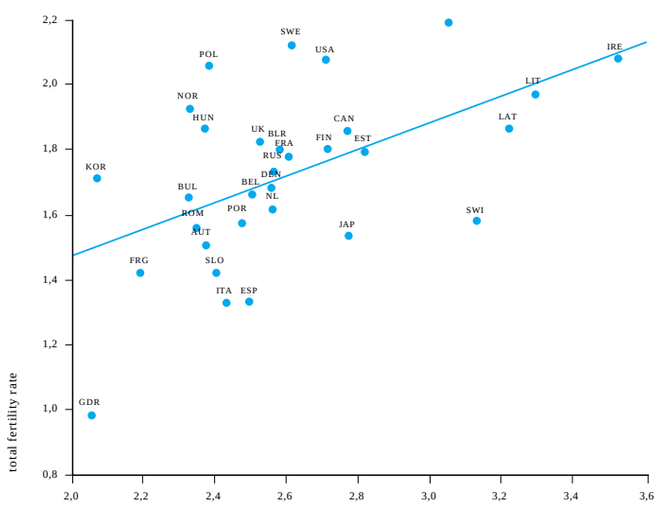
However once the tree of contraceptive knowledge has been tasted, and its fruit shared around, everything is changed. For the first time since the origin of life hominids can cheat the genes; take the refinements of sexual pleasure perfected by millions of years of evolution, and if they wish set aside the tedious and expensive chore of reproduction which they would otherwise have been tricked into accepting.

A case for some 'innate structure' for reproduction as well as for sex presents problems, given the prevalence of voluntary childlessness (Barkow and Burley, 1980). It is difficult to devise genetic tests for supposedly universal processes: neuronal or hormonal linkages are a more promising avenue. Conventional genetical analysis, of behavioural or other characteristics, depends upon measurable heritable differences (see Plomin *et al.* 1994, Plomin and Craig, 1997; Daniels *et al.*, 1998). 'Instincts' have to be nearly universal. This one is not, as healthy and normal individuals decline to be affected by it and, it would seem, are not punished psychologically for not doing so. On any normal basis of natural selection, if the deficient parental instinct were determined by gene differences, it would rapidly become extinct.

However, quite high levels of otherwise damaging genes can be maintained in a population if, in combination with other genes, they convey some advantage. Thus in a number of 'balanced polymorphisms' harmful genes, lethal or crippling in double dose, are kept at high frequency in populations because their presence in single dose conveys an advantage. A number of examples are known, including sickle-cell haemoglobin and the thallassaemias. We lack information about the genetic status of individuals who are childless compared with those who have children. At the moment we cannot identify genes which might predispose to such behaviour, if any such exist. But as the human genome becomes better mapped, it may turn out that polymorphisms for which the childless might differ statistically from others might be linked with genes affecting behaviour (Udry, 1994; Udry, 1996) although that could hardly offer an explanation for trends.

Figure 11. *Desired family size*





That still leaves the problem of the two-child family. What if social norms of parenting, or biological instincts to reproduce, can be satisfied with just one child? Two points to consider: ideal family size remains stubbornly around two in all developed societies where the question has been asked, and desired family size seldom falls much below two, however deplorable current performance may be (Figure 11). Supportive attitudes to family and procreation remain remarkable uniform in Europe (Palomba and Moors, 1995). A family size of two is the smallest where it is possible to hope for a child of each sex. Also, a family size of two is the biggest where the parents can still win, or at least hope for a draw, in the struggle between the generations. Above that number not only are parents numerically outnumbered by their offspring, but the number of interactions possible between individual family members moves out of the realm of the stimulating into that of the overwhelming; those among siblings permitting a much better conspiracy than the one connection only which is available to the parents (Table 2).

Table 3. *Connections within families by sibship size*

sibship size	ratio of adults to children	total no. of relation-ships	total between parents	total between parents and children	total between children	ratio of connections involving adults to connections involving children	result
1	2.00	3	1	2	0	2.00	parents win
2	1.00	6	1	4	1	1.00	draw
3	0.67	10	1	6	3	0.67	children win
4	0.50	15	1	8	6	0.50	children win
5	0.40	21	1	10	10	0.40	children win
6	0.33	28	1	12	15	0.33	children win
7	0.29	36	1	14	21	0.29	children win
8	0.25	45	1	16	28	0.25	children win
9	0.22	55	1	18	36	0.22	children win
10	0.20	66	1	20	45	0.20	children win
11	0.18	78	1	22	55	0.18	children win
12	0.17	91	1	24	66	0.17	children win
13	0.15	105	1	26	78	0.15	children win
14	0.14	120	1	28	91	0.14	children win
15	0.13	136	1	30	105	0.13	children win
16	0.13	153	1	32	120	0.13	children win

Formula is 1 + (s*2) + (((s**2)-s)/2) where s = sibship size

Note: Each connection should be multiplied by two

18 | Conclusions

As to a judgement on convergence we may have to echo Mr Chou En-Lai's verdict on the significance of the French Revolution: that it was still too early to tell. As to mechanisms it is clear that we have some way to go. Economic and attitude change models fit some trends but cannot account for much of the difference in behaviour between populations or even individuals. Both deal with variation in the influences upon fertility over time, not absolute levels, and have little to say about the stability or otherwise of underlying desires for children. Institutional support needs more attention. We cannot specify rational choices without a comparative analysis of benefits to families from welfare and support systems. The effects of such support, if any, will operate through material channels on household income and time budgets, but the form they take will reflect the preferences and values of the population.

Either way, few modern human beings operate in a 'free market' in respect of reproduction. To some degree all actions are a function of subsidies, some greater, some less. The artificial nature of this private economic environment is yet another consequence of intended or (mostly) unintended policy influence on the settings within which fertility decisions are taken. Whether welfare systems which are able both to support families and to cope with the costs of ageing are sustainable, remains to be seen. Welfare systems in the industrial world have already felt the first breath of cold air, including pressures to ensure that males make their contribution. Some developments of the second demographic transition may then be rolled back, and some aspects of it may be seen to have been more of a fling, like the baby boom, rather than a permanent change. Even so, as low fertility continues welfare support for mothers with children will become an urgent policy priority in some countries.

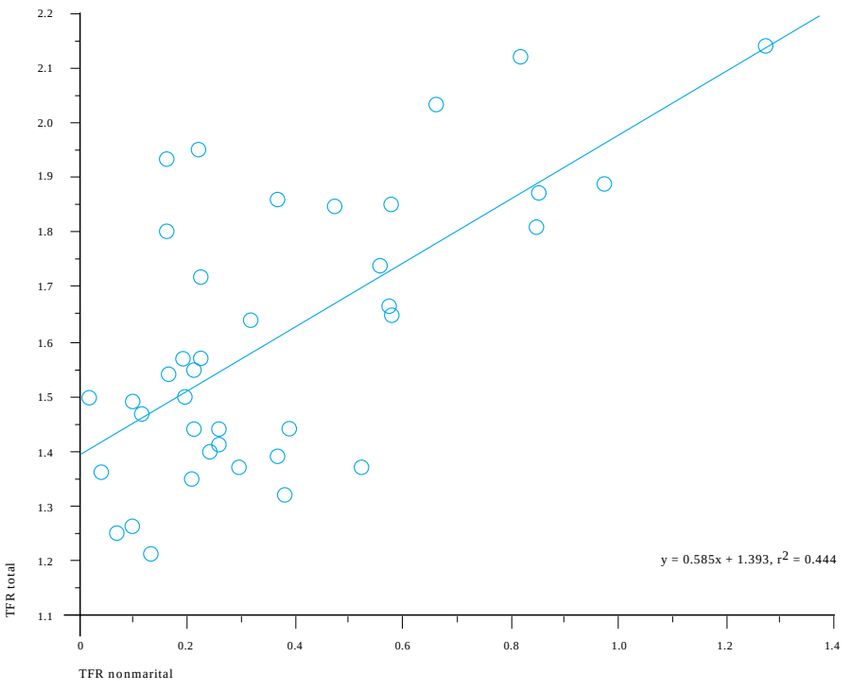
The fundamental change really relates to women, the impact of which is only just beginning. Through the masculinization of the level and pattern of their participation in the workforce, women are progressively making men redundant. Increasingly women can support children on their own. Men can offer little special to labour except brute force. As demand for that is on the downward slope, women may outshine men in work as they are beginning to do in education.

Is it possible that women may only be prepared to produce approximately enough babies to replace the population if they can have at least some of those babies in a loose, not constrained relationship? On the whole, populations with primarily marital fertility suffer low birth rates; in the industrial world, high birth rates are only found in those societies which tolerate a high proportion of births outside marriage (Figure 12).

Children, it seems, always were fairly useless in terms of their immediate material benefit to their own parents. The problem of understanding why humans persist in having children is only a more sophisticated version of another question: why all other animal species produce offspring and care for them usually at such net cost to themselves. Cheating the genes has given us lots of pleasure but brings the nemesis of a new uncertainty in the reproduction and replacement of our populations and our species.

Figure 12. *Legitimacy ratio and fertility rates*

Scattergram of TFR and nonmarital TFR. 39 industrial countries, 1994.



Childlessness offers relatively few insights into the future pattern of fertility. Involuntary childlessness causes distress, but a larger number of normal if non-average people choose to avoid children without incurring psychological or other penalties. The pervasive endorsement across so many societies of the unique value of being a parent is impressive, as is the durability of ideal family sizes over two children in almost all advanced societies. But it is difficult to envisage really durable social or psychological mechanisms which might preserve such values other than those based on a self-conscious protection of the future or on biological processes, inaccessible both to consciousness and until recently to scientific enquiry.

The uncertainties of the future are moving us back to the biology which dominated human affairs in the remote past. In our origins, the early risk environment of the Palaeolithic set the parameters for human reproductive characteristics evolved to ensure the possibility of a surplus of births over deaths. Until 150 years ago no large human population exceeded an average expectation of life of 45 and therefore all needed an average family size between four to seven children to survive.

Now we have created our own much more protective environment, average expectation of life will approach the biological limit. Further change will depend on biological change, which will have to be engineered if it is to be discernible. Population and individual survival will move from the realm of demography and of the social sciences into that of genetics and biology.

The achievement, which we assume is permanent, of near-perfect survival to age 50 or so brings in its train a requirement for a perpetual average of two children to maintain population numbers. If we wish to survive, we are now stuck with that final family size. Deviation is no longer possible on the long-term without serious consequences. Excess is not sustainable, deficit brings extinction. The development of the post-transitional equilibrium, if any, whereby that may be maintained will doubtless be obvious to the demographers of the 21st century. But today I feel that all I can do is to point out that we have a problem, of considerable intellectual and practical importance.

Acknowledgements

Much of the computation and some of the graphs used in this paper were the work of Mr Tarani Chandola. Dr A.J. Boyce, Dr M. Lalljee, Professor M. Dawkins, Professor A. Kacelnik provided valuable comments or references. Some of the work behind this paper was supported by grant L315253006 from the Population and Household Change Programme of the UK's Economic and Social Research Council, and by a grant from the World Society Foundation, Zurich.

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