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Demand Theories of the Fertility Transition: An Iconoclastic View*

JOHN CLELAND† AND CHRISTOPHER WILSON‡

INTRODUCTION

Demographic transition theory provides the framework within which demographers try to make sense of many of the events and trends they observe. So important is this framework that Demeny has referred to it as ‘the central preoccupation of modern demography’.¹ Particular attention has been focussed on fertility change, above all on fertility within marriage, as the phenomenon to be explained, and on economic factors as the explanatory variables. As Miró and Potter write: ‘It is a shared tenet of... almost everyone who works in the area to-day that fertility tends to respond to shifts in the balance of economic benefits and costs that childbearing entails.’² So ubiquitous is the use of such reasoning in discussions of the demographic transition that it has become virtually the only mode of explanation.

The dominance of economic causation was apparent in the earliest theories of the transition. The fact that it has remained so reflects several things: the common assumption that social change is driven primarily by economic forces; the inherent plausibility of this notion when applied to human fertility; and the willingness of economists, unlike sociologists and anthropologists, to formulate precise concepts and hypotheses which, in principle, though frequently not in practice, are open to empirical validation.

Economic reasoning undoubtedly has a role to play in understanding fertility transition and we do not wish to engage here in a purely interdisciplinary dispute. Differences between economic and sociological theories are often more a matter of terminology than of substance. However, we argue that the central assumption of all economic theories does not provide a plausible explanation of fertility trends during the last 100 years. The assumption, so entrenched as to be almost unquestioned even in many more sociological explanations, is that the changing balance between costs and benefits of childbearing, resulting in reduced parental demand for children, is the fundamental force behind fertility decline.

When transition theory was first framed, its authors had little information at their disposal: sets of birth and death rates drawn from civil registration systems in Europe and North America; a few more detailed calculations for particular countries in Europe; and a near-absence of data for the rest of the world. Thus, while aggregate connections between socio-economic and demographic developments could be traced, no way existed of testing whether these general relationships applied at the local or individual level.³

* We would like to acknowledge helpful comments on an earlier draft from: A. J. Coale, T. Dyson, M. Montgomery, A. R. Pebley, R. Rutherford, B. Vaughan and S. C. Watkins.

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¹ Paul Demeny, ‘Early fertility decline in Austria-Hungary: a lesson in demographic transition’, in *Population and Social Change*, eds. David V. Glass and Roger Revelle (London: Edward Arnold, 1972).

² Carmen A. Miró and Joseph E. Potter, *Population Policy* (London: Frances Pinter, 1980), p. 96.

³ An alternative characterization would be that the original framers of transition theory felt that the links between fertility and economic factors were so obvious as not to need testing.

The lack of detailed comparable data on a wide scale persisted for several decades. In recent years, however, this dearth has been transformed into a relative abundance. One thrust has been in historical research. Family reconstitutions have made the nature of pre-industrial European populations much clearer, and for England the innovative use of 'back projection' by Wrigley and Schofield has provided detailed 'national' data back to the sixteenth century.⁴ Even more important for the theorists of the transition is the work on nineteenth- and early twentieth-century Europe undertaken by a team of scholars organized by Ansley Coale. This work, usually referred to as the European Fertility Project, has provided regional information on fertility and nuptiality across almost the whole continent for the period during which most European countries went through the fertility transition. Although the basic data and several national monographs from this study have appeared since 1970, the summary volume for the project has only recently been published.⁵ This enables a much more considered appraisal of the project to be made.

In parallel with these developments on the historical front, a clearer picture of trends in the Third World has emerged from the many fertility and family-planning surveys now conducted, above all from the comparable data on 41 developing countries collected for the World Fertility Survey (WFS). Moreover, just as the historical evidence has only recently been synthesized, so it is only now that the full results of the WFS programme are available. In short, therefore, this is an excellent time to consider how far transition theories are confirmed or contradicted by the new evidence. Our aim in this article, which builds upon an earlier analysis confined largely to WFS results,⁶ is to assess the implications of both the historical and contemporary data for theories of reproductive change. Discussion is confined to marital fertility and largely ignores the role of nuptiality in determining overall fertility levels. The reason for this focus is the evidence that the timing of marriage and the rate of childbearing following marriage are influenced by different sets of factors.

EXPLANATIONS OF MARITAL FERTILITY DECLINE

Though a complete review of theories of marital fertility decline will not be attempted, a brief synopsis of the central ideas of the various theories is a necessary precursor to the presentation of the empirical evidence in later sections. Coale's succinct statement concerning the main preconditions for marital fertility decline offers a convenient introduction to the discussion.⁷ In his review of the European transition Coale identified the following three conditions: (i) fertility must be within the calculus of conscious choice; (ii) effective techniques of fertility reduction must be known and available; and (iii) reduced fertility must be perceived to be advantageous. As implied earlier, it is the third factor, concerning motive rather than means, which has dominated theoretical speculation.

The most pervasive theme in transition theory is that the modernization of societies changes the economics of childbearing in such a way that a large number of children

⁴ E. A. Wrigley and Roger Schofield, *The Population History of England 1541-1871: A Reconstruction* (London: Edward Arnold, 1981).

⁵ The summary volume is *The Decline of Fertility in Europe*, eds. Ansley J. Coale and Susan Cotts Watkins (Princeton: Princeton University Press, 1986). It provides both a detailed description of the European results and several analytical and interpretative chapters.

⁶ John Cleland, 'Marital fertility decline in developing countries: theories and the evidence', in *Reproductive Change in Developing Countries*, eds. John Cleland and John Hobercraft (Oxford: Oxford University Press, 1985).

⁷ Ansley J. Coale, 'The demographic transition', in *International Population Conference 1973* (Liège, International Union for the Scientific Study of Population, 1973).

becomes disadvantageous to parents. Fertility decline is thus seen as a rational, though perhaps lagged, accommodation to changes in objective economic circumstances. In traditional societies, it is argued, children are beneficial to parents from an early age as a source of labour; they represent an investment for support in old age, an insurance against risk in a hazardous environment, and enhance the physical security and political influence of the family unit. In such circumstances, large numbers of children are either a conscious goal, or deliberate limitation of family size offers non-existent, or such small advantages that a regime of natural fertility prevails.

Modernization erodes these benefits either directly or by providing more attractive alternatives. The shift from familial to larger-scale modes of production reduces the labour utility of children, and the advent of mass education further decreases their availability for work. New forms of investment and insurance arise and, increasingly, political and legal functions are taken over by specialized non-familial institutions. In the process of economic development, the primacy of kinship is eroded, and the family gradually stripped of all its functions except child nurture and emotional satisfaction. The transition from corporate kinship systems to extended families and, finally, to nuclear families brings about a progressive reduction in the social and economic advantages of large numbers of children, and fertility falls. At the same time, monetization of the economy may heighten awareness of the cost of children in terms of food and clothes. These costs are increased directly by educational expenses and, indirectly, by the lost opportunity for mothers to exploit the rising employment prospects outside the home.

These views were the core of the earliest explanations of the transition. Thompson, Davis and, perhaps most clearly, Notestein argued that prime responsibility lay in the development of industrial and urban societies which undermined traditional values supporting high fertility.⁸ Notestein and the other creators of 'classical' transition theory argued principally in macro-economic terms. More recently, the micro-economic approach proposed by Becker and others, and variously referred to as 'demand theory', 'the Chicago School approach' or 'new household economics' has introduced greater theoretical rigour without, however, changing the central thesis: that reduced demand for children is the fundamental driving force behind the transition.⁹

The 'demand theory' approach to fertility developed as a branch of the theory of consumer choice. At its heart is the notion that rational self-interested people will choose to consume the goods that give them the greatest satisfaction. Theoretically it is straightforward to extend this logic from cars and refrigerators to 'goods' of demographic interest such as children.

Particularly influential has been the idea that time itself is a valuable commodity. This has led to an interest in the way women allocate their time between competing

⁸ Earliest expressions of transition theory are to be found in the following: W. Thompson, 'Population', *American Journal of Sociology*, 34 (1929), pp. 959-975; K. Davis, 'The world demographic transition', *Annals of the American Academy of Political and Social Science*, 273 (1945), pp. 1-11; F. W. Notestein, 'Population: the long view', in *Food for the World*, ed. T. W. Schultz (Chicago: Chicago University Press, 1945).

⁹ The first expression of the micro-economic approach was G. S. Becker, 'An economic analysis of fertility', in *Demographic and Economic Change in Developed Countries*, National Bureau of Economic Research (Princeton: Princeton University Press, 1960). Subsequent major contributions are G. S. Becker, 'A theory of the allocation of time', *Economic Journal*, 75 (1965), pp. 493-517; T. P. Schultz, 'An economic model of family planning and fertility', *Journal of Political Economy*, 77 (1969), pp. 153-180; T. P. Schultz, 'Determinants of fertility: a micro-economic model of choice', in *Economic Factors in Population Growth*, ed. A. J. Coale, pp. 89-124 (New York: Wiley, 1976); T. W. Schultz, ed., *Economics of the Family: Marriage, Children, and Human Capital* (Chicago: Chicago University Press, 1974); and G. S. Becker, *A Treatise on the Family* (Cambridge, Mass.: Harvard University Press, 1981). A convenient summary of the variables dealt with in a household demand system is T. P. Schultz, *Economics of Population*, ch. 4, especially table 4.1 p. 99. (Reading, Mass.: Addison-Wesley).

alternatives, such as childbearing and work outside the home. Indeed, the emphasis placed by the neo-classical household economists on the value of mothers' time, and its relationship to the cost of children, has strengthened the long-held view that the social status and economic independence of women may be an important intervening factor between economic modernization and fertility decline.

Since its first formulation in the 1960s many criticisms have been made of the demand theory. Some of these have led to modifications of the rather stark early formulations, in particular the greater emphasis on the trade-off between the quantity and quality of children in Becker's more recent work.¹⁰

Even more influential than the Chicago School approach have been the contributions of Leibenstein and Easterlin which combine the economic decision-making process with the social and biological constraints to which it is subject.¹¹ By explicitly taking into account factors which influence the supply of children, such as mortality and marriage, as well as the demand for them, Easterlin provides a model of much greater flexibility and scope than the strict micro-economic approach allows. The dominance of Easterlin's model can be judged from the massive study by the United States National Academy of Science of the determinants of fertility in developing countries.¹² However, the idea that economic considerations of costs and benefits are of primary importance remains central, and in this regard the broader socio-economic approach is little different from simpler demand theory models.

Some sociologists have been at pains to disavow the assumption of the rational, decision-making household that is explicit in much socio-economic theorizing and have stressed the cultural and normative context in which reproduction occurs.¹³ Faced with fluctuating mortality at a high average level, systems of values, beliefs, and normative pressures have evolved to encourage moderate to high fertility. When mortality falls, these supports are no longer necessary and, indeed, their effects may become dysfunctional; they wither under the onslaught of new perceptions and new ideas.

There have been several attempts to combine the economic and sociological approaches. Perhaps the best known is Caldwell's theory of intergenerational wealth flows, which unites the concept of an economic demand for children with the cultural transmission of western ideas and values which ultimately undermine that demand.¹⁴ Pre-transitional societies, he claims, are characterized by a net flow of goods and services from children to older generations. A reversal of the direction of this flow is the driving force behind fertility decline and the fundamental cause of this reversal is the emergence and cultural transmission of the idea of the child-centered nuclear family, which replaces the extended family system with its vested interest in high fertility. The locus of reproductive decision-making shifts from extended family patriarchs to the conjugal couple, who are free to lavish emotional and financial care on their children in the modern Western mode. As such care is expensive, family size falls.

¹⁰ See Becker, *A Treatise on the Family*, *op. cit.* in footnote 9.

¹¹ See H. Leibenstein, 'An interpretation of the economic theory of fertility: promising path or blind alley?' *Journal of Economic Literature*, 12 (1974), pp. 457-479; H. Leibenstein, 'The economic theory of fertility decline', *Quarterly Journal of Economics*, 89 (1975), pp. 1-31; R. A. Easterlin, 'An economic framework for fertility analysis', *Studies in Family Planning*, 6 (1975), pp. 54-63; and R. A. Easterlin, R. A. Pollack and M. L. Wachter, 'Towards a more general economic model of fertility determination: endogenous preferences and natural fertility', in *Population and Economic Change in Developing Countries*, ed. R. A. Easterlin, pp. 81-149 (Chicago: Chicago University Press, 1980).

¹² See R. A. Bulatao and R. D. Lee (eds.), *Determinants of Fertility in Developing Countries* (New York: Academic Press, 1984).

¹³ For a recent forceful argument against the individualistic household approach, see Norman B. Ryder, 'Fertility and family structure', *Population Bulletin of the United Nations*, 15 (1983), pp. 15-33.

¹⁴ John C. Caldwell, *Theory of Fertility Decline*, ch. 11 (London: Academic Press, 1982).

In contrast to the large body of theoretical work concerning the impact of modernization on the demand for children, little attention has been paid to the other two of Coale's three preconditions, which concern the means of control. There are, however, at least two relevant schools of thought. The first argues that an important consequence of the structural modernization of societies, in particular the growth of formal education, is a psychological shift from, *inter alia*, fatalism to a sense of control of destiny, from passivity to the pursuit of achievement, from a religious, tradition-bound, and parochial view of the world to a more secular, rational, and cosmopolitan one.¹⁵ The implications of such general shifts in outlook for attitudes towards and propensity to use birth control are obvious.

The second school of thought, the diffusion of innovations theory, is concerned with the way in which new technologies or forms of behaviour spread within a population.¹⁶ Analysis is focused on the perceived attributes and advantages of the new discovery, and its compatibility with moral values and social norms, which determine its initial acceptability. The roles of opinion leaders, social networks, and inter-spousal communication in disseminating the new idea are specified. In the case of birth control, diffusion may be actively encouraged by government policies and programmes, or it may occur in a more spontaneous manner.

Few theorists have attempted to unite all three of Coale's conditions for fertility decline. Easterlin's framework which gives explicit recognition to the possible influence of the costs of fertility regulation is the best-known example. More recently, Retherford has propounded a theory of fertility transition which integrates the impact of development and mortality decline on demand for children with innovation diffusion perspectives. Declining demand is seen as the underlying cause, while initial resistance to, or ignorance of, birth control accounts for the timing and rapidity of change.¹⁷

This brief review of the central reasons for marital fertility decline emphasizes the multiplicity of potential alternatives. At one time or another, every feature that is thought to distinguish societies with high from those with low fertility has been advocated as a cause. Most of the central ideas have at least superficial plausibility and some intuitive appeal. Moreover, they may be inextricably intertwined. Structural modernization and transmission of new ideas go hand in hand, and their impact on the economic role of children, on material aspirations, and acceptance of the principle of birth control are likely to change in concert. As always in the social sciences, the separation of cause from concomitant or consequence is difficult. Plausible *post factum* explanations for particular trends abound, but an understanding of causal mechanisms, such as would allow confident prediction is out of reach. Nevertheless, it is possible to confront these central ideas with the empirical mass of historical and contemporary research findings in an illuminating way.

¹⁵ For the most influential expressions of this theory, see A. Inkeles and D. H. Smith, *Becoming Modern: Individual Change in Six Developing Countries* (London: Heinemann, 1974); and A. Inkeles, *Exploring Individual Modernity* (New York: Columbia University Press, 1983).

¹⁶ For a general treatment of the diffusion theory, see Everett M. Rogers and F. Floyd Shoemaker, *Communication of Innovations: a Cross-Cultural Approach* (New York: Free Press, 1971). For an application to family planning, see Everett M. Rogers, *Communication Strategies for Family Planning* (New York: Free Press, 1973).

¹⁷ R. D. Retherford, 'A theory of marital fertility transition', *Population Studies*, 39 (1985), pp. 249–268. Using results from a simulation model Casterline and Clark have also claimed that a diffusion model is the best way to explain very rapid declines. They also suggest that both conventional socio-economic approaches and diffusion need to be considered in any complete model. See J. B. Casterline and R. B. Clark, 'Diffusion perspectives on fertility transition: a critical assessment'. Paper presented at the Annual Meeting of the Population Association of America, San Francisco, 1986.

THE NATURE OF THE DATA

Before discussing the results from contemporary and historical materials it is valuable to identify their nature, since this has consequences for the kind of question they can be expected to answer. One striking feature of both the WFS and the main historical studies is that they were conducted primarily as exercises in description and documentation. They did not begin with a specific set of hypotheses to be tested; rather they attempted to document accurately levels and trends in fertility, and only then to move on to explanatory analysis. Although at first blush it might be thought that this would restrict their usefulness to theorists, it is our contention that the lack of any particular conceptual strait-jacket endows the data with an impressive generality. In particular, the European Fertility Project and the WFS provide data which enable the same fertility measures to be compared for a wide variety of countries and regions with greatly differing social, economic and cultural characteristics. This comparability is much more useful for an assessment of broad theories than the answer to a few tests aimed at proving or disproving a particular theory in a specific setting.

The WFS was characterised by a concentration on the measurement of reproduction itself, together with its major direct determinants: sexual exposure (or its surrogate, marriage), birth control, and post partum infecundability (or its surrogate, lactation). This central material was supplemented by a few items on reproductive motivations and on the social and economic characteristics of parents, selected, as Caldwell has pointed out, on the pragmatic grounds that they had been found in earlier investigations to be powerful correlates of reproductive behaviour.¹⁸ Only in one instance was the WFS core questionnaire constructed with specific causal hypotheses in mind, namely those concerning the possible relationship of women's labour force participation to child-bearing. Of the various modules devised and promulgated by the WFS as adjuncts to the core questionnaire, only one, the economic module, was designed to test precise, causal propositions. But, in the event, it was used in only a few surveys.

The historical data which are most relevant to our concern fall into three categories. The first comprises family reconstitutions which are created by linking the baptism, marriage and burial records found in parish registers to produce maternity histories very similar to those of the WFS. While the registers sometimes provide more generational depth to an historical study than the single-round WFS could attain, they usually lack information on the socio-economic characteristics of the individuals who appear in them. Even where such data do exist in the registers, the lack of standardized methods for handling such complex variables as occupation or social class severely limits their use for analytical purposes. Moreover, the registers only contain information on the outcome of fertility decisions, i.e. births, and are mute on the issue of motivation. A further drawback with most family reconstitutions is that they do not cover the era of the fertility transition. Many stop before any decline in fertility is apparent, or only deal with the early parts of the transition.

The second branch of historical research relevant here is the innovative use of parish register material in aggregated form made by Wrigley and Schofield. Using simple totals of baptisms, marriages and deaths recorded in 404 parishes in England from 1538 to 1837 and census information from the mid-nineteenth century, they performed a particular form of reverse survival. Their work resulted in the calculation of the main demographic indices (life expectancy, gross reproduction ratio, etc.) for England as far back as the mid-sixteenth century. These times series of results could then be compared

¹⁸ John C. Caldwell, 'Strengths and limitations of the survey approach for measuring and understanding fertility change: alternative possibilities', in Cleland and Hobcraft, (eds.), *op. cit.* in fn. 6.

with an analogous series of real wage statistics produced by Phelps-Brown and Hopkins to provide a detailed analysis of economic-demographic relations for pre-industrial England.¹⁹

The third major set of historical sources consists of studies based on census and civil registration data starting from the mid-nineteenth century. They do cover the era of the transition, and sometimes provide socio-economic data which parallel the demographic results. However, they do not give us information at the level of the individual, but for regional units: counties, *départements* and so on. Nevertheless this is still a major advance on national-level data and enables us to observe crucial regional differences in many countries.

In contrast to some Third World surveys, one feature which most of the historical sources have in common is a high degree of accuracy in reporting. In family reconstitutions, for example, it is usual for dates of birth and death (or more exactly baptism and burial) to be known to the day, obviating the need to impute missing information. Likewise, the quality of census and vital registration data from historical European populations is normally excellent. Confidence in the accuracy of results based on these data goes some way to balancing the inherent advantages for present purposes of modern surveys in which the reproductive aspirations and performance of individual families can be examined, in the light of their social and economic circumstances.

The value of the WFS and other recent studies in improving our understanding of fertility trends is widely acknowledged. Whereas 15 years ago the scale and generality of fertility decline could be doubted, it is now apparent that a massive transition in childbearing is taking place in most parts of the world. The historical data produced in recent years have also had a profound impact on our understanding of the nature of demographic developments during the transition. The detailed picture of change has proved to be much more complicated than was expected, and to pose serious questions for theories of transition.

It is clear that neither the historical nor the contemporary data will permit a definitive appraisal of any single theory. Evidence on such crucial matters as prices and wages is almost entirely absent. Nevertheless, it is possible to pull together the various strands of evidence and gain a view of the value of demand theories for an overall consideration of the transition. We attempt in the sections that follow to make sense of the disparate and indirect sources of information available to us.

THE NATURE OF PRE-TRANSITIONAL FERTILITY

There are three major questions about the nature of marital fertility in pre-transitional societies that are relevant to the theme of this article.

1. Was conscious birth control within marriage practised?
2. To the extent that control was absent, did this reflect a universally high demand for children?
3. Can the widely varying levels of pre-transitional fertility be interpreted as a by-product of economic systems?

To answer these questions we focus initially on the historical record since this provides a clearer picture of reproductive behaviour in traditional societies than do modern surveys. The possible use of birth control in the era before the demographic transition has been a much-discussed topic in historical demography. Indeed, two pioneering studies based on family reconstitutions (by Henry on the bourgeoisie of Geneva and by

¹⁹ See Wrigley and Schofield, *op. cit.* in fn. 4 for details.

Wrigley on the English parish of Colyton) gained particular fame because they appeared to discover evidence of family limitation at unexpectedly early dates.²⁰ For a long time the evidence upon which to base judgements remained very limited, but as studies of pre-industrial populations have accumulated, it has become increasingly apparent that instances of birth control were limited to small groups (mostly elites) or came from studies based on small data sets which cannot be expected to provide unambiguous results.²¹ Two of the most comprehensive analyses, by Knodel on German villages and by Wilson on England, both concluded that, while the existence of family limitation in pre-industrial Europe cannot be ruled out, it is highly unlikely that it was of any significance in determining the overall pattern of marital fertility.²²

Clearly if this is the case attention must focus on the groups and populations where control first came to be used. The most significant example of an early transition is that of France. From the 1780s on, there is clear evidence from family reconstitution studies that family limitation was widespread. Given that the populations involved were almost entirely rural, largely illiterate and far from affluent, this decline in itself casts doubt on simple macro-economic explanations. Wrigley has recently suggested that the French fertility decline may best be viewed as comprising two transitions: a first from about 1780 to the mid-nineteenth century, perhaps a response to the very rapid improvement in mortality during the eighteenth century, and a second which was simultaneous with the main fertility decline elsewhere in Europe.²³

The pattern of regional variation within France also deserves comment. Fertility remained high in several areas throughout the period of early decline elsewhere in France. (Brittany, Flanders, and the Basque country, for example.) In general, these areas were both economically backward and socially and politically conservative. As such, the regional French experience, in so far as it is known, is compatible with almost any theory of the transition. Thus, the lack of data for France comparable with those for other European countries seems to us to make definitive judgements about its fertility decline unwise.

If the example of France is tantalizingly unclear, even less is known about the other examples of specific groups where it is known that family limitation began early. Parts of Hungary appear to share with France an early rural transition, though evidence is, by comparison, much less clear-cut and geographically more restricted.²⁴ A number of other small pockets of birth control have been identified.

In the most detailed review, Livi Bacci has presented clear evidence of family limitation among various elite groups in Europe, especially after 1700. Additionally the results he cites are highly suggestive that control in many European Jewish populations antedated their Gentile neighbours. The economic and religious backgrounds of these groups are diverse, and there appears to be no obvious characteristic that they possess in common, apart from living in towns. Thus, both the impetus that gave rise to family limitation

²⁰ Louis Henry, *Anciennes familles Genévoises* (Paris: INED, 1956); and E. A. Wrigley, 'Family limitation in pre-industrial England', *Economic History Review* (2nd series), 19 (1966), pp. 82-109.

²¹ See Massimo Livi Bacci, 'Social group forerunners of fertility control in Europe', ch. 3 in Coale and Watkins (eds.), *op. cit.* in fn. 5.

²² John Knodel, 'Natural fertility in pre-industrial Germany', *Population Studies*, 32 (1978), pp. 481-510; and Christopher Wilson, 'Natural fertility in pre-industrial England, 1600-1799', *Population Studies*, 38 (1984), pp. 225-240. It is important to note that considerable anecdotal evidence exists to assert knowledge of contraceptive methods in some pre-transition European countries. For example, see Angus Maclaren, *Reproductive Rituals* (London: Methuen, 1985). Such knowledge was not translated into general behaviour, however, until the late nineteenth century.

²³ E. A. Wrigley, 'The fall of marital fertility of nineteenth-century France: exemplar or exception', *European Journal of Population*, 1 (1985), pp. 31-60 and 141-177.

²⁴ R. Andorka, 'Un exemple de faible fécondité légitime dans une région de la Hongrie', *Annales de Démographie Historique* (1972), pp. 25-53.

among them and the reasons for the very slow spread of the practice to the population at large remain matters for speculation.

Given the highly accurate information on age which family reconstitution provides, historical demographers have been able to employ a wide variety of checks to test for the presence of parity-specific control. Age-specific marital fertility rates, ages at the birth of the last child and parity progression ratios are all readily calculated.²⁵

Unfortunately such accuracy, which is usually found only in well-kept registers of vital events, is rare in developing regions. There are exceptions, however, such as Taiwan, and, for this country during the early part of this century, natural fertility may be inferred with confidence from the age pattern of fertility.²⁶ In other developing countries, uncertainties about data qualify the usefulness of the measures employed by historical demographers to diagnose fertility control. To some extent, this deficiency is balanced by contemporary survey data on knowledge and use of birth control. Furthermore, the fertility of socio-economic groups can be analyzed in supposedly non-contracepting populations in a search for differences which are suggestive of purposive control.

In view of the almost universal recognition of the link between coitus and procreation, total ignorance among adults of any method of preventing conceptions is not to be expected. Yet survey data suggest a surprising lack of knowledge in pre-transitional societies, where there has been no organized effort to popularize the subject. Very low levels of knowledge of any method of contraception are reported for such countries as Indonesia, India and Morocco during the early 1960s.²⁷ Older women in Thailand also report an inability to control fertility, because of ignorance of effective methods.²⁸ WFS findings are similar for countries which have been sheltered for geographical or political reasons from external sources of birth control information. In Nepal, North Yemen and the francophone countries of West Africa, only a minority of women report an awareness of modern methods, or of methods such as withdrawal. Apart from African populations where interpretation of survey results is difficult because of confusion with customary post-natal sexual abstinence, the idea of prolonged abstinence as a means of reproductive control within marriage appears to be alien. These results raise the possibility that simple ignorance of contraceptive measures may have been prevalent in many historical populations. Similar evidence cannot be adduced for folk methods of abortion or infanticide, but physical danger and/or moral repugnance may have precluded their routine use in most populations as means of controlling family size.

Attempts to assess contraceptive knowledge are fraught with severe definitional and measurement problems which preclude straightforward comparisons between different countries or periods. The record of surveys in measuring use of contraception, by comparison, is impressive. Independent surveys in the same country usually provide consistent results, and the spread of contraception in many Asian and Latin American populations during the last two decades has been documented convincingly. The overwhelming weight of evidence suggests that contraceptive practice was confined, until recently, to very small minorities in developing countries.

²⁵ While some measures are ambiguous, the richness of detail available in reconstitutions goes a long way to overcoming the uncertainties of any one measure.

²⁶ See Ansley J. Coale and T. James Trussell, 'Model fertility schedules: variations in the age pattern of childbearing in human populations', *Population Index*, 40 (1974), pp. 185-218.

²⁷ Halvor Gille and R. H. Pardoko, 'Family life study in East Java', *Family Planning and Population Programs*, ed. Bernard Berelson (Chicago: University of Chicago Press, 1966). W. Parker Mauldin, 'Fertility studies: knowledge, attitude and practice', *Studies in Family Planning*, 7 (1965), pp. 1-10. Division of Statistics, Secretariat for Planning, Government of Morocco, 'Morocco: family planning knowledge: attitudes and practice in rural areas', *Studies in Family Planning*, 58 (1970), pp. 1-22.

²⁸ See John Knodel, Napaporn Havanon and Anthony Pramualratana, 'Fertility transition in Thailand: a qualitative analysis', *Population and Development Review*, 10 (1984), pp. 297-328.

However, this evidence on contraceptive use need not be regarded as definitive proof of natural fertility. Contraception may be underreported because of embarrassment, or conscious fertility control may be exercised in other ways such as induced abortion, which is rarely reported reliably. From analyses of fertility itself can family limitation be inferred in allegedly non-contracepting populations for which survey or equivalent data are available?

Numerous authors, particularly in the Indian sub-continent, have examined the possible effects of family income and wealth, as for instance indicated by size of landholding, on fertility. Though positive effects are found more often than not, we are unconvinced that these results support the volitional interpretations that are commonly given to them.²⁹ Differential quality in the reporting of numbers of children, or the influence of factors unrelated to reproductive motivations, such as duration of breastfeeding or regularity of cohabitation, provide more plausible explanations.

There are, however, a few scattered findings which provide more credible evidence of deliberate fertility control in pre-transitional settings. In Pakistan and Nepal, for instance, a deficit of sons appears to result in an acceleration of the tempo of childbearing and, in the latter country, becoming a grandmother is associated with a drop in fertility.³⁰ Against this evidence must be balanced other research findings. Breastfeeding durations are not varied as a conscious attempt to control fertility.³¹ Terminal abstinence in African countries studied by the WFS is too low to suggest that cessation of sexual relations is a common response to becoming a grandmother. Evidence is weak that the level of reproduction is consciously raised to make up for late marriage or death of children.³² Moreover, the level of fertility in many pre-transitional societies is so high that the existence of fertility limitation on any scale seems unlikely. In conclusion, it seems most likely that natural fertility was the predominant form of childbearing in all pre-transitional societies for which we have reliable information.

We turn now to the second question raised at the start of this section. Can the absence of birth control be interpreted as reflecting a universally high demand for children? Though the fragmentary and conflicting nature of the evidence precludes a definitive answer to this question, several telling insights may be gained from both historical and contemporary sources.

Data relating to reproductive desires are not available for historical populations. However, in one case it is possible to examine in detail the interplay of economic and demographic change in the very long run in a way which illuminates the economic value of children to their parents. The country in question is England, whose demographic history has been reconstructed by Wrigley and Schofield to permit comparison with long-term data on real wages.³³ Moreover, Smith has combined their work with results from other historical studies to provide a comprehensive description of the economic,

²⁹ For a similar scepticism see Mead Cain, 'On the relationship between landholding and fertility', *Population Studies*, 39 (1985), pp. 5-15.

³⁰ John Cleland, Jane Verrall and Martin Vaessen, 'Preferences for the sex of children and their influence on reproductive behaviour', *WFS Comparative Studies*, 27 (1983); and Jee-Peng Tan, 'Marital fertility at older ages in Nepal, Bangladesh and Sri Lanka', *Population Studies*, 37, 3 (1983), pp. 433-445.

³¹ Anrudh K. Jain and John Bongaarts, 'Socio-biological factors in exposure to childbearing: breastfeeding and its fertility effect', in *World Fertility Conference 1980: Record of Proceedings*, vol. 2 (Voorburg, Netherlands, International Statistical Institute, 1981).

³² For a discussion of possible catch-up effects following later marriage see John Hobcraft, 'Family Building Patterns' in Cleland and Hobcraft (eds.), *op. cit.* in fn. 6. For a convincing demonstration that the cause of increased fertility following the death of a child is physiological rather than volitional in Pakistan see H. J. Page, R. J. Lesthaeghe and I. H. Shah, 'Illustrative analysis: breastfeeding in Pakistan', *WFS Scientific Reports*, 37 (1982).

³³ See fn. 4.

social and cultural setting of fertility.³⁴ Fertility (as measured by the gross reproduction ratio) fluctuated considerably over the centuries, falling from a relatively high value of 2.8 in the mid-sixteenth century to a low of between 1.8 and 1.9 around 1650, before rising to a peak of over 3 in the early nineteenth century. These swings appeared to have followed similar trends in real wages, albeit at a lag of about a generation. However, marital fertility was virtually constant throughout the 300 years before 1850, almost the whole change in overall fertility being caused by changes in nuptiality. This remarkably tight link between marriage and real wages came about because of the particular institutional setting. As was common in much of North-West Europe before the nineteenth century, many children left home in their teens to work as servants in other households. The years spent in service enabled the members of the younger generation to accumulate the savings and skills needed to set up a new and self-supporting household. As Smith puts it when discussing the link between fertility and real wages: 'It was the highly distinctive cultural situation which demanded economic independence for the newly married that underpinned this pattern.'³⁵

In fact the evidence for England contradicts most major theories of the transition, since English society exhibited virtually all the traits which are supposed to bring about a fall in marital fertility for centuries before the transition began. For example, the nuclear family is predominant in all records as far back as the Middle Ages, kinship networks were weak, forms of community rather than familial support for the elderly were widespread, and by the later eighteenth century wage labour had almost totally replaced subsistence agriculture. Children left home early to go into service and did not remit significant amounts of money back to their parents. Yet, in spite of this overwhelming evidence that children represented a net economic loss to their parents, natural fertility remained predominant until about 100 years ago. To quote Smith once again: 'There is no place within this system for a fertility analysis that supposes households or individuals within households had a determinant and determinable set of preferences for children, which they rationally assessed so as to produce optimal outcomes.'³⁶

Clearly the particular institutional arrangements of pre-industrial England make it unwise to generalize too far from its experience. But it does warn us against an uncritical acceptance of demand models of the transition.

In comparison with the example of England, evidence concerning the economic value of children in contemporary pre-transitional societies is more abundant, but less clear-cut and more controversial. Attempts to measure objectively the economic contributions and costs of children by a variety of techniques ranging from structured interviews to intensive observation of small communities have yielded no consensus.³⁷ Similarly, attitudinal data on the perceived costs and benefits of children are open to many interpretations, and their cross-sectional nature precludes unambiguous identification of

³⁴ Richard M. Smith, 'Fertility, economy and household formation in England over three centuries', *Population and Development Review*, 7 (1981), pp. 595–622. His interpretation was challenged in Nancy Birdsall, 'Fertility and economic change in eighteenth and nineteenth century Europe: a comment', *Population and Development Review*, 9 (1983), pp. 111–123. Smith's rejoinder, 'On putting the child before the marriage: reply to Birdsall', is in the same issue, pp. 124–135. Subsequently Smith has gone on to demonstrate in even greater detail the crucial role played by non-familial institutions in buffering from stress the inherently vulnerable nuclear family at particular points in the life cycle. See R. M. Smith, 'Transfer incomes, risk and security: the roles of the family and the collectivity in recent theories of fertility change', in *The State of Population Theory: Forward from Malthus*, eds. D. Coleman and R. Schofield, pp. 188–211 (Oxford and New York: Blackwell, 1986).

³⁵ Smith (1981), *loc. cit.* in footnote 34, pp. 614–615.

³⁶ Smith, *loc. cit.* in fn. 34, pp. 618–619.

³⁷ See, for example, Eva Mueller and Kathleen Short, 'Effects of income and wealth on the demand for children', in *Determinants of Fertility in Developing Countries*, eds. Rodolfo Bulatao and Ronald D. Lee, vol. 1, pp. 590–642 (New York: Academic Press, 1983).

cause and effect. For instance, the six-nation Value of Children Survey lends support to an economic interpretation of fertility change with its finding that economic advantages of children are more frequently mentioned in settings of high rather than of low fertility.³⁸ However, in the same study the perceived costs of children did not vary according to the level of fertility. Indeed, attitude surveys in general give the impression that parental grumbles about the cost of childbearing are as common in pre-transitional as in post-transitional societies. Furthermore it has been consistently shown in the results of Asian and Latin American surveys during the last 20 years that the number of children that rural as well as urban respondents purport to want is modest and, for older couples, commonly less than the number of living children that have already been born. The contemporary evidence is sufficient to rebut Caldwell's assertion that a maximization of fertility is a rational and conscious choice in traditional societies, but insufficient to sustain more precise conclusions.³⁹

While natural fertility seems to have been predominant before the transition this does not mean that levels of childbearing were similar in all populations. In contemporary non-contracepting countries, total fertility commonly ranges from five to eight children and the dispersion in marital fertility is equally great. Even restricting our attention to European populations it is possible to find some areas where marital fertility equalled or exceeded that of the Hutterites, an anabaptist religious group many of whose members live on the High Plains of North America, and whose high fertility is widely used as a benchmark for maximum fertility. In contrast, fertility in other parts of Europe only reached about 60 per cent of Hutterite levels. The behavioural and physiological factors behind such differentials (principally variation in breastfeeding practices) have been discussed elsewhere.⁴⁰ What concerns us here is whether these variations reflect underlying structural economic factors which conditions the economic role of children, or whether they are largely independent.

The relationship between the economy and reproductive patterns is a vast and complex subject. A satisfactory analysis would demand consideration of the entire demographic regime (i.e. nuptiality, mortality, and migration as well as marital fertility). Here, it must suffice to point out that levels of natural marital fertility bear little or no relation to objectively measurable socio-economic characteristics. For example, the areas of Western Europe identified in the European Fertility Project in which marital fertility was highest in 1870 (e.g. parts of Bavaria, Flanders, the Southern Netherlands and the adjacent area of Germany) cannot be distinguished from neighbouring areas in economic terms. Equally, regions of homogeneous fertility, such as pre-transitional England, contained highly differentiated economic areas. Moreover, throughout Europe there seems to have been very little differentiation within communities. There are few family reconstitution studies in which significant occupational or status differentials within a given village or town could be demonstrated, and in one of the most thorough analyses of reconstitution data (by Knodel for German villages) it was noted that 'perhaps the most striking feature for couples married between 1750 and 1849 is the general lack of substantial occupational differentials.'⁴¹

Similarly, a cursory examination of contemporary societies does not suggest any

³⁸ Rodolfo A. Bulatao, 'On the nature of the transition in the value of children', *Papers of the East-West Population Institute*, no. 60-A, (Hawaii, East-West Center, 1979).

³⁹ Caldwell, *op. cit.* in fn. 12.

⁴⁰ Christopher Wilson, 'The proximate determinants of marital fertility in England, 1600-1799', in *The World We Have Gained*, eds. Lloyd Bonfield, Richard Smith and Keith Wrightson (Oxford and New York: Basil Blackwell, 1986).

⁴¹ John Knodel, 'Demographic transitions in German villages', in Coale and Watkins (eds.), *op. cit.* in fn. 5, ch. 9.

systematic relationship between economic structure and levels of marital fertility. The very high natality of most Arab countries, for instance, surely cannot be attributed to a correspondingly high utility of children. Nor does the difference in Africa between high-fertility Kenya and low-fertility Lesotho lend itself to any obvious economic explanation. Moreover, an interpretation of the substantial increases in natural fertility that have been observed in a number of countries in terms of a growing demand for children seems far-fetched. A more convincing explanation is that, just as in Europe, these large variations and changes reflect differing physiological factors such as sexual and breastfeeding customs, whose origins and fertility consequences are not consciously economic in nature.

In summary, we can give the following fairly confident answer to the first of the three questions posed at the start of this section, but more qualified answers to the other two.

1. Despite wide differences in levels, natural fertility was predominant in most large populations before the transition.

2. The absence of family size limitation does not necessarily imply that children represent a net economic return to parents (the case of England). The evidence for contemporary societies is conflicting, but the assumption of a high demand for children in these settings is certainly unjustified.

3. Differences and changes in the level of natural fertility appear to be largely unrelated to economic factors.

Although natural fertility is no more than an increasingly distant memory in most countries, these observations are of more than purely historical interest. The fact that family limitation in its modern form of parity-specific control was largely absent from traditional societies means that explanations of the transition must include innovation and the adoption of new ideas and forms of behaviour. Similarly, the lack of evidence for economic explanations of pre-transitional fertility casts doubt on the value of such models in dealing with the transition. Specifically, the weak empirical evidence that moderate to high fertility is economically advantageous to parents and other older kin in traditional societies makes us sceptical of the proposition that a fall in parental demand for children is the main underlying cause of the fertility transition.

THE ONSET OF DECLINE

Historical evidence, confirmed by the events of the last 30 years, indicates that once a decline in marital fertility is established within a population (a fall of ten per cent is the common criterion) it almost always proceeds considerably further.⁴² It is, therefore, not surprising that the search for an explanation has concentrated on conditions prevailing at the time of onset or shortly before, and particularly on the identification of some common threshold. The failure of this search is well known, and accordingly we wish only to consider a few key points.

For Europe, Knodel and van de Walle have convincingly demonstrated that the level of socio-economic development of a country had virtually no association with the date at which significant fertility decline began.⁴³ Rather, in most of the 700 provinces of Europe fertility first declined within a very short period of time: in 59 per cent of the provinces between 1890 and 1920 and in 71 per cent between 1880 and 1930.⁴⁴ Moreover, during this period the first declines of fertility occurred in many areas of European

⁴² Susan C. Watkins, 'Conclusions', in Coale and Watkins (eds.), *op. cit.* in fn. 5.

⁴³ John Knodel and Etienne van de Walle, 'Lessons from the past: policy implications of historical fertility studies', *Population and Development Review*, 5 (1979), pp. 217-245.

⁴⁴ See Watkins, *loc. cit.* in fn. 42.

settlement overseas. The diversity of economic circumstances between these provinces was huge in terms of both levels and trends, ranging from rural societies dominated by subsistence agriculture to urban and industrial areas. Clearly the simultaneity and speed of the European transition makes it highly doubtful that any economic force could be found which was powerful enough to offer a reasonable explanation.

The prospect of finding clear-cut relationships between modernization and fertility is diminished for other contemporary societies because of the intrusion of a new factor, government action to control population growth. It is, therefore, perhaps not surprising that the broad conclusion reached by Knodel and van de Walle for Europe applies also to other regions. Indices such as urbanization, income, energy consumption, or percentage of the labour force engaged in agriculture bear only a tenuous relationship to the onset of decline, whether their effects are assumed to be lagged or not. Literacy levels are more closely related to fertility change than these macro-economic factors,⁴⁵ but this finding is open to many interpretations, and consistent with nearly all transition theories.

In addition to socio-economic factors, mortality change was also held by classical transition theory to play a major role in bringing about fertility decline. A fall in mortality (especially infant mortality), it was suggested, should stimulate and, therefore, precede the drop in marital fertility. The demonstration that no such straightforward link existed in the European transition is one of the most striking of recent findings. In England and Belgium, for example, in most areas the decline in fertility preceded that of infant mortality. In few countries did change consistently follow the expected pattern.⁴⁶ Moreover, within countries, only weak correlations between infant mortality levels and fertility were detectable at best, and in most cases no statistically significant relation existed. Nor was it necessary for infant mortality to fall to any particular level before the fertility decline began. In parts of Germany the infant mortality rate stood at more than 300 per 1000 at the onset of the fertility transition, while in other areas fertility remained unchanging until the rate fell below 100. In Norway, for example, the infant mortality rate was 76 per 1000 by the time marital fertility had fallen by ten per cent.

As in Europe, the relationship between child mortality and fertility decline observed in other regions is at best weak. There are examples of decreasing fertility where well over ten per cent of children die in infancy, for instance Egypt and Turkey (though pronounced regional variations are apparent in both countries), and counter-examples of moderate mortality but little or no fertility decline, for instance Jordan, Syria and Kenya. Interpretation is complicated because nearly all Third World countries have benefited during the last 40 years from the elimination or amelioration of epidemics and famines which previously took a catastrophic toll of lives. This progress, with its direct effect on population growth and its indirect effect on government attitudes towards birth control, may well facilitate fertility decline, but the link is difficult to prove.

One persistent thread in discussions about fertility transition is the intriguing possibility that the initial effect of modernization may be to raise fertility through the erosion of traditional restraints such as prolonged lactation and post-natal abstinence, or by an effect on nuptiality. The issue is of theoretical importance because, as with mortality decline, it represents a situation which may result in a demand for birth control

⁴⁵ See for instance Phillips Cutright, 'The ingredients of recent fertility decline in developing countries', *International Family Planning Perspectives*, 9 (1983), pp. 101-109.

⁴⁶ Francine van de Walle, 'Infant mortality and the European demographic transition' in Coale and Watkins (eds.), *op. cit.* in fn. 5. For a detailed examination of both fertility and mortality in England and Wales, see William Brass and Mohammed Kabir, 'Regional variations in fertility and child mortality during the demographic transition in England and Wales', in *Regional Demographic Analysis*, eds. John Hobcraft and Philip Rees (London: Croom Helm, 1980).

without appreciable changes in the number of children that parents desire. Resort to contraception is required to prevent family sizes from exceeding their previous level. There is scattered evidence that such increases in marital fertility have occurred during the twentieth century in a number of populations including the predominantly Islamic republics of the Soviet Union, Korea, Taiwan and among Canadian Indians. In these cases it appears that declines in the prevalence and duration of lactation have played an important role, while in Latin America Dyson and Murphy have suggested that nuptiality change was the prime mover in generating rises in fertility during this century.⁴⁷

The historical evidence from Europe suggests that, while increases in fertility preceding the ultimate decline did sometimes occur, they are far from universal. In many areas there were significant increases in overall fertility, though this appears to have been principally attributable to changes in nuptiality, and relatively few instances of significant rises in marital fertility were found.⁴⁸ Possibly the most appropriate conclusion to draw from the European evidence is that, during the nineteenth century, traditional patterns of reproductive behaviour were destabilized with changes in long-standing customs concerning such matters as breastfeeding and pre-marital intercourse as well as family limitation. This destabilization could produce any sequence of rises or falls in fertility rates or could work in a countervailing fashion keeping fertility levels constant while changing its age pattern and proximate determinants. For example, in a study of 14 German villages Knodel and Wilson suggested that during the nineteenth century fecundability rose and breastfeeding durations declined at the same time as family limitation became established. These simultaneous changes produced a sharp increase in fertility during the early years of marriage, a decline at older ages, and virtually no change in the final size of families. Similar patterns of counterbalancing changes have been reported recently for Lagos, Nigeria and for Thailand.⁴⁹

Evidence from the WFS also suggests that the factors which might lead to a rise in fertility are generally balanced by more birth control. In an analysis of 29 WFS surveys few cases were found where modernization, represented by educational and rural-urban strata within countries, was acting to increase marital fertility in a substantial manner, by means of a greater effect on lactation than on contraception.⁵⁰ Rather, these two behavioural changes accompanied each other, with the anti-natal effect of contraception typically overriding the pro-natal effect of shortened lactation. This finding lends credence to the idea that the imprint of increased birth control on fertility may often be blurred by countervailing tendencies. Conversely, no support is afforded to the view that a rise necessarily precedes the fall. While such increases may have occurred during the recent past, a decline in customary fertility restraints without a simultaneous increase

⁴⁷ For the Soviet Union, Korea and Taiwan, see Ansley J. Coale, Barbara Anderson and Erna Härm, *Human Fertility in Russia since the Nineteenth Century* (Princeton: Princeton University Press, 1979). For Canada, see A. Romaniuk, 'Increase in natural fertility during the early stages of modernization: Canadian Indians case study', *Demography*, 18, (1981), pp. 157-172. For Latin America, see T. Dyson and M. Murphy, 'The onset of fertility transition', *Population and Development Review*, 11 (1985), pp. 399-440. Their work also suggests that age at marriage fell in many African and Asian countries, though the evidence for this is less clear-cut. See M. Murphy and T. Dyson, 'Marriage trends and the fertility transition in developing countries' in *Dynamics of Population and Family Welfare*, eds. K. Srinivasan and S. Mukerji (Bombay: International Institute for Population Studies, forthcoming).

⁴⁸ Using pooled information on Europe, Dyson and Murphy, *loc. cit.* in fn. 47, estimate that 85 per cent of the increase in overall fertility during the nineteenth century was attributable to earlier or more universal marriage.

⁴⁹ John Knodel and Christopher Wilson, 'The secular increase in fecundity in German village populations', *Population Studies*, 35 (1981), pp. 53-84. For Lagos, see *Childspacing in Tropical Africa: Traditions and Change*, eds. Hilary J. Page and Ron Lesthaeghe (London and New York: Academic Press, 1981). For Thailand, see Knodel *et al.*, *loc. cit.* in fn. 28.

⁵⁰ Susheela Singh, John B. Casterline and John G. Cleland, 'The proximate determinants of fertility: sub-national variations', *Population Studies*, 39 (1985), pp. 113-135.

in voluntary birth control appears to be rare, confined to countries such as Cameroon and Zaire where pathological sterility was previously prevalent. There appears to be no reason, therefore, to view a rise in fertility as an important part of any theoretical explanation.

In our view, the most striking feature of the onset of transition is its relationship to broad cultural groupings. We have already noted the simultaneity of fertility change in Europe and its overseas settlements. In historical perspective, the same synchronization is true for the countries of Latin America, for the Sino-influenced states of East Asia, for the islands of the English-speaking Caribbean and so on. The Arab world appears to stand on the brink of transition, while change in sub-Saharan Africa may still be some way off. Just as in Europe, there is an immense diversity of economic and political organization within each of these blocks. The spread of knowledge and ideas seems to offer a better explanation for the observed pattern than structural determinism.

FERTILITY IN TRANSITION

While the factors that precipitate widespread fertility decline within a society remain obscure, much more is known about the speed and character of decline once it is under way. Some of these features have important implications for an understanding of the underlying causes. Demand theories of fertility transition specify the forces allegedly responsible for fertility decline, namely rising costs and eroding benefits of children. These forces may operate at many varying levels, ranging from the nation state to individual families. The main purpose of this section is to ascertain whether expectations drawn from demand theory about the fertility behaviour of different types of community and family during the transition itself are fulfilled. If, indeed, the main cause of fertility transition were a transformation in the economic value of children, we may expect to find fertility declines within particular societies occurring earlier and to be more pronounced in communities and/or families for whom it may be inferred that the economic aspects of childbearing have changed most sharply. Specifically we may expect a reduction in marital fertility to be most apparent where the costs of childbearing have been raised by the advent of mass schooling, or indirectly by increased employment opportunities of women outside the home, or where the potential economic contribution of children has been reduced by alternative forms of security, by the decline of family enterprises, the fragmentation of landholdings or the mechanization of agriculture. Historical evidence at this micro-level is limited. Our appraisal of fertility differentials for evidence of the imprint of economic forces, therefore, concentrates mostly on the developing world, drawing upon recent surveys, particularly the WFS.

Perhaps the finding from WFS with the most far-reaching theoretical implications is the failure to identify any divergence in fertility between familial and non-familial economic sectors. In only one of 24 populations studied was there a significant difference (after control for prior variables such as education) between the rate of childbearing in families where the head of the household was self-employed or employed by a family member, and those where the head was employed by a non-relative.⁵¹ This similarity held for urban and rural populations. Its theoretical importance stems from the common and plausible assumption that the labour utility of children is greater in family-run enterprises or farms than under other modes of economic organization. Perhaps the assumption is incorrect, but the finding casts serious doubt on the child-utility theories of decline. Such

⁵¹ German Rodríguez and John Cleland, 'Socio-economic determinants of marital fertility in twenty countries: a multivariate analysis', in *World Fertility Survey Conference 1980: Record of Proceedings*, vol. 2 (Voorburg, Netherlands, International Statistical Institute, 1981).

scepticism is increased by the absence of an observed link at the community level between agricultural mechanization, which presumably erodes the importance of familial labour, and fertility response⁵² and by the lack of firm evidence that fragmentation of landholding (which again is likely to reduce the economic value of children) is related to conscious reduction of family sizes.⁵³ It may also be noted that some of the most substantial fertility transitions have occurred in labour intensive rice-growing areas of the world, where the contribution of children might be expected to be particularly great.

In many demand theories, central importance is attached to changing economic opportunities for women which not only provide attractive alternatives to childbearing, but may raise the opportunity costs of children. Despite intense empirical investigation of the interrelationships between women's employment and fertility, no convincing evidence of a causal link has been established. The position has been summarized by Weller in a recent review. He notes that: 'the available evidence does not always show a negative association between the gainful employment of females and fertility, especially in the rural areas of developing countries, and that even when present such a negative relationship is seldom strong and may have an ambiguous causal nature'.⁵⁴

WFS findings support Weller's conclusions. In a United Nations study of 38 WFS surveys a clear-cut association between the mother's experience of work in the modern sector and her lifetime fertility is established only at higher levels of societal development and, moreover, the direction of causality remains obscure. Parallel differences in contraceptive use are small and statistically significant only in a minority of countries studied.⁵⁵ We accept that the link between women's employment and fertility is extremely difficult to study by means of cross-sectional surveys. However, the general conclusion is inescapable that the fertility transition is only marginally related to the increasing involvement of women in the non-familial economy.

The security motive for high fertility looms large in many explanations of the fertility transition, and the case for the value of sons for widowed or divorced women in settings where custom precludes active participation of women in the economy has been convincingly argued.⁵⁶ However, the empirical base for asserting that such considerations are a major influence on fertility is very slender. Once again we may turn to a recent review of the subject, by Nugent, to encapsulate the position.

The prima facie evidence in the form of what people, and especially women, say about the old-age security motive for fertility suggests that the motive may be very strong. On the other hand, indirect (behavioral) evidence concerning what happens to fertility related behavior...and to fertility itself as the depth, breadth and coverage of old-age pension programs and/or of other substitutes for support from children vary from one situation to another over time and space, is weak and contradictory.⁵⁷

No discussion of fertility differentials during the transition is complete without a consideration of the role of education. This topic has two main aspects: the influence

⁵² J. B. Casterline, 'Community effects on fertility', in *The Collection and Analysis of Community Data*, ed. John B. Casterline (Voorburg, Netherlands, International Statistical Institute, 1985).

⁵³ See Mead Cain, 'On the relationship between landholding and fertility', *Population Studies*, 39 (1985), pp. 5-15.

⁵⁴ Robert H. Weller, 'The gainful employment of females and fertility: with specific reference to rural areas of developing countries', in *Rural Development and Human Fertility*, eds. Wayne A. Schutjer and C. Shannon Stokes (London and New York: Macmillan, 1984).

⁵⁵ United Nations, *Women's Employment and Fertility*, Population Studies 16 (New York: Department of International Economic and Social Affairs, 1985).

⁵⁶ Mead Cain, 'Risk and insurance: perspectives on fertility and agrarian change', *Population and Development Review*, 7 (1981), pp. 435-474.

⁵⁷ Jeffrey B. Nugent, 'The old-age security motive for fertility', *Population and Development Review*, 11 (1985), pp. 75-97. It should be noted that relatively little detailed analysis of actual value of children to aged parents in the Third World has been undertaken.

of the level of education received by parents themselves, and the influence of schooling opportunities for their children. To take the latter aspect first, we note at the outset that the growth of educational opportunities for children may condition fertility in a direct economic fashion by increasing costs and reducing availability for productive contributions and in less directly economic ways by changing attitudes towards children, particularly by encouraging investment in quality of children and at the expense of numbers.⁵⁸ Evidence of an effect by either path is mixed. At the macro level, a strong relationship between school enrolment and fertility appears to be confined to more developed economies and to secondary rather than primary schooling.⁵⁹ At the level of the community, an association between the presence of schooling opportunities and fertility has rarely been found;⁶⁰ but at the level of the individual family, aspirations for education of children are often found to be negatively correlated with overall family size desires.

By comparison, the influence of parents' levels of education have been studied more intensively. The persistent link between literacy and fertility at the national level was noted in the previous section. WFS analyses have furnished massive confirmation of this link at the level of the individual family; during transition, higher levels of parents' education are associated with greater use of birth control and lower marital fertility. Though the strength and form of the relationship varies considerably between different countries, it tends to be stronger than for the more purely economic characteristics of couples, such as income, husband's occupation, or standard of living; the link persists when these factors are controlled through multiple regression; and it holds in both urban and rural settings. In the majority of countries, but especially in Latin America, the length of the wife's formal schooling is more closely tied to reproductive behaviour than that of the husband; but the difference is not great, and offers little support to the thesis that the status of the woman in the household is a critically important factor in reproductive change.

There are many possible interpretations of the pervasive though not universal education-fertility relationship. We would argue that the evidence supports a cognitive mode of causality, rather than a structural one. The fact that, in most countries, a few years of schooling appear sufficient for a shift in reproductive behaviour is more likely to reflect changing perceptions, ideas, and aspirations than changes in objective micro-economic realities. This interpretation is further supported by the finding that the link between women's education and fertility does not operate through enhanced employment prospects for the better-educated, thereby raising the opportunity or indirect costs of children. In a multi-national WFS study, the education-fertility association was little affected by a control for wife's employment since marriage.⁶¹

Further doubt is cast on a narrowly economic view of the education-fertility link by the fact that the level of mother's education exerts a strong influence on infant mortality. The evidence concerning this effect suggests that the intervening mechanisms concern the knowledge of, and attitude towards disease, hygiene and nutrition rather than material standards of living or purchasing power. If such cognitive change, induced by

⁵⁸ See J. C. Caldwell, 'Mass education as a determinant of the timing of fertility decline', for convincing evidence of the importance of education in imparting new ideas and attitudes. *Population and Development Review*, 6 (1980), pp. 225-255; and Becker (1981), *op. cit.* in fn. 9 for a theoretical description of the quality-quantity trade-off.

⁵⁹ See Jee Peng Tan and Michael R. Haines, *Schooling and Demand for Children: Historical Perspectives* (Washington, D.C., World Bank, 1984).

⁶⁰ For a brief review of the evidence see John Casterline, 'Schooling and fertility', International Union for the Scientific Study of Population, *International Population Conference*, vol. 2, pp. 7-20. (Florence, 1985).

⁶¹ Rodriguez and Cleland, *loc. cit.* in fn. 51.

education, can have a powerful effect on the survivorship of children, it should not surprise us if it were to have an equally powerful effect on the bearing of children.

While the differentials in fertility predicted by demand theories are not generally found in the WFS and other recent studies, sub-national differentials based on ethnic, religious or linguistic factors are frequently pronounced, in parallel with national-level patterns discussed at the end of the previous section. Detailed analyses of WFS data for Malaysia, Thailand and Indonesia have shown such differentials in reproductive behaviour to attenuate little after control for confounding factors of an education or economic character.⁶² Similar examples abound, testifying to an influence on reproductive behaviour of what we may broadly term 'culture'.

The historical evidence from Europe demonstrates a similarly critical role for cultural factors. Although few sources are available in which fertility differentials in historical Europe can be examined at the individual level, the availability of detailed regional or local-level data enables us to investigate the issue. One of the most striking features to emerge from the European Fertility Project is the importance of linguistic and cultural boundaries in determining the regional pattern of fertility change. In contrast, socio-economic factors were often of minor importance. Belgium, which is divided into French and Flemish-speaking areas, provides a striking example. Lesthaeghe compared the fertility of pairs of communities on opposite sides of the linguistic border, with similar socio-economic characteristics and never more than ten kilometres apart. He discovered that declines occurred much earlier and were more rapid in francophone communities, often preceding the Flemish ones by several decades.⁶³ A further demonstration of the power of moral values is the study by Lesthaeghe and Wilson of the role of secularization in the transition.⁶⁴ Their work indicated that the inhabitants of secularized regions were pioneers of fertility control, and that in Catholic regions secularization played a particularly important role. In brief, the European experience makes it clear that differences between cultures in terms of language, religion, customs or values may either inhibit or facilitate the adoption of family limitation or other novel forms of behaviour. Moreover, the European data enable us to examine the persistence of such differences through time. While many aspects of behaviour changed during the transition, the relative openness of regions to new ideas often remained remarkably stable. For example, in Italy, there is a close correlation between the regional pattern of fertility change during the early decades of this century and contemporary regional variation in attitudes to such matters as divorce or abortion.⁶⁵ Similar observations have been made for several countries. Thus, though the social, economic and demographic characteristics of a region may be revolutionized, certain aspects of its character remain largely invariant. It would be surprising indeed if such powerful and enduring features did not have a significant effect on fertility.

⁶² For Malaysia see Tey Nai Peng and Idris Abdurahman, 'Factors affecting contraceptive use in Peninsular Malaysia', *WFS Scientific Reports* 23 (1981). For Thailand, see John Knodel, Apichat Chamrathirong, Napaporn Chayovan and Nibhon Debavalya, *Fertility in Thailand: Trends, Differentials and Proximate Determinants*, Committee on Population and Demography Report No. 13 (Washington D.C., National Academy Press, 1982). For Sri Lanka, see Iqbal Alam and John Cleland, 'Illustrative analysis: recent fertility trends in Sri Lanka', *WFS Scientific Reports* 25 (1981). For Indonesia see Budi Soeradji and Sri Harijati Hatmadji, 'Contraceptive use in Java-Bali: a multivariate analysis of the determinants of contraceptive use', *WFS Scientific Reports*, 24 (1982).

⁶³ Ron Lesthaeghe, *The Decline of Belgian Fertility, 1800–1960* (Princeton: Princeton University Press, 1978).

⁶⁴ Ron Lesthaeghe and Christopher Wilson, 'Modes of production, secularization and the pace of the fertility decline in Western Europe, 1870–1930'. Ch. 6 in Coale and Watkins (eds.), *op. cit.* in fn. 5.

⁶⁵ For a general consideration of regional patterns, see Ron Lesthaeghe, 'A century of demographic and cultural change in Western Europe: an exploration of underlying dimensions', *Population and Development Review*, 9 (1983), pp. 411–435.

There is not space here to speculate on the wide range of possible causes for these findings, such as the nature of the family unit, moral values concerning sexuality or procreation, the compatibility of traditional and new ideas. It must suffice to conclude that in historical Europe, just as in the developing world to-day, the culture of sub-populations, loosely defined by religion, language or region, appears to exert a major influence on the timing of reproductive change, independently of levels of development, education, or provision of family planning services.

Most studies of differential fertility are cross-sectional, with the result that historical perspective is lost and too much interpretative emphasis is placed on differences that may be transitory. The evidence on this aspect from industrialized countries is clear-cut. Socio-economic differentials appear and then attenuate in the course of transition in a manner entirely consistent with the notion of the diffusion of innovatory behaviour. As Caldwell and Ruzicka put it when discussing the fertility transition in Australia: 'Fertility differentials... are of little significance in explaining fertility transition although they do illuminate the historical process of fertility change. The differentials do not demand economic explanations for their existence'.⁶⁶

The study of differential fertility has a long pedigree in demographic research. But as Watkins has noted from the European data, '... a concern for differentials should not obscure the similarities'.⁶⁷ For example, evidence on class differentials from England shows a widening of differences during the early decades of the transition, but significant falls occurring in almost all social classes about the same time.⁶⁸ Similarly, to quote Watkins once more, evidence from other countries indicates that, although fertility decline may be most dramatic in urban, industrial, educated populations, 'The effect of modernization need not be confined to those individuals who adopt new occupations, who move to the city, who learn to read.' Transition theories usually predict that some groups will find birth control advantageous and others disadvantageous on economic grounds. However, as Watkins notes, the European evidence suggests that, whatever the economics, 'even those who could be expected to find continued childbearing advantageous or family limitation unacceptable adopted family limitation rather quickly after the leaders'.⁶⁹

Evidence from societies currently undergoing transition echoes the Western experience. In countries such as Taiwan, Republic of Korea, Thailand and Costa Rica, fertility decline was initially concentrated among the urban or the more educated, leading to large differentials, but this divergence has already largely disappeared as members of other sectors of the population reduced their fertility. While this stratified form of transition is common, it is not inevitable. In parts of South India, Sri Lanka, Indonesia and the Republic of China, change has been more synchronous across socio-economic sectors, no doubt a reflection of a more egalitarian society or of effectiveness of government policies in promoting the ideas of smaller families or birth control.

The fact that, within culturally homogeneous populations, birth control and resulting marital fertility decline spreads to all sectors within a remarkably short period of time implies that the fundamental forces of change operate at the societal level. The household economics model seems an entirely inappropriate framework for understanding a change of this nature, because of the vast differences in micro-economic realities of households in transitional societies. The explanation must surely be sought in changes that can be experienced in common. This does not preclude broad economic factors, but strongly

⁶⁶ John C. Caldwell and Lado T. Ruzicka, 'The Australian fertility transition: an analysis', *Population and Development Review*, 4 (1978), pp. 81-103.

⁶⁷ Watkins, 'Conclusions', *loc. cit.* in fn. 42.

⁶⁸ See Dennis H. Wrong, *Class Fertility Trends in Western Nations* (New York: Arno Press, 1980).

⁶⁹ Watkins, 'Conclusions', *loc. cit.* in fn. 42.

suggests the influence of new knowledge, ideas and aspirations that can spread independently of individual economic circumstances.

Consideration of the rate of decline leads to the same conclusion. While the pace of change has been relatively gradual in such areas as the northern India states and Egypt, spectacularly rapid change has taken place in many East Asian and Latin American countries. The fact that falls in marital fertility of one-third or more in a decade are common is a further powerful rebuttal to the more narrowly deterministic micro-economic theories in which fertility change is interpreted largely as the outcome of shifts in costs and benefits of childbearing. It is implausible to maintain that the social or economic structure of these societies has changed so profoundly within a decade as to account for this demographic response. This is not to deny that the effect of structural change, including mortality decline, on reproductive motivations may have been an important precursor, but rather to argue that this approach offers a far from complete explanation of observed fertility trends.⁷⁰ At least part of the explanation must lie in social or psychological elements, such as aspirations, knowledge, attitudes or social norms, which are capable of rapid transformation. One possible way of gaining an insight into such ideational changes is through an examination of fertility preferences. Although fraught with difficulties and uncertainties, the topic is too potentially revealing to be dismissed out of hand. Given that historical data on preferences are only anecdotal rather than representative, we base our comments here solely on contemporary survey material.

One major issue considered in surveys is the relative importance of the factors that affect parents' desire or demand for children and the factors influencing the means of achieving these reproductive aspirations. In principle, at least, a partial answer can be sought in the direct testimony of women concerning the number of children that they wish to have. If, as is usually assumed, fertility transition follows a sequence in which social or economic change initially reduces the desire or demand for children, which is then translated, perhaps after a delay, into birth control and finally into fertility reduction, this sequence should be traceable through an examination of survey data on preferences for number of children. Specifically, we might expect to detect evidence of declines in the number of children preferred by parents before any massive transformation of behaviour itself and pronounced differences in the number preferred according to the socio-economic position of societies, groups, or individuals.

Neither of these expectations is fulfilled, comparisons of WFS data on desired family size with those from earlier KAP studies reveal little downward shift. Throughout Asia and Latin America, modal desired sizes of three or four children have been persistently reported in surveys during the last 20 years. It is difficult to find examples of falls in desired fertility preceding behavioural change. The Philippines may be one such case. In Costa Rica, however, fertility preferences appeared to change very little either before or during the decade when fertility itself was falling so dramatically.⁷¹ Similarly in the Republic of Korea, Thailand, and Taiwan, desired family sizes fell only after the fertility transition was under way.⁷² This suggests that successful experience with birth control may itself influence attitudes towards family size, but is contrary to the expectation that lowered fertility aspirations are the precursor of transition. A cross-national analysis of

⁷⁰ For a theory that deals explicitly with the suddenness of fertility transition see Retherford, *loc. cit.* in fn. 17.

⁷¹ J. Mayone Stycos, 'Putting back the K and A in KAP; a study of the implications of knowledge and attitudes for fertility in Costa Rica', *WFS Scientific Reports*, 48 (1983).

⁷² For Korea, see Lee-Jay Cho, Fred Arnold and Tai Hwan Kwon, *The Determinants of Fertility in the Republic of Korea*, Committee on Population and Demography Report No. 14 (Washington, D.C., National Academy Press, 1982). For Taiwan, see Te-Hsiung Sun, Hui-Sheng Lin and Ronald Freedman, 'Trends in fertility, family size preferences and family planning practice: Taiwan 1961-76', *Studies in Family Planning*, 9 (1978), pp. 54-70. For Thailand, see Knodel *et al.*, *loc. cit.* in fn. 62.

WFS data by Lightbourne and MacDonald⁷³ gives a similar impression. When the number of living children was controlled, they found no evidence of divergence in preferred numbers of children in different cohorts of women. They conclude that either historical shifts in family size norms or desires have affected all generations equally (which is possible, but seems unlikely) or that desires have remained stable.

The general finding from WFS regarding socio-economic and other differentials in stated reproductive preferences, is clear. In Asian, Latin American, and Middle Eastern countries, differentials by parents' education, urban-rural residence, and similar characteristics are much more modest than variations in fertility itself. Similarly at the national level, mean preferred family sizes tend to cluster tightly in the range of 3.5-4.5 children, in contrast to a range in total fertility of between three and seven births per woman. Thus, the big difference between high and low fertility groups in these regions appears to reside not in their reported preferences, but in their ability or willingness to restrict childbearing to accord with these preferences. The extensive literature on unmet need for contraception and unwanted or surplus fertility reinforces this point. The proportion of births that is unwelcome is invariably greater among couples of lower socio-economic status.

Survey results on preferences are often dismissed lightly by scholars who point to genuine difficulties in their interpretation. We feel, however, that they cannot be ignored. There is abundant experience from WFS, but even more from the Value of Children Surveys⁷⁴ that even in non-contracepting societies parents find no difficulty in discussing the advantages and disadvantages of large or small families or, except in sub-Saharan Africa, in expressing a numerical preference. Though the intensity of preferences may be doubted, there are no convincing grounds for the assertion that the concept of a preferred number of children is totally alien to many couples and that their answers are, therefore, meaningless.

Nor should the persistent evidence of discrepancies between fertility desires and outcomes in developing countries be treated with particular suspicion. Unwelcome births were prevalent in the United States and other industrialized countries until recently, and much of the fertility decline in these countries over the last two decades may be attributed to the reduction of such births in response to improved birth-control technology.⁷⁵ The assumption by many commentators that utility can be inferred from overt behaviour is surely mistaken.

To the extent that these arguments are accepted, survey data on reproductive desires constitute powerful evidence against theories of fertility decline that rely upon changing parental demand for children as the main link between structural change in economic and social organization and fertility. Rather, it appears from the available findings that reproductive aspirations in Asia and Latin America during the last 20 years have been uniformly modest and have changed little until after fertility decline was established. In these regions the distinction between countries with stable, high fertility and those with falling marital fertility resides in the propensity to translate preferences into behaviour. What triggers this translation remains obscure, but the important implication is that attitudes towards birth control, which are themselves no doubt conditioned by the openness of indigenous cultures to new ideas, are an important factor in the fertility transition.

The geographical restriction in the preceding paragraphs is deliberate. In sub-Saharan Africa, and to a lesser extent the Middle East, fertility preferences contrast strongly with

⁷³ Robert E. Lightbourne and Alphonse L. MacDonald, 'Family size preferences', *WFS Comparative Studies*, 14 (1982).

⁷⁴ For a review of findings, see Bulatao, *op. cit.* in fn. 38.

⁷⁵ W. F. Pratt, W. D. Mosher, C. A. Bachrach and M. C. Horn, 'Understanding U.S. fertility: findings from the National Survey of Family Growth, Cycle III', *Population Bulletin*, 39, 5 (1984).

those in other major regions. In Africa, desired family sizes are uniformly high, ranging from six to eight children; the proportions of women wanting to limit family size are uniformly low; and substantial minorities are unable or unwilling to state numerical preferences concerning the number of children that they would like. Moreover, socio-economic differentials in desired fertility are more pronounced than divergences in fertility itself.

The indisputable strength of pro-natalist sentiments in Africa poses a major theoretical challenge. It cannot be explained simply by low levels of development, educational attainment, or life expectancy. Literacy and survivorship are higher in many African countries than in much of the Indian sub-continent, for instance. The low densities of population and abundant availability of land is sometimes proposed as the key factor, though this argument applies with equal force in parts of South America without the same apparent effect on fertility attitudes. More probably, the answer lies in the prevalent form of social organization, which, until recently, has conferred physical security and advantage on groups which are numerically strong. This in turn, has engendered strong cultural supports for high fertility. Such speculation, however, takes us beyond the scope of the present article, though these are certainly issues which must be considered in any comprehensive study of the fertility transition.

In this section we have attempted to gain insight into causes by examining the process of marital fertility transition. Our conclusions cannot be dogmatic, because much of the evidence is fragmentary. However the simple facts of transition – its speed, pervasive nature and lack of any obvious connection with economic change at family or community level – point consistently away from demand theories. We do not deny that in the long term economic modernization, with its need for skilled, capital-intensive labour, progressively strips children of their productive functions and tends to raise the direct costs of their upbringing. However, it is quite a different matter to assign to this change a key causal role in inducing demographic transition. We can see little evidence to support the view that structural changes affecting family economics are responsible for initiating fertility decline. The evidence is more consistent with ideational forces, the possible nature of which are discussed further in the final section.

CONCLUSIONS

The main conclusions from this review of marital fertility transition are as follows:

1. The conscious exercise of birth control within marriage in its modern parity-specific form is probably absent in most traditional societies.
2. This absence, with its implications of moderate to high fertility levels, does not necessarily imply that children possess a high economic value for their parents, nor do fertility variations in pre-transitional societies appear to relate to concomitant variations in the economic role of children.
3. At the societal level, the timing of transition is strongly influenced by cultural boundaries and is associated rather with indicators of social development, such as literacy, than with economic indicators. Within societies the same is true; the onset of demographic change is more closely associated with parents' education and cultural affiliation than with economic factors, such as familial control of economic life or women's employment.
4. The speed with which marital fertility decline due to birth control can occur in culturally homogeneous populations, and its pervasive nature in all economic sectors, testify to the diffusion of new ideas, rather than to changes in micro-economic forces, which are likely to act in contrary directions at the community or family level.

5. Declines in parents' demand for children (as indicated by survey data on preferences) do not appear to precede fertility transition, nor are fertility aspirations markedly lower in more modern sectors, except in Africa; rather, the distinction between groups with unchanging fertility and those experiencing transition is the propensity to translate desires into appropriate behaviour.

These conclusions run counter to many conventional explanations for the European transition and to the mainstream of recent theoretical work on transition in other regions. One reason for this current emphasis on economic determinism – the greater ability of economists than of sociologists or anthropologists to give conceptual and mathematical precision to their models – has already been suggested. Another equally important reason is the apparent persistence of high fertility and the failure of family planning programmes in most developing countries throughout the 1960s, which discredited the findings of early surveys, which had implied a massive potential demand for fertility reduction. Perhaps in reaction, theoreticians of the last decade have sought the determinants of fertility decline in deep-rooted institutional factors. As Caldwell puts it, 'these explanations [for the onset of fertility decline] will be found to be ones of fundamental economic and social change. Changes in attitudes and aspirations, in family size norms and in the acceptability of contraception will be found to be the results and not the causes.'⁷⁶

The tone of this article has been critical, rather negative and reactionary, in the sense of harking back to views more common 20 years ago than now. For these features, we make no apology. Indeed, our main purpose has been to emphasize the widening gulf between theories and the evidence, and to challenge the dominance of explanations in terms of parents' demand for children. However, in these final paragraphs, we shall be more positive and attempt to sketch the outlines of an explanatory approach, which better accords with the observed facts.

The probable importance of ideational rather than structural change is our most significant conclusion. This conclusion is supported by a number of strands in the evidence: the weak links at either macro- or micro-level between economic structure and fertility; the stronger links with culture and education, both of which are likely to determine the initial acceptability of new ideas; and the quick spread of birth control within many societies. We were also influenced by the massive scale and force of the flow of new knowledge and values from the industrialized to the developing world, which impinge upon political, economic and social life alike. It is surely no coincidence that in those parts of the world that have withstood this onslaught by design (e.g. much of the Islamic world), by the strength of indigenous culture and its incompatibility with Western values (e.g. the Indian sub-continent) or by relative isolation (e.g. Africa), fertility transition has yet to occur, or has only a tenuous foothold.

Caldwell's theory of wealth flows is essentially an ideational theory of change, involving the transmission of a new family morality, one of the consequences of which is to transform children from economic assets to economic liabilities. Third World surveys indicate that parents have high aspirations for their children, a finding consistent with Caldwell's theory. Such aspirations can spread quickly within a society and could provide a powerful motive for family size reduction. Similarly, aspirations for consumer goods can spread quickly and raise the relative costs of childbearing. But these approaches founder on the lack of evidence, outside Africa, for the predicted fall in desired family size. Ideas concerning the status of women have been put forward as another potentially powerful agent of reproductive change. However, the available evidence does not support this thesis. Women's employment outside the home, surely a key indicator of the independence of women from men, is not associated closely at

⁷⁶ Caldwell, *op. cit.* in fn. 14, p. 350.

either societal or family level with fertility transition. Nor is the effect of the wife's education on childbearing radically different from the effect of the husband's education. Nor, finally, are major disparities found in the family-size aspirations of men and women.

By this process of elimination, we come to ideas concerning the means of fertility reduction, rather than ideas that provide the motive. This topic has several interrelated aspects: the perceived feasibility of birth control (instrumentality); moral acceptability of the principle of control; and the acceptability of particular methods. The evidence that these factors can influence the timing and nature of fertility transition is overwhelmingly strong, but few commentators would assign central explanatory importance to them. The common and compelling view is that, if the motive is strong, the means for its fulfilment will automatically follow. There is a danger here of underestimating the fundamental nature of the change from reproduction without conscious control to a regime of deliberate regulation of births within marriage. In all cultures, procreation has had strong moral and religious meanings, which may be extremely resistant to change. We suspect that attitudes towards birth control, broadly defined, are of central explanatory importance for the timing of fertility transition; but in the absence of direct evidence to support it, such a view is largely speculative. Nor is the subject amenable to simple empirical investigation. Cross-cultural measurement of values is a notoriously complex area.

These considerations warn us against drawing too deep and dogmatic a distinction between diffusionist theories and theories of economic modernization or even classical theories of transition, which emphasize the lagged effect of mortality decline. Alien ideas of reproductive control are unlikely to flourish in a static society, even if officially promoted by governments. This explains the modest correlations observed between macro-economic indicators and fertility decline. In this sense we agree with Retherford who sees the diffusion of birth control as part and parcel of the development process.⁷⁷

One implication of assigning a central explanatory role to ideas concerning reproductive control is the prior existence of a latent desire for reductions in fertility. This, in turn, raises a further fundamental question. If human societies, outside Africa, have long been characterized by a latent desire for lower fertility, why has the practice of birth control been largely absent until recently? Perhaps the answer lies in two features of recent history. The first is the unprecedented growth in human mastery over nature. We see the advent of widespread birth control as an inevitable extension of this mastery. The second and related feature is the mortality decline which has undermined the reproductive imperative and thus facilitated the spread of this new form of behaviour.

Though the link between mortality and fertility is weak at the level of individual countries the near-universal increase in life expectancy has played a crucial role in diffusing birth control knowledge and ideas by creating worldwide concern at rates of population growth, and invoking the response of official birth control programmes. While both historical and contemporary experience shows us that fertility transition can occur without such programmes, there can be little doubt of their effect on the speed of change or even, perhaps, on the timing of the onset of change.

Nor do we claim that the ideational approach which we have been advocating can offer a complete explanation of the fertility transition. In sub-Saharan Africa, for instance, changing ideas about birth control are unlikely to bring about appreciable fertility decline without reductions in the uniquely high level of parents' demand for children. Furthermore, theories which emphasize the means of control cannot explain the level of childbearing in societies where birth control is entrenched. Indeed, fertility transition may occur in two distinct phases: an initial decline which is largely the outcome

⁷⁷ Retherford, *op cit.* in fn. 17.

of the advent of birth control which eliminates excess fertility; and a second phase in which a complex and poorly understood set of factors determine the level of controlled fertility. Whatever the complexities of post-transitional fertility, we feel that explanations of the initial decline must give fuller recognition to the role played by ideational forces.