Demographic Transition Theory
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by

John C. Caldwell
The Australian National University,
Canberra, Australia

Contributing Co-Authors
Bruce K. Caldwell
Pat Caldwell
Peter F. McDonald
Thomas Schindlmayr

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PREFACE

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INTRODUCTION
CHAPTER 1

THE ANALYTICAL APPROACH

The papers collected in this volume are focused on human reproduction and survival over the full span of mankind’s existence. The decline in the last two centuries of fertility and mortality from moderately high, and often very high, to lower levels is called the “demographic transition.” This book examines the determinants of fertility and mortality levels and their balance, from the time when the world’s people were solely hunters and gatherers to when an increasing number live in cities undertaking work far removed from producing food. Although the focus is on reproduction, the search for explanations crisscrosses the work of others whose central concern is production.

The background for the ideas expressed here is almost half a century of experience and research in sub-Saharan Africa, South and Southeast Asia, and Australia. Early experience with fertility attitudes and behaviour in rural West Africa convinced me that, in the circumstances of the population there, uncontrolled reproduction was just as logical as was highly controlled reproduction in industrial society. The reason clearly lay in the economic system, which for the great majority of West Africans was family farming. Nevertheless, it was work in South Asia (rural South India and Bangladesh) from the late 1970s that demonstrated the inner workings of family farming. The progressive expansion of my concept of modes of production can be found in Caldwell (1976), “Towards a restatement of high fertility…,” (1977) “The economic rationality of high fertility…,” and (1982), Theory of Fertility Decline; Caldwell, Reddy and Caldwell (1982) “The causes of demographic change in rural South India” and (1988), The Causes of Demographic Change: Experimental Research in South India; Caldwell and Caldwell (1992), “Family systems: their viability and vulnerability. A study of intergenerational interactions and their demographic implications;” and Caldwell (2004), “Demographic theory: A long view.”

Much of what I learnt can be summarized from the work on the South Indian farming family at the beginning of the 1980s, supplemented by a study of individual labour inputs in rural Bangladesh (Caldwell et al. 1984). Land tenure was freehold held by the older male farmer. There was not really a free market in land, because, although it could be sold in a crisis, most family farmers regarded land tenure as being descended from ancestors and as needing broad agreement from relatives before the land could be sold. Indeed, when the land was divided between married sons, it was not only relatives but also members of the broader
community who judged where the boundary lines should be placed. Food was stored after the harvest and most of what the family ate during the following year was from this store.

The main purpose of the family was to work hard on the farm, to maximize the amount of food that could be produced, and, if possible, to acquire more land. The most efficient way of doing this was found to be direction by the head of the family (usually male) and a detailed division of work as appropriate to the age and sex of the person. In each sphere the work was immediately directed by an older person of the same sex: the farmer in the field, and his wife in the house and also in the field when female household members were weeding. The working group consisted of the patriarch, his wife, his unmarried and married sons (the latter until such time as the land should be divided), daughters-in-law and unmarried daughters.

Work efficiency was maintained by sons respecting their father as an ancestor and as the owner of the land and the decision-maker on inheritance. Daughters were kept in line by the knowledge that only the family could arrange their marriage and raise sufficient dowry to get good husbands. The weakest point in the system was the position of the daughters-in-law who provided the major input into household work. They were strangers, and were treated as such, with a deep suspicion that they did not fully identify with the family and its traditions. This distance between the farmer’s wife and daughters-in-law served the former well in maintaining discipline and demanding backbreaking work. The daughter-in-law, knowing that she would eventually be a mother-in-law, sought to strengthen her position by emphasizing to her husband the importance of the marital bond and his duties to his own children. The family countered this danger by ensuring that the son acquired a much younger wife whom he would treat almost as a child, and by ensuring that he and his wife demonstrated little overt affection and had limited possibilities for dalliance or sexual relations, that the son spent most of his time with his brothers and showed great parental respect, and that much of the decision-making about children was done by the grandparents. Sons’ wives understood that they were primarily daughters-in-law, and only secondarily wives.

Little of this control was exercised by brute force. Rather it was achieved by setting everything into a moral framework. The young had a duty, enshrined by religion and community precept, to honour, respect and obey the old. Sexuality was suspect and so was affection, except between the generations. Daughters should be married into families with at least as much property, and this should be ensured by holding premarital virginity to be blessed and to execrate any change in that condition. Those in control saw the advantages of all these requirements but they also believed that religion and culture held that they were to be venerated.

These conditions were changing even as we undertook research, but most of the old system was largely intact, and the older people had been immersed in it and could testify to the way it worked. Nevertheless, money and the market
were eroding behavioural patterns and the culture that had modelled them. Jobs were becoming increasingly available outside agriculture. Schooling was reducing children’s labour and threatening to make them sceptical of the wisdom of the old. The national family planning program was preaching a message at odds with the age-old, high-fertility reproductive morality. Of course, there had always been people who were not in land-owning families. There were the agricultural labourers who, without the promise of inheritance, had less control over their children and daughters-in-law, and who still paid bridewealth or practised no marital payments. There were also shopkeepers and traders. But all these groups were adherents of ancient religions which enshrined the farmers’ values. In any case, those religions were of value in keeping their own families in order and ensuring that their children worked hard and regarded their individual earnings as family property.

The economic and cultural system of the peasants of South Asia differed marginally but not fundamentally from that of the West African shifting cultivators that we had studied in the 1960s and 1970s. In West Africa, land was communally owned (usually by clans) and inheritance could not be a major source of the older generation’s power. Marriage was by bridewealth, often modest, in contrast to the situation among livestock-raising and livestock-giving people of much of the African savannah. Indeed, female premarital virginity while prized, and often desired, did not take such a central place in culture and religion (Caldwell and Caldwell 1987; Caldwell, Caldwell and Quiggin 1989). In these circumstances even greater emphasis than in Asia was placed on the cultural and religious centrality of kinship, lineage and ancestry. The dead patriarchs became ancestral spirits who could witness and interfere with earthly life. The live patriarchs were close to achieving this position, and, in any case, the spirits or high gods were likely to punish those young men who failed to honour and work for their fathers. The arrangement of marriage had been in the fathers’ hands and in an earlier almost entirely subsistence society only the old had the control over livestock and other produce to be able to put together bridewealth. Furthermore, the elders were responsible for maintaining one aspect of sexual activity, long female postpartum sexual abstinence that maximized the survival chances of the newborn (Saucier 1972). They also controlled reproduction by honouring women with many children and excoriating the sterile, the subfertile, and those held responsible for high child mortality.

This system proved fragile when colonization and the modern world intruded. Wage-earning meant that young men could themselves pay the bridewealth, and urbanization meant areas where the wages could be earned. Schooling reduced the value of children’s labour and threatened to make them doubtful about the wisdom of the old. The towns provided a context in which high fertility led to children being more costly. Yet in rural areas children’s labour was still so valuable, and everywhere children’s gifts of money, goods and labour to the venerated elders were still so great that the establishment of family planning programs was retarded and their success outside the cities (and Southern Africa) limited.
CHAPTER 1

THE SEARCH FOR A THEORETICAL FRAMEWORK

All our African and Asian work suggested that the type of economy determined the culture, its religion, and its demographic behaviour. Clearly, this is akin to Karl Marx’s use of “mode of production,” a term which will also be used here. Although this concept is central to Marx’s materialist interpretation of history, references to it in his works are fleeting and concentrate on the collapse of capitalism. The Preface to A Contribution to the Critique of Political Economy provides a longer view: “At a certain stage of their development, the material productive forces of society come into conflict with the existing relations of production. . . . Then comes the period of social revolution. With the change of the economic foundation [earlier referred to as “the mode of production of material life”], the entire immense superstructure is more or less rapidly transformed” (Marx 1904 [1859]:12).

There are complexities. Donham (2001:9924–9927) points out that Marx used the term Produktionweise which has traditionally been translated into English as “mode of production” although it can be just as correctly rendered as “way of production” or “way of producing.” The productive forces (or technology) determine the relations of production or the underlying power relations, and together these produce the superstructure or the de facto distribution of power. The superstructure is the culture, that is the beliefs, customs, laws, religion, art, and attitudes etc. which justify the relations of production and stabilize the whole system. To most people within the system the superstructure appears to be rational, natural, and the truth about the world and existence. In most agricultural communities the power of the patriarch, and even his power when dead, the need to defend and extend the lineage, and the gender and age segmentation of productive activities seem to be an eternal truth, heaven-sent. To fit our interpretation certain problems must be discussed.

First, Marx (1904 [1859]: Introduction) gave as examples of modes of production “primitive communist, ancient, Asiatic, feudal, capitalist, socialist and communist.” Indeed, Cohen (1978:79–80) claims that Marx used the term in three different ways. In none was “mode or production” identical with economic (or, presumably, technological) system. He interpreted it as a way of producing or even just the power relations and hence the way of distributing the product. Cohen (1978:80) wrote: “There is a change in the material mode of production when enclosed fields replace strip farming, when power looms replace hand looms, or when the quill is ousted by the typewriter.” Neither Marx’s nor Cohen’s examples define how we wish to use the term “mode of production.” Most of Marx’s lists were not modes of production but modes of administration or distribution. We will address the three major modes: hunting and gathering, farming, and capitalist/industrial. Admittedly, a case could be made for treating both shifting cultivation and nomadic pastoralism as separate modes.

Second, Marx wrote of the economic foundation and the immense superstructure being rapidly transformed. This may have been the expectation for the
future revolution but was hardly a satisfactory description of the historical past. In the changes discussed here, the modes overlapped for long periods, while the elements of the superstructure did so for even longer times. Even the transient mixed superstructure was at every stage a stabilizing force.

Various attempts have been made to use, in modified forms, the concept of the mode of production. Alexander Chayanov (1966 [1925]) drew on his study of the Russian peasant in the early years of the twentieth century to produce *The Theory of Peasant Economy*. Here he proposed that peasant, largely subsistence production had its own mode, aiming at maximizing production rather than profit which is the driving force of capitalist farming. The workforce is the family and work inputs vary as the life cycle of the family changes its age composition. Marshall Sahlins (1972) in *Stone Age Economics* identified a precapitalist, subsistence mode of production, and contrasted hunters and gatherers, having limited wants and much leisure, so enjoying “stone age affluence,” with hard-working peasant farmers driven by needs. Whether he regarded these two types of subsistence peoples as employing two modes of production is not completely clear. He did not stress the different superstructures. The contrast between the two lifestyles, driven by two differing ways of getting food, had already been made by Ester Boserup (1965) although she did not adopt a mode-of-production approach.

Among the neo-Marxists of the 1960s and 1970s the one who came closest to meeting our analytical needs—possibly because he had also worked in West Africa—was Claude Meillassoux (1960, 1972, 1975). He stressed that hunter-gatherer society contrasted with farming society in that hunting did not depend for production on the family but on the band that varied in composition over time and could contain distant relatives or even non-relatives. He equated farming with cereal production, probably because he was familiar with the West African savannah, but his conclusions hold for the farmers of the forests further south growing plantains, yams and cassava, as well as maize. He identified farming as determining the production unit, and primary social unit as the family—not usually the nuclear family—enshrined in culture (or superstructure) by a strong belief in the importance of kinship. This brought with it an emphasis on the importance of reproduction (see on sub-Saharan Africa, Caldwell and Caldwell 1987). Meillassoux placed an emphasis on demography by proposing that so important was the labour force that the elders regarded the control of reproduction as more important than production.

These were not theoretical explanations that we sought for guidance in our research—indeed, much of this material had not been published in the early years of our work. Rather we were increasingly convinced that the whole culture was shaped in such a way as to maximize the efficiency of each mode of production and that there were demographic outcomes. At first we identified two modes of production: pre-industrial and industrial. But, as research on the economy of hunter-gatherers, and on their work inputs by sex and age, mounted (see Chapter 5), it became clear that their labour needs differed so much from those of farmers that they must be regarded as adopting a different mode of production. As much less work was
demanded of children, they might well be characterized by a different demographic regime from that of farmers.

Thus, we ended with three demographic regimes: hunting and gathering (collecting the fruits of nature); farming (cultivating and harnessing the fruits of nature); and capitalism where the main labour market was external to the family and where delayed consumption, in the form of investment in machinery and other production goods, as well as the use of inanimate sources of energy, multiplied human production and eventually led to great rises in living standards (this industrial category also includes socialist countries). A fourth mode has been proposed, preceding hunting and gathering, namely scavenging at the dawn of human existence when mankind lived as their primate ancestors had done, and, having not yet invented tools and weapons, ate fruits and other parts of plants and competed with animals to eat carcases. But, lacking evidence and contemporary examples, attention will now be concentrated on the first three modes.

We have observed hunter-gatherers but have undertaken no systematic research on them and so will depend on others. We will follow the argument in Theory of Fertility Decline (Caldwell 1982) in assuming that children have economic value in that they work productively when young, and, when mature, they help their parents with the production of consumption goods, as well as providing protection and physical assistance. In accord with the empirical findings and theoretical arguments of Boserup (1965) and Sahlins (1972), most recent anthropological field research has found that hunter-gatherers do less work than farmers, and their children do far less work than do farmers’ children. This finding is not completely secure as it is based on studies of contemporary hunters and gatherers who have mostly been pacified and assisted by governments and mission stations. It is, however, secure enough to lead us to define a separate mode of production for hunting and gathering. This decision is strengthened by a situation where hunters and gatherers—especially hunters—do their work in bands often with diverse composition rather than going forth as a family. Accordingly, the attempt has been made to show that hunters and gatherers have always had less need for children than farmers and actually reared fewer. It has also been argued that most infectious diseases were unknown among Palaeolithic populations and that accordingly their mortality must have been lower than that of closely settled farmers, let alone that of early peoples practising irrigation or living in towns. Most of the arguments for Palaeolithic population control rest on the practice of infanticide, but, as will be seen in Chapter 2, the evidence is far from solid (see Wood 1998). It is likely that the premodern man just accepted as natural, or what the gods determined, the flow of births and accompanying high infant and child mortality rather than actively intervening to try to change the situation. After all, that was the situation in England for most of Queen Victoria’s reign.

Farmers certainly needed children to assist in working the land and to inherit it. Their emphasis on kinship and ancestry meant also giving importance to descendants and the survival of the lineage, especially where there was no right to family land, and where, as in West Africa, all pressure for high fertility had to take
the form of exalting continued reproduction and abhorring childlessness. Where, as in parts of Asia, there was the need for land inheritance and land was scarce and valuable because of dense settlement, the parents of many sons might resort to infanticide or abortion. Where there was a need for high dowry, the parents of many daughters might do likewise (see Chapters 6 and 7). There is clear historical evidence that during famines in China babies, especially daughters, were drowned, not in an attempt to control family size but in an effort to minimize the immediate demand for food. But most farming fertility was uncontrolled and welcomed, and contraception, abortion and infanticide were regarded as evil, at odds with the culture, and forbidden by religion.

The great cultural and demographic change came with that advance in science, technology, the massive use of inanimate sources of power, the proportional reduction of the agricultural sector of the economy and employment, and the rise in individual productivity and incomes that we call the Industrial Revolution. Children were increasingly educated for most of their years instead of being productive. Eventually old age needs were protected by the state or private investment institutions and there was less reliance on children. With some delay, contraception was regarded more favourably, and, with more delay, adequate contraception was invented (see Chapters 9 and 11). More recently, women have joined the workforce in numbers beginning to compete with men, and children are no longer merely an expense but a rival for women’s time against the time demanded by the employers. New ideologies justify low fertility and even childlessness, and the religions’ old attitudes to fertility are forgotten or reinterpreted.

Several additional points need to be addressed.

First, the existence of uncontrolled fertility did not mean maximum fertility in any society. Even where children were in strong demand, the need for a stable, organized society had precedence. Most societies attempted to restrict childbearing to marriage, especially in the case of socially stratified landed societies where parents feared that poor adventurers would seduce their daughters and demand marriage and inheritance. The lifestyle and social class of descendants could be maintained only if daughters married men with property expectations equal to the holdings of the daughters’ family; or if sons married brides with adequate dowries. Many societies discouraged the remarriage of even young widows or the keeping of all women in marriage by means of polygyny. In this way, inheritance and lineage problems were avoided. Birth intervals were kept long by prolonged breastfeeding both because it was known that early weaning made it more likely that the child would die, and because milk was regarded as a free food that should not be rejected. Many societies practised postpartum female sexual abstinence with the aim of avoiding a premature new pregnancy, and thus of maximizing the child’s chance of living. Even in societies regarding high fertility as showing great virtue and the approval of the gods, women could be killed for conceiving outside marriage.

The second point is that there is no clear-cut division between one mode of production and the next. Economies overlap, even in the one family or individual,
and superstructures not only persist but are put to use stabilizing successor societies. Hunting and gathering persist in many West African societies that have been increasingly practising agriculture for more than two millennia. The domestic production of household goods and services still survives in industrialized societies, and only recently has the industrial system shown that it can compete efficiently with the household in the preparation of food, the making of clothes, and child rearing; and can provide employment for all the displaced housewives. Non-agricultural employment has been available in some measure at least since the first cities came into existence five thousand years ago and probably to some extent in earlier villages up to ten thousand years ago. These non-agriculturalists did not develop a complete new cultural superstructure partly because they constituted only a small minority of the population and partly because most businesses were family businesses run like farms, employing all the family and usually placing only relatives in positions of trust, and having a single budget. This is how Florentine Renaissance banks were run, and resembles much of the service sector in today’s Italy. There was no reason to limit fertility, although by the eighteenth century at the dawn of the modern world the Protestant bourgeoisie of Geneva had found reasons to do so. The modes of production were stabilized by the cultural superstructure, mainly by justifying and so stabilizing the relations of production. The superstructure consisted of customs, beliefs, taboos, laws and religion. In premodern societies the boundary lines between these elements were blurred. Religion was the ultimate sanction: that is, religion in its broadest sense explaining to us the world, existence, the sacred, and the proper way of doing things, as well as revealing the misfortunes and punishments that befall transgressors.

Australian Aborigines, like most hunter-gatherers, focused their religion on explanations of nature, and on sacred objects and sites, together with the spirits that inhabited them. Accordingly, there was little resentment or tension among wives or other counterparts in production relations if men spent much of their time visiting sacred sites in order to gain other-worldly protection for themselves, their families or clans; or seeking out distant relatives who might help in the hunt or warfare or grant rights to hunting on their land. Old men were in a difficult situation in hunting societies once their speed and prowess began to desert them but they were usually protected from senicide by a general respect for the aged, and, amongst peoples such as the Aborigines, by their being the repository of recondite knowledge that could not be revealed to the young.

Some of these elements are still found among West African farmers and in South Indian villages. But farming, especially that with de facto ownership of land, brought with it a class system (determined by the fact and extent of land ownership), a concern about inheritance, and a determination that children’s marriages would be to those with at least equal access to land or wealth, often transferred in the form of marriage payments (see Goody 1976). This meant parental arrangement of marriage and a determination that poor adventurers would not seduce the family’s daughters. In India this led to the caste system with endogamous marriage, and to child marriage. Everywhere it led to the cult of virginity until marriage and
subsequently to sexual relations being exclusively within marriage. With settled agriculture the world religions began to develop, sometimes starting with the scriptures being transmitted orally, but, with the invention of writing, made concrete in written texts. They absorbed the cult of virginity to a point where their adherents equated “immorality” with female sexual relations before or outside marriage; they often concluded that strong males should prevent transgressions by weaker females. These emphases encouraged patriarchy, husbands older than wives, and the separation of the sexes. Such separation gave older women considerable power, since it was they who directed the younger females undertaking work in the house and sometimes in the field as well. The core of this younger female workforce was constituted by the daughters-in-law. It was important that they should owe primary allegiance to the household, especially to their mothers-in-law, rather than to their own husbands and children. The likelihood of their doing so was an important consideration in arranging a son’s marriage. Nevertheless, it was inevitable that the younger woman would use her emotional tie, based partly on sexual relations, to try to get her husband to commit himself to her and their children. The older couple countered such attempts by trying to minimize close relationships between the younger couple and to extend the cult of virginity to imply that young wives too emotionally bound to their husbands and too responsive to sexual relations were improper or even immoral (see Caldwell, Reddy and Caldwell 1988).

In farming societies, especially those adhering to the world religions, ancestor worship is less pronounced, or absent. This weakness in the control system is overcome by customs and laws enshrining property rights that give the patriarch indisputable control of the land, family employment, and ultimately inheritance. The world religions, with the exception of Christianity, tend to treat the family as the basic worshipping unit and to hallow its existence. Agriculture is often seen as a natural or even holy calling. In traditional societies young adults who broke with their families found it hard to find friends, a place in the community, or employment.

Demographic behaviour in agricultural societies is characterized by unconstrained marital fertility, and attitudes to large families ranging from respect in Asia to the identification of them with divine and ancestral blessing in sub-Saharan Africa. Nevertheless, other cultural priorities may well stop fertility from being maximized. While sub-Saharan Africa favours quick widow remarriage and high levels of polygyny to allow all women of reproductive years to bear children, Hindu India, with its private ownership of land and focus on inheritance, regards widow remarriage as discouraged by religion and as raising complications with regard to both social duties and inheritance. An older Europe frowned on such successive marriages, known as “digamy,” if only because they threatened problems in the next life after resurrection. In much of extremely-high-mortality sub-Saharan Africa mothers were expected to practise long periods of postpartum sexual abstinence to increase the infant’s chance of survival because the ultimate aim was maximizing the number of living children, not the number of births. Meillassoux (1972) argued that West African agriculture, built primarily about
the nuclear family and employing it as the workforce, was always in danger of subfecundity or capriciously high child mortality, or being in the part of the life cycle where all children were either very young or married. He saw the last two dangers as being overcome by fostering children, usually from relatives who had a surplus of children of working age. In addition, the first wife’s sterility could, of course, be remedied by polygynous marriage.

The final mode of production is probably capitalism (industrial society, labour-market society), where workers are employed outside their homes by non-relatives. Productive relations depend ultimately on force: unemployment, sacking, laws, police and trade union action. Nevertheless, these instruments are hidden, softened or made needless by the cultural encouragement of the good worker, the good employer, social responsibility, the common effort, nationalism, and the good of the nation or economy. If this is insufficient, then labour laws can be rolled back to free the labour market and can be justified on the grounds of more production for all. Much industrial peace can be credited not to the superstructure built up by the new industrial society but to that persisting from the agriculture mode of production: family values, hardworking and obedient young, and doing one’s best in one’s job and for the father-like figure who leads the enterprise. These values are also drawn from the world religions that emerged with agriculture and sanctified it. Their continuation into the industrial era is encouraged by employers and political leaders.

Labour-market society does not need the family or the fostering of family values except as a social pacifier. Nor does it need marriage or reproduction except to bolster the size of the workforce or market. In fact, colonial firms were happy to pay a man a living wage suited to supporting one person while his family supported themselves back on the farm. Modern economies prefer to have both husband and wife working while factories produce the prepared foods and clothes once made at home. While such production took place at home, family morality inherited from the agricultural period helped to keep domestic peace. Ultimately, the industrial system does not need marriage, families, virginity, legitimate births or even reproduction. If the birth rate falls too low then immigrants can replace the native-born. The industrial system increasingly needed educated workers, and, when the women’s movement impelled societies to educate daughters as much as sons, it was no longer necessary to pay each parent a family wage. The fact that women as well as men could now earn a salary sufficient to support themselves meant that marriage dissolution was no longer a financial tragedy. Better contraception separated sexual activity from conception. The tendency to discard the farming family system and its ethics increased greatly as incomes grew in the second half of the twentieth century, multiplying by four in Western Europe and by three in English-speaking countries of overseas European settlement (Maddison 2003:262). Higher incomes could more easily support split families, single adults in their own apartments, and single mothers.

As sexual and reproductive behaviour found that the old limits no longer held, life philosophies changed. This was largely affected in most industrialized
countries by secularization, and in the United States by separating sexual and reproductive behaviour from church attendance. Fertility in industrialized countries fell steeply to below replacement level nearly everywhere. It seemed unlikely that firms would demand higher birth rates. They could profit by employing more capital-intensive labour. The nation states might feel threatened by diminishing populations. If so, they might be able to raise fertility levels again by greater government involvement—thus flying in the face of liberal economics—possibly by using a market solution; that is, by equating reproduction with production and paying a competitive market wage for women undertaking births and caring for young children.

In Europe demographers tended to see the behavioural changes wrought by the changes in the relations of production as autonomous, as the new enlightenment, and as a victory for rational thought over tradition and superstition, thus constituting the “second demographic transition.” Many hardly mentioned the economic revolution, and most regarded analyses of the changes in terms of a superstructure altering to meet the demands of a new mode of production and new relations of production as being old fashioned and as treating modern man as less than a fully rational being.

Meanwhile, the market system and its culture were being exported all over the world in a process of economic and social globalization. In Asia, but less so in sub-Saharan Africa, peasant farms were selling more of their produce, and money transactions were becoming more universal. Farmers increasingly encouraged their children to enter paid employment in the growing cities, and often sought part-time, off-farm paid employment for themselves and their children. This tendency, and encouragement by international agencies (themselves evidence of globalization), meant ever more children being educated, which cost money and reduced their immediate labour value. In Asia, sexual mores changed only slowly, but female age at marriage rose. More significantly, the movements towards a labour market and a more comprehensive consumption market, together with children’s increasing educational costs, undermined the belief in large families. The cultural superstructure moved to justify lower fertility, a process that was hastened by beliefs exported from the West condemning population explosion. Faster economic growth was promised if fertility was controlled (Coale and Hoover 1958), and international agencies offered assistance to Third World governments setting up national family planning programs. Between 1965 and 2000 the fertility (as measured by the total fertility rate) of both the developing world and the whole world nearly halved, so that by the end of that period around one-third of the populations of both Asia and the world lived in countries with below-replacement-level fertility.

The future is unknown. All that is certain is that even in the industrialized countries the superstructure has not yet fully adapted to the change in the mode of production and that mode is very far from its fully developed form. Future populations will undoubtedly look upon the marital, sexual and reproductive patterns of the early Third Millennium as being less than fully rational or liberated. Therein lie my worries about some of the explanations of the Second Demographic Transition.
ISSUES OF EARLY TRANSITION

The literature of anthropology and anthropological demography of the 1960s and 1970s rather surprisingly suggested a Palaeolithic demographic transition, later to be reversed and hidden by demographic changes brought about by the Neolithic Revolution (see Chapters 2 and 3). The argument was that hunter-gatherers deliberately controlled their fertility so as to raise their standard of living, lower mortality, and reduce pressure on resources, so preventing the deterioration of the environment and hence the food supply. This had been suggested as early as 1922 by Alexander Carr-Saunders in his *The Population Problem: A Study in Human Evolution*. It seems an unlikely proposition given that it is difficult to envisage whole groups concluding that over generations the environment would deteriorate and that mortality levels would ultimately be lowered if they took demographic action first. Carr-Saunders (1922) suggested the means of population control as including primitive abortion and contraception, but more recent anthropologists have realized that the only practicable means would have been limiting surviving family size by infanticide. Raymond Firth (1936), in *We, the Tikopia*, produced somewhat ambiguous evidence that Polynesians had once controlled their numbers.

The concept of an early demographic transition had several sources. One was the enthusiasm of the 1960s–1980s for controlling the “population explosion” by encouraging high-fertility countries in the developing world to use contraception to achieve small families. Many involved were loth to admit to themselves that they were foisting foreign cultures on developing countries, and preferred to believe that, on the contrary, they were making amends for the destruction of an older population control system at the hands of missionaries and colonial administrators. Anthropological studies of contemporary hunter-gatherers such as the !Kung appeared to show relatively low birth rates, but this finding may have been derived from incomplete reporting of vital rates, social structures such as rare widow remarriage because of the foraging way of life, or recent infection by sterilizing sexually transmitted disease. Evidence of infanticide in some recent hunting and gathering groups was assiduously collected and the case for its regular practice was almost certainly overstated. Many anthropologists had always been given to resenting any suggestion that the people they studied were any less rational than modern industrial populations, and too readily assumed that the context of their lives was similar. Sahlins (1974) wrote of the “Original Affluent Society,” and, even though he made it clear that this title was meant to be provocative and referred only to plentiful leisure, others took it to mean demographic affluence in the form of low death and birth rates. Indeed, during aeons of near-zero population growth, birth and death rates must have been over the long run approximately equal. So, if it was argued that Palaeolithic mortality had been low, then so must fertility have been. This is exactly what medical scientists and epidemiologists began to argue, based on the belief that the great killer, infectious disease, was almost wholly a product of closer settlement after the Neolithic Revolution. The
idea that mankind was almost immortal in earlier times flies in the face of reason. If we hypothesize that at least some societies did not practise wholesale infanticide even though they were characterized by low mortality, then we have to draw the improbable conclusion that they expanded indefinitely and came up against Malthusian resource constraints, and so died of starvation or other ailments caused by physical weakening. They lived, after all, in very different conditions from contemporary hunter-gatherers. The alternative is that the apparent mortality gap was actually filled by high mortality levels from warfare and other violence, and that accidents were often followed by tetanus or septicaemia (Chapter 3).

The demography of their mode of production is relevant. In fact, evidence that children were relatively unproductive finally led to the conclusion that their productive system was indeed a separate mode (see Chapter 5). Ronald Lee (2002), drawing on Hillard Kaplan’s data, shows that, at least in some contemporary groups of hunter-gatherers, children’s work is relatively unimportant. Coupled with the fact that the hunting band rather than the nuclear family gathers meat, why would it not have been sensible for Palaeolithic man to have restricted family size? The answer probably is high mortality, the fear of extinction of the band or clan, and the bringing into existence of new hunters and warriors while the parental generation was still alive.

Chapters 5 and 6 address the question of whether some highly developed agricultural societies practised birth control or infanticide in order to limit family size and thus raise living standards. The best known candidate is Ancient Rome because of its institution of child exposure. The evidence is that the practice was probably confined to a small elite among whom patrimony was irreplaceable and its division among several sons would reduce them and their descendants to a lower socio-economic class. Children appear to have been valued for their work by the great majority of the population, farmers and artisans, an interpretation supported by the failure of population aggregates to show any structural signs of population control. In the densely settled populations of Asia, infanticide was practised to overcome inheritance or marriage payment problems or in times of famine, but not because children’s work failed to largely defray the cost of their upbringing.

THE MODERN DEMOGRAPHIC TRANSITION

The second half of this book argues that the fully developed industrial-capitalist-market mode of production is the only mode that places no pressure, even long-term pressure, on individuals to reproduce at all. Once domestic production had reached a low level and education universality, children’s production was nearly zero. Once financial institutions and pension arrangements, whether private or government, had reached a high level of development, children’s value for providing security in old age tended to disappear. There remained, of course, social and psychological reasons for wanting children, grandchildren and a network of relations. But their value depended on the extent that their existence
was compatible—especially for women—with alternative desirable life courses, and the extent to which the new system could offer alternative or compensating pleasures.

The new mode of production depended on scientific and technical advances that led to an enormous increase in the use of inanimate sources of energy, and so hugely multiplied the output per person. The new forces of production were organized in an extra-domestic factory system which largely excluded family participation once the putting out of some of the production as piecework to families disappeared. In spite of the early growth of industrial slums, with staggering death rates, the new system produced huge increases in wealth and ultimately unprecedentedly low birth and death rates. Compared with the income levels in 1820, Western Europe’s real per capita income more than doubled by 1870 and multiplied by 16 by the end of the twentieth century (Maddison 2003). That of the Western Offshorts (Maddison’s term for the English-speaking countries of overseas European settlement: USA, Canada, Australia and New Zealand) doubled and multiplied by 22 respectively. It was this huge increase in wealth, allowing new science to be done and its findings to be applied, that was the major factor in increasing life expectancy. The new relations of production were foremost in explaining the decline in fertility, but science produced better contraception, and the new industrial system yielded a great expansion in the number of attractive service-sector jobs. The Industrial Revolution industrialized agriculture, so that a very small proportion of the workforce was in primary production; and it is proceeding to do the same with secondary production. The tertiary sector, with equal numbers of male and female workers, may eventually employ 90 percent or more of the workforce.

My main message is that, just as a hunter-gatherer element remained as a complementary way of producing food (in many agricultural societies for ten millennia), domestic production, especially of household goods, has persisted in industrial societies, although dwindling, until the present day. This partly explains the slow change in the superstructure with religious precepts and moral attitudes suited better to the family relations of production. It is not the only reason: parents controlling children, governments ruling countries, and employers handling their relations with employees have found their tasks easier if they appealed to the values of family production. Often (see Chapter 7), the opposition to changing values was trenchant and well organized; usually it was based on religious texts fixed for millennia.

Every time culture adjusts to the new relations of production, a revolution in ideas and outlooks is correctly discerned, but, at the same time, there is a danger that the revolution will be regarded as mainly one of ideas rather than being propelled by fundamental economic change. Thus, decline in marriage, the spread of cohabitation, the increase in divorce and extramarital childbirth, and the massive entrance of women into the paid workforce, as well as the Second Demographic Transition decline in fertility, often seem to be taken as fundamental signs of ideational reorientation or awakening rather than the surface froth of
economic change plus certain domino effects, like the incompatibility between women’s work and rearing many children. Increasing wealth certainly allowed some of these behavioural changes to occur less painfully (see Chapter 13). The Industrial Revolution, its new mode of production, and the rise in incomes are very far from having run their course and new types of apparent enlightenment and new demographic behaviour will certainly come and their forms are largely unforeseeable. Logically, they will lead to near-zero fertility, but this is far from certain or even probable, for an increasingly rich society may experience ideological shifts favouring children as essential consumption items or necessary for the survival of the state or national culture. Women will certainly not return to the home, but ways may be found and funded to reduce the friction between being a mother and working outside the home.

The most sensitive issue is the role of the new industrial system in reducing mortality, partly because social scientists and many epidemiologists have an understandable preference for social rather than economic explanations. Social change has certainly resulted in mortality decline. I have played a role in demonstrating this. The higher one’s level of education, the longer one is likely to live or even to survive a specific ailment. The more the mother’s education increases, the lower her children’s mortality is likely to be. This is truer in the developing than the developed world (Preston and Haines 1991), probably because schooling teaches a belief in the efficiency of modern medicine and a determination to use it properly. Indeed, low mortality has been achieved in much of the developing world without substantial industrial production. This can be regarded as scientific, technological and cultural transfer from developed countries, analogous to earlier transfer from the urban to rural areas of those countries. This was supported by, and is also partly the achievement of, education and a transition to a market economy. These changes are necessary for the use of vaccines, insecticides, antibiotics, and other medicines and procedures, which were, in their countries of origin, the product of the new industrial system with its ability to invest money in new technologies. Certainly the scientific revolution has earlier origins; indeed it was a necessary precursor to the Industrial Revolution. Certainly, education and lifestyles played an important role but mass education was originally the product of a rich industrial society which had increasingly less need for child labour and an increasingly greater need for an educated workforce and sophisticated consumers. Chapter 7 argues that the change in mode of production was so necessary to the movement towards very low mortality that the real question is why steep decline waited even in England, the workshop of the world, until nearly the end of the nineteenth century (the exact decade or exact movement in life expectancy is not important). Mortality decline, especially among infants and children, was almost certainly necessary for fertility decline, but, in industrial societies, fertility is eventually independent of mortality. At low mortality and fertility levels, movements in either are unlikely to affect the other.

What follows is examination of a series of issues, all fitting into the framework set out here but not exhausting it.
REFERENCES


PART I

ISSUES OF EARLY TRANSITION
CHAPTER 2

PRETRANSITIONAL POPULATION CONTROL AND EQUILIBRIUM

Co-Authored by BRUCE K. CALDWELL

On the issue of the cultural control of family size before the fertility transition, most demographers appear to disagree with many of those cultural anthropologists with whose work they are most likely to be familiar. Typifying the demographer’s stance, van de Walle (1968b, p. 489) wrote: “Control of marital fertility by contraception, as we know it today in Western countries, is without doubt a fairly recent development.” He went on to conclude that the typical pattern for most of the world’s population had for aeons been one of early marriage followed by uncontrolled fertility. A similar conclusion was drawn by Knodel (1977, p. 242), who decided that birth control must have been adopted by the vast majority of mankind only fairly recently and that its practice was innovative.

Some anthropologists and anthropological demographers have sounded a different note, louder in the late 1960s and 1970s than currently, but still influential. Thus Handwerker (1983, p. 5) reported that most anthropologists assume that birth and death rates were low throughout most of human history, and Polgar (1971b, p. 3) argued that “There are several lines of evidence indicating that the voluntary regulation of family size may well have been one of the earliest features of human culture.” In a similar vein, Greenhalgh (1995b, p. 15) wrote: “people without access to modern contraception take steps to limit family size,” and Bledsoe and Camara (1997), emphasizing that Gambian women ensured that too many pregnancies, births, and children did not weaken them, implied that there must have been ancient ways of avoiding an excessively large family.

This review will attempt to show how it was possible that such contrasting conclusions could have been reached from the same human experience, and will search for a resolution. Although some theoretical anthropological ecologists and biologists assert that this debate is now history (see Maynard Smith 1964, 1976; Wood 1998), prominent field anthropologists often disagree. For example, to counter Wood’s (1998) claim that belief in premodern fertility control was now

There are some obvious reasons for the different conclusions, but they are far from the whole story. Anthropologists tend to focus on the limitation of population and family size, which includes abortion as well as contraception, and infanticide as well as fertility control, while demographers, if they could obtain the data, would count infanticide on both sides of the vital-events ledger, as births contributing to fertility and as deaths contributing to mortality. In addition, as Weiss (1976, p. 351) charged, demographers are usually not interested in small societies.

Anthropologists concerned with long-term fertility patterns focus on hunter-gatherers. They now make up an insignificant proportion of the world’s population, but in 10,000 BC they constituted the whole of it, although there were only about 10 million of them altogether (Lee and DeVore 1968, p. 5 and frontispiece). The present-day survivors are used to provide evidence about how their distant ancestors behaved, an approach with significant dangers.

In contrast to the way they differ over the cultural control of fertility, anthropologists and demographers are in agreement that, for most of human history, populations have been very close to being stationary or in a condition of equilibrium and that birth rates and death rates have been almost identical. In fact there is little room for disagreement because the mathematics of exponential growth show that any persistent margin of birth rates over death rates would have resulted in far greater population growth than has actually occurred. Most demographers assume that this balance of births and deaths was Malthusian, with mortality holding down fertility’s potential for population growth. Most anthropologists rarely mention Thomas Robert Malthus (1766–1834) except to claim that premodern man was sufficiently resourceful to bypass his constraints.

The anthropologists’ neglect of Malthus when focusing on premodern populations is unfortunate, because in the first edition of his Essay, in 1798, he analysed the nature of this age-old equilibrium. Postulating a constant passion between the sexes, he argued that it normally led to so many births that population would have grown had it not been constrained by mortality driven by a shortage of food, the production of which had grown slowly, if at all, for most of human history.

Since the beginning of the anthropological analysis of population stasis, essentially starting with the biologist, Carr-Saunders (1922), that view has often been taken to mean that a population in Malthusian equilibrium was constantly on the verge of starvation, weakening both the people and their society. But in fact much of the mortality constraint on premodern hunter-gatherers took the form of violent deaths, mostly in warfare, and possibly accounting for as much as 30 percent of the mortality of males (Coleman 1986, p. 29). Indeed, that deaths unconnected with starvation may protect the rest of the society by helping to maintain its resources is conceded by those anthropologists with a focus on infanticide. It was not Malthus’s view that the mortality arising from insufficient food usually took the form of starvation, except in famine crises, nor what his type of equilibrium
would imply. In his view, the lower the average nourishment, the more likely were people to die of infection, especially during epidemics. This is an argument that McKeown (1976) has applied to England into the twentieth century and that Fogel (1997) is beginning to use for even later dates. It is only in recent times that we have been in a position to control infection without raising nutritional levels. Also, Malthus believed that much of the high mortality needed to constrain growth was normally borne by specific, and not very visible, sections of the population without affecting the rest of society. He pointed to two groups. One was the lowest class, which he regarded as less worthy, often unemployable, and given to such reprehensible demographic behaviour as marrying early and threatening to have large families. Indeed, he felt that any help to this class would lead the constraint of high mortality to impinge on the class next above it, consisting of worthy artisans and skilled workmen. The other section of society which felt the full ravages of the constraining mortality consisted of young children, on whom we might suppose the impact paralleled that of contraception or infanticide. Rose (1968) has described such a society as late as 1941 in Groote Eylandt off Australia’s northern coast, with slow population growth and adults appearing fairly robust and healthy while a large proportion of the young children was wiped out by very high mortality. Malthus (1959, p. 15) maintained that conditions in such societies prevented “any but the most robust infants growing to maturity;” and cautioned that “we must not fix our eyes only on the warrior in the prime of life.” In the later modifications of the First Essay he pointed increasingly to the benefits of Western Europe’s postponement or forgoing of marriage, especially among women, as allowing its population to escape the miseries of societies in the rest of the world, such as the early marrying Chinese. Clearly, he was not saying that Europeans had escaped the constraints of a slowly growing food supply, but rather that they had achieved an equilibrium between population and food at a more comfortable and demographically less oppressive level of living.

Recent research has thrown light on different levels of the Malthusian equilibrium, especially the construction of stable population tables. Here are some examples of how a stationary population can be achieved with different combinations of fertility and mortality: an average of 6–7 births per woman, an expectation of life at birth of 20 years, around 50 percent of births resulting in deaths by 5 years of age, and 50 percent of all deaths in the society being to those under 5 years of age; or 4–5 births per woman, a life expectancy of 30 years, and 40 percent dying by age 5; or just under 4 births, an expectancy of 40 years, and 30 percent dying by age 5. These results can be compared with the contemporary developed world, where a stationary population is achieved with a life expectancy of almost 80 years, just over two children per woman, and only 1 percent of these births succumbing to death in their first 5 years (Coale and Demeny 1966, West tables). It is not suggested that premodern populations could attain a life expectancy of 80 years by restricting family size to two children, but they might have achieved 30 years while averaging fewer than five births, or possibly 40 years with under four births. This is exactly the mortality level that many anthropologists believe
most premodern hunter–gatherers achieved by limiting, if not their births, then the number of children who escaped infanticide to an average of around four per woman.

Modern research has led scholars to agree that, for centuries, Western Europe’s fertility was limited by women postponing or forgoing marriage. Hajnal (1965, p. 132) toyed with the idea that the emergence of modern Europe and capitalism resulted from the European marriage pattern, a view with which Malthus seems to have concurred. Goldstone (1986) used evidence on England from Wrigley and Schofield (1981) to show that the major influence on fertility was lifelong spinsterhood. Over more than three centuries, 1551–1875, marital fertility levels scarcely changed, with overall fertility being determined solely by fluctuations in marriage (Wilson and Woods 1991, pp. 403–4). There is little in the way of a long series of premodern demographic measures but the reconstitution by Wrigley and Schofield (1981) does provide a test for England. Between 1650 and 1750 the population was close to stationary, growing by less than 10 percent over 100 years, with the crude birth rate averaging only one point per 1,000 population above the death rate. This was achieved with an average total fertility (i.e., the average number of births per woman over a lifetime if demographic rates change little) of 4.6 and life expectancy at birth of 37 years (Wrigley and Schofield 1981, p. 230).

The conditions in England and Wales between 1650 and 1750 were different from those experienced by hunters and gatherers: society was more organized and sporadic killing much less common, but closer settlement, especially in the towns, meant a greater burden of infection. Nevertheless, the Wrigley and Schofield figures do demonstrate that an average of fewer than five births per woman (a crude birth rate in the 30s) is compatible with a life expectancy of nearly 40 years and indeed would probably be a major reason why that expectancy was so high. This is evidence of the effects of more food per head and less pressure on resources, though it is probably still the availability of food which determines the society’s level of resistance to mortal illness. It is a moot point whether, if fertility had fallen any lower, life expectancy could have climbed further, thus preventing population decline. It might be noted, however, that by 1787 Denmark was recording a total fertility of around four and a life expectancy of 43 years (Coale 1986, p. 6, Figure 1.2).

We will now examine the differing experiences and traditions of those demographers and anthropologists who have considered these issues and which led them to widely separate understandings of the nature of pretransitional population control and population equilibrium.

THE DEMOGRAPHERS’ EXPERIENCE

Twentieth-century demographers were at first far from sure that mass contraception was a relatively recent innovation. Many were influenced by Himes’s (1936) Medical History of Contraception, which documented the use of coitus interruptus, sponges, douching, suppositories, and herbs over the millennia, and condoms, quinine, vinegar, and alum over recent centuries. In his introduction,
Himes drew mainly on Carr-Saunders (1922) but also on Sumner et al. (1927), stating: “Man’s attempts to control the increase in his numbers reach so far back into the dim past that it is impossible to discern their real origin. Some forms of limitation on the rate of increase are undoubtedly as old as the history of man” (Himes 1936, p. 3). But later in the book, after having to search vast quantities of literature for relatively rare references to contraception, he seemed less certain of a demographic impact and did not refer again to any significant effect on society’s numbers. Instead, he more cautiously concluded: “The desire to control conception is a well-nigh universal culture-trait, universal, that is, in time and space. The desire, often unconscious, is much more universal and general than the practice” (Himes 1936, p. 421, his emphases).

One channel of Himes’s influence on demographers was through Frank Notestein, head of Princeton University’s Office of Population Research (OPR). In his key writings, which usually drew largely upon OPR sources, Himes was one of Notestein’s two most frequently cited outside sources (Caldwell 2001, p. 10,750). Notestein was strengthened in his belief that coitus interruptus had long been known and available to the human race by his questioning of immigrant Europeans at a New York birth control clinic about contraceptive methods they had earlier known and used in Europe (Stix and Notestein 1940, p. 150).

Over the last 50 years demographers’ scepticism about the idea that pre-transitional fertility control had been of sufficient magnitude to lower societal fertility has been driven by evidence from four main sources: large-scale demographic surveys such as those carried out in sub-Saharan Africa by French statistical and technical aid agencies from the mid-1950s; the KAP (Knowledge, Attitudes and Practices towards Family Planning) surveys from the 1960s; the World Fertility Surveys (WFS) from the 1970s; and the Demographic and Health Surveys (DHS) from the 1980s. Where these surveys were able to obtain data on completely pre-transitional populations, mostly in sub-Saharan Africa, fertility levels were usually found to be very high and reported knowledge or practice of contraception very low. In one of the earliest surveys, that in Guinea in 1954–55, the demographic levels for the little-developed Forest Département were crude birth and death rates of 45 and 42, respectively, almost balancing, and an infant mortality rate over 250, with almost half of all births followed by deaths within the first 5 years. The implied life expectancy was around 27 years. In Upper Guinea total fertility was 6.2 with birth and death rates of 50 and 42 (Coale and Lorimer 1968, p. 157). As the surveys of sub-Saharan Africa continued, the recording of total fertility levels in the range 6–7 became typical.

Scepticism about the existence of universal population control was increased by Henry’s 1961 paper with its concept of “natural fertility,” and by later publications on the same subject (see Leridon and Menken 1979). Henry argued that natural fertility was not always at the same level because of differing durations of postpartum lactation and sexual abstinence, but that any conscious limitation of family size would inevitably be detected by a steeper fall in fertility in the late reproductive period as families grew in size than where there was no such control.