

Demography, Democracy, and Demonology

E. GREBENIK

I MUST BEGIN BY THANKING THE ORGANIZERS of this event for the honor they have done me in asking me to deliver the Darwin Lecture. I am very conscious of the fact that many of my distinguished predecessors have used this occasion to communicate the results of their original research. Although I shall not do this, it seems fitting that a lecture on human biology designed to commemorate Charles Robert Darwin should deal with problems relating to human populations and human numbers. In his autobiography Darwin refers to having read Malthus's *Essay on Population*, still one of the most important and certainly one of the most influential books ever to have been written on the subject. Darwin writes:

In October 1838, that is, fifteen months after I had begun my systematic enquiry, I happened to read for amusement Malthus on *Population*, and being well prepared to appreciate the struggle for existence which everywhere goes on from long-continued observation of the habits of animals and plants, it at once struck me that under these circumstances favourable variations would tend to be preserved, and unfavourable ones to be destroyed. The results of this would be the formation of new species. Here, then, I had at last got a theory on which to work. . . .¹

Clearly, Malthus's arguments were an important influence on Darwin's views on evolution and the struggle for existence.

I have chosen the title of this lecture not merely for reasons of alliteration. When at an earlier stage of my career I held the Readership in Demography at the University of London, I received (among others) two letters addressed respectively to the Reader in Democracy and the Reader in Demonology. On reflection it seemed to me that the writers of these two letters may not have been entirely wrong in their views of the nature of my subject and that there are, indeed, connections between these three areas that are worthy of consideration.

I shall begin by talking about demography and note that a lecture on this subject is being delivered by someone who has not been trained as a biologist. This would have been much less likely in the past: some 60 years ago Raymond Pearl had no doubt that the study of human populations was the proper and legitimate concern of biologists, and most of the scholars at the time who were interested in population problems had been trained in the biological sciences. The relatively small number of economists who wrote on the subject were as a rule more concerned with the effects of changes in population on the economy than with the processes that determined and governed such changes. The statisticians were content to collect the necessary data. As late as 1924, Udny Yule, in his presidential address to the Royal Statistical Society, could refer to human population growth as a "biologically self-regulating process"; indeed, "a process of which the regulation was extraordinarily sensitive," although he was not very forthcoming in explaining the mechanics of this process of self-regulation.

Malthus, of course, was an economist, but it is possible to consider his model of population regulation as one which was essentially determined by biology. His writings—like Holy Writ—can be interpreted in different ways to suit the prejudices and preconceptions of his readers; and his ideas did, of course, develop and were to some extent modified during his lifetime. Basically, however, he argued that human numbers are regulated by the interaction of two major biological drives—hunger and sex—which keep each other, and thereby population, in check through their effects on mortality. In the last analysis, it is shortage of subsistence that will limit excessive reproduction, among men as among animals. Any excessive reproduction will result in a rise in the death rate. It is surprising that Malthus, a clergyman, did not pay more attention to the uniqueness of man and regarded it as improbable that he would be successful in modifying and, at least partially, in controlling his environment. It is true that in the later editions of the *Essay* he was prepared to admit, in theory at least, that "moral restraint," by which he meant delayed marriage coupled with premarital sexual continence, could act as a curb, based upon reason, upon the unchecked operation of the Principle of Population; and he admitted that an increase in wealth and in standards of living might not result in a "proportionate acceleration of the rate of increase." I think it is fair to say, however, that he did not believe that moral restraint would be widely adopted (and in this respect, at least, he has not been proved wrong by events) and that he took the pessimistic view that further pressure of population upon subsistence would be the more likely outcome of any improvement in material conditions of life.

Malthus alerted his readers to the existence of a demon, the demon of excessive growth leading to overpopulation, a frightening presence able to rectify any disequilibrium between population and subsistence by the operation of the positive checks of famine, pestilence, and war, which would

raise the death rate. He was by no means the first to point to the existence of this demon, but his writings attracted more attention than those of his predecessors, and he must be given the credit for dragging the demon into full public view. It is not surprising that economics, the subject that Malthus professed for most of his working life, came to be known as the "dismal science," for it was generally believed to prove that any attempt to ameliorate the human condition was bound to be lost in the gloomy and arid desert of the Principle of Population.

Malthus's scenario was not, of course, universally accepted. Even during his lifetime there were those, like Ensor and Sadler, who dismissed his analysis as being altogether mistaken. Others—more optimistic than he was about human potentialities—thought that his predictions could be avoided by a modification of individual behavior. However, even among those who did not accept his conclusions, many accepted his analysis as being both relevant and correct. One of them, George Drysdale, an early advocate of birth control, wrote in his *Elements of Social Science* toward the end of the last century:

I do not know of any work so important to the happiness of mankind at present as that of Mr. Malthus. It alone explains the real cause of the fearful evils both in the economical and the sexual world . . . of the multiform miseries which are breaking the hearts and paralysing the arms of so many myriads amongst us and making the philanthropist despair.²

Whatever view may be taken of Malthus, his thesis that mortality serves as the prime regulator of population growth influenced the development of the new science of demography. Throughout the nineteenth century students of human population devoted much more attention to the study of deaths than to that of births. They collected systematic information about the age and sex pattern of death rates, about causes of death, and about differences between the mortality of different social, economic, and geographical subgroups of the population. British scholars played a prominent part in these activities, particularly in the study of occupational mortality. Their interest was additionally stimulated by the needs of the actuarial profession for accurate information about mortality rates in the operation of increasingly complex systems of life insurance. By the end of the nineteenth century, the methods used in the study of mortality were well advanced and only minor modifications have been introduced since.

At the same time it was becoming increasingly clear that in the industrialized countries at least, fertility rather than mortality had become the dominant factor in determining the rate of population change, and that it was necessary to shift the emphasis from a study of deaths to that of births if we were to obtain a better understanding of the processes of population change. In the industrialized countries, the principal epidemic diseases had

been brought increasingly under control (the great influenza pandemic during the years immediately following World War I was the last of the great disease-induced mortality catastrophes in the Western world), the mortality of infants and young children was falling, and the great majority of babies survived to an age when they could, in their turn, reproduce themselves. This process of mortality reduction was greatly advanced during the first half of the present century by the discovery of new drugs and the introduction of new therapeutic techniques, and this important social gain was extended from Europe and America to Asia and Latin America. Today, it is really only in Africa that changes in mortality may be as important as changes in fertility in determining human numbers; elsewhere in the world, fertility clearly plays the dominant part.

Interest in the study of fertility in America and Europe increased when it was realized that birth rates were diminishing. Some measures of social control over fertility have, of course, existed in every human society, and methods for avoiding births were well known before the nineteenth century: abortion and infanticide had been used to regulate births far earlier. But marital fertility tended to be regarded as constant; thus, Malthus considered that the birth of five or six children was the normal consequence of a marriage. It was generally accepted during the first half of the nineteenth century that married couples would not take any steps to interfere with the natural consequences of marital intercourse, and it seems unlikely that appliance methods of birth control were widely used by married couples at the time. In conformity with the view that changes in population growth were biologically determined, explanations for the fall in birth rates were at first sought in biological terms. It was suggested that these changes had been brought about by a reduction in the biological capacity to reproduce—the factor that demographers call “fecundity” to distinguish it from “fertility,” a term which is reserved for actual reproductive performance—and that these changes were in some undefined way associated with peculiar aspects of modern civilization and industrialization. Some very odd explanations for the supposed decline in fecundity were put forward until well into the middle of the present century.

I remember that when I was employed in the secretariat of the British Royal Commission on Population during the late 1940s, a number of correspondents wrote to the commissioners to give them their opinions about the factors in modern life that had resulted in the supposed decline of the capacity to reproduce. Among the more unusual explanations put forward were the excessive consumption of coffee, the tendency of men to take hot baths (believed to reduce spermatogenesis), the use of vaginal tampons for women’s personal hygiene, and—perhaps the most ingenious explanation of all—improvements in cleanliness involving more frequent washing of the genital region, given that soap has slight spermicidal properties. Nor was the view that the physiological capacity to reproduce had declined confined to

a few cranks. Some medical men believed that the practice of contraception itself had resulted not only in a reduction of fertility, but also in a reduction of fecundity.

Concern about the supposed decline in fecundity spilled over into fears that the quality of the genetic stock of the population was declining as well. The fact that the birth rate had fallen more steeply among the upper than among the lower sections of the population, coupled with a somewhat naive identification of social and economic success with higher biological value, provoked growing alarm in some quarters that the quality of the population was deteriorating. An indication of this belief can be found in the fact that the early demographic research carried out in Karl Pearson's laboratory at University College London and financed by the Drapers' Company was published under the title *The Drapers' Company Research Memoirs in Natural Deterioration*.

The view that the primary determinants of fertility were biological in nature also influenced the methods that were used to measure and assess fertility. An individual's chronological age was the most important determinant of his or her probability of dying; so—by analogy—a woman's chronological age was regarded as the most important determinant of her probability of giving birth during a given year. Age-specific fertility rates—the number of births occurring to a woman of a given age related to the total number of women alive at that age—were the principal instrument used to measure her fertility. The only mediating variable that was used in those sexually less permissive days was marriage, and marital age-specific fertility rates, which related the numbers of legitimate births to the total number of married women alive at the time, were calculated. These rates were then summed to obtain indices of gross reproduction and combined with women's mortality rates to yield indices of net reproduction: this latter index was used to assess whether or not a population was generating a sufficient number of births to replace itself in the long run. Discussions relating to the future development of the population were conducted almost exclusively in terms of these indices, and little, if any, account was taken of the previous marital or reproductive histories of the women concerned. If I may be permitted another reminiscence from my days with the Royal Commission, it proved difficult to persuade the eminent statisticians from the General Register Office, who were members of the Commission's Statistics Committee, that it was unrealistic to assume that a fall in women's age at marriage would leave age-specific fertility rates unchanged. They argued that such a reduction, which would increase the chances of earlier childbearing, would not affect future age-specific fertility rates at older ages so that total fertility would increase as a result of the reduction in the age at marriage.

The reason that it became necessary to adopt different methods of measuring fertility was, of course, the emergence of more widespread and more effective individual control over fertility. This is one of the most im-

portant—possibly *the* most important—of the features that distinguish reproduction in industrialized societies during the present century from that of the past. The history of the development of contraception and the dissemination of contraceptive knowledge and practices throughout the population has been frequently told and need not be repeated here. It coincided with and was related to many other social and economic changes, among which I need only mention improvements in education, housing, and health (particularly the health of mothers and infants); changes in the attitude toward and the role of women in society; and a reduction of the influence of religion on individual conduct. Married couples were seen to prefer to have fewer children than they could expect if they took no steps to reduce their own fertility. Improvements in contraceptive techniques made it increasingly possible for them to translate their preferences into practice. The small family as a central social convention had by the 1930s completely replaced the nineteenth century regime of natural and relatively unrestricted fertility.

Actually, the Victorians did not seem to have been unduly worried by the existence of the Malthusian demon of overpopulation, even though the validity of Malthus's analysis was widely accepted at the time. The economic euphoria of the post-1851 period, the growth in the economy, and the rising political status of the United Kingdom in the world made a growing population seem to be a natural state of affairs to them. If there were a real threat of numbers becoming excessive, the surplus could always be decanted overseas. Malthusians, and certainly those neo-Malthusians who advocated birth control, were on the fringes of intellectually respectable life: the latter in particular were regarded as barely respectable because of their insistence on discussing embarrassing topics in public. Annie Besant, for instance, in spite of irreproachable sexual conduct on her part, was deprived of her children because of her association with Charles Bradlaugh in his struggle for birth control. The late Lord Simon, who was the first chairman of the Royal Commission on Population and a Victorian by upbringing, when addressing the newly appointed members warned them that "during the course of their deliberations they would have to think about and might even have to talk about matters which it was generally considered improper to discuss in mixed company!"

However, though the growing practice of birth control appeared to have exorcised the demon of "overpopulation," its increasing social acceptance appeared to have liberated a related demon, that of "race suicide," who seemed to be rapidly gaining in animation and vigor. Warnings of a possible cessation of population growth began to be voiced in Britain about 100 years ago, and the demographic literature of the first half of this century is full of discussions of the threat of population decline and its consequences of intellectual and moral impoverishment. Beginning in France, where birth rates started falling earliest, concern spread to Britain, Germany, and Scan-

dinavia, and fears of population decline coincided with dire warnings about the deterioration in the quality of the genetic stock. The titles of books published during that period bear witness to these fears. Dumont's *Dépopulation et civilisation* appeared in France in 1890; the Whethams wrote *The Family and the Nation* in 1911; the British National Council of Public Morals set up the National Birth Rate Commission before World War I; and during the 1920s and 1930s came the publication of McCleary's *Race Suicide*, Enid Charles's *Twilight of Parenthood*, and Raymond Cattell's *Fight for our National Intelligence*. With the exception of Dumont, all these authors focused their attention on the probable decline in human numbers in Britain, which they regarded as imminent, and on its supposedly deleterious consequences. Nationalist and racist undertones began to color discussions about fertility; the low fertility of particular countries was contrasted unfavorably with that of their more vigorous neighbors; and differences between the fertility of white and nonwhite populations were stressed.

Today, with the benefit of hindsight, we know that these fears and concerns were exaggerated and to some extent caused by a faulty analysis of the situation. The population projections that were used were based on an extrapolation of age-specific fertility rates, and little attention was paid to the overall reproductive performance of women—that is, the total number of children they would achieve by the time they reached the menopause—in other words, to cohort fertility. It is surprising that so simple and obvious a concept as cohort fertility took so long to develop and to become accepted as a more appropriate measure of fertility than the sum of age-specific fertility rates of a particular year, a measure which can often be quite misleading as an indicator of the actual fertility of a population. The persistence of older forms of analysis was in part a consequence of the inertia of statistical systems that were not well designed to produce the type of information needed for the assessment of cohort fertility, and in part to the dearth of scholars outside the ranks of the official statisticians who were interested in population problems. The primary concern of the statisticians lay with the compilation of official data. In Britain, the Eugenics Society began to press the Registrar General for an improvement and extension of the information that was collected at the registration of a birth as early as the 1920s, but it took until 1938 for the law to be changed and for the first major amendment to the registration system to come into effect, when the Population (Statistics) Act was passed more than 100 years after registration first began.

The use of cohort fertility to measure rates of population growth and to assess fertility levels was given an impetus by the work conducted on behalf of the Royal Commission on Population in the United Kingdom and by the work of P. K. Whelpton in the United States. Whelpton had shown that the use of summed age-specific fertility rates could lead to paradoxical and, indeed, impossible results. By summing age-specific fertility rates for

first births only for the United States in 1942, he showed that a continuation of these rates would result in 1,000 women giving birth to 1,084 first children during their lifetimes, manifestly an impossibility. Clearly, then, an indefinite continuation of the prevailing pattern of age-specific fertility rates was impossible, and it was necessary to consider the entire marital and reproductive histories of the women concerned, in order adequately to assess their true completed fertility and to determine whether or not they had produced a sufficient number of children to replace themselves.

However, the introduction of new methods of measurement raised new problems. What type of cohort was the most appropriate for study? Whelpton had used birth cohorts, that is, groups of women born in a particular year, and took no account of marriage, in part because marriage statistics in the United States at the time were incomplete. By contrast, in Britain, in the Family Census of 1946, the fertility of marriage cohorts, that is, of groups of women married in a particular year, was investigated. Implicit in this decision was the view that once fertility had been brought under individual control, then—within certain wide biological constraints—the length of time for which a woman had been married was more relevant for determining her fertility than her chronological age.

Marriage cohorts have been used to study fertility in Britain for the last 40 years. However, the situation today is very different from what it was 40 years ago, and it is by no means obvious any longer that marriage cohorts are the most appropriate cohorts to consider when assessing fertility. At the time the Family Census was taken, some 95 percent of births in Britain occurred to married women, and of these, some 80 percent to women who had been married for less than ten years. It seemed appropriate, therefore, to concentrate the study of fertility on the first decennium of married life. Today a much higher proportion of births occur to women who are not married. In 1985, 65 percent of births to women in their teens, 34 percent of births to women aged less than 25, and 19 percent of all births occurred to women who were not married. The proportion of women in the population who never marry has increased, as has the fraction of marriages that end in divorce. Many younger women whose first marriages have ended in divorce enter a new union, which may or may not be a legal marriage. A much larger proportion of women—both married and unmarried—are gainfully employed outside their homes, and many of them delay starting a family for a considerable period after they enter a stable sexual union, so that the birth of a child should not conflict with their employment. The early years of a union are no longer necessarily the most prolific.

All these considerations suggest that it may be advisable to return to birth cohorts for the assessment of fertility and of changes in fertility. In the past, the major transition in an individual's life (and more particularly in that of a woman) was from the single to the married state; today the transition

that matters is from the childless state to being a parent. Once a woman has given birth to her first child, attention should be devoted to the transition from one parity to the next, and it may even prove desirable to look at "motherhood cohorts," that is, to study the fertility of women whose first child was born in a given year. This involves the study of so-called parity progression ratios, a measure first suggested by the French demographer Louis Henry nearly 40 years ago which shows the proportion of women of a given parity who go on to the next. This approach has been used with some success to study changes in the fertility of societies as diverse as the United Kingdom and the People's Republic of China.

A second difficulty that arises in the study of cohort fertility is the distinction between what have been called "quantum" and "tempo." Once fertility has been brought under individual control, couples are able to decide with some confidence both the total number of children they wish to have and the time when they have them. Theoretically, decisions about reproduction could be made in two different ways: couples may decide on the total number of children they wish to have at the beginning of their union, or they may make these decisions sequentially, that is, decide whether or not to make an addition to their family at a particular point in time in the light of their circumstances at the time. Intuitively, it seems that the second method represents reality more closely than the first; no doubt, some couples begin their life together with a particular size of family in mind, but adjust their views when faced with the realities, costs, and inconveniences of reproduction and child care. If this is so, any attempt to estimate the future of fertility by questioning women about their reproductive intentions is unlikely to yield accurate results. Answers to such questions will only reflect general attitudes in the light of circumstances prevailing at the time the questions are asked, and are not necessarily capable of being used as indications of future reproductive behavior. In a study conducted in the United States, Charles Westoff and his associates compared answers given by women to questions about their reproductive intentions with their actual reproductive behavior five years later. They found considerable differences between the stated intentions and the subsequent reproductive performance of individual women, though it so happened that the aggregate fertility of the group they investigated was fairly close to the fertility intentions stated five years earlier. However, as they themselves admitted at the time, this coincidence of intentions and behavior may well have been a fluke.

In a situation where the average number of children a woman bears during her lifetime is small—say two or three—she will have considerable latitude in deciding when these children are to be born. Annual numbers of births in Britain and other industrialized countries have been fairly volatile during the last 25 years or so, and whenever such numbers change we need to ask whether these changes represent variations in the quantum of fertility,

that is, a real change, or are merely changes in the timing or tempo of births. Error in the assessment of these factors can produce a distorted view of the actual situation at any particular point in time, and even greater errors in the determination of fertility trends as evidence of future likely developments. Incidentally, it also makes it very difficult correctly to assess the true impact of any population policy.

I have dwelt on these somewhat technical matters because during the last 30 years or so demographers have been refining methods of measuring fertility in order to obtain greater precision, and these activities have also been one of their major preoccupations in studying the populations of less developed countries. The new methods have made it possible to isolate some of the components of population change during the somewhat turbulent demographic history of the period since World War II. The areas in which changes had occurred could be pinpointed with greater accuracy. The period of time during which women were actually engaged in reproduction (the interval between their first and last birth) had become shorter; childbearing began later and stopped earlier than in the past; the proportion of women with large families (defined for this purpose as those with four or more children) has fallen and is continuing to fall. Since the baby boom of the 1950s and early 1960s, the proportion of women who remain childless has increased. In societies with a small-family system, the crucial ratio that distinguishes populations in which the numbers of births are sufficient for the long-term replacement of the population from those in which they are not is the proportion of women with two children who go on to have a third. All these facts and many others that I have not mentioned are useful pieces of historical information, but they can do little more than illuminate a process of historical change that is already in the past. Unless we are prepared to assert that the future will be like the past—in this context, an unsafe assumption to make—the predictive value of these facts is strictly limited. They tell us little about the characteristics and attitudes that determine the willingness of men and women to produce children and perhaps even less about the way in which social factors operate to change these private and personal decisions.

The demographic profession has little reason to be proud of its record in forecasting the future. In countries in which families are small, our two demons—overpopulation and race suicide—have been paraded alternately before the general public, but by the time one of them succeeded in attracting public attention, he seemed ready to leave the stage to make room for his brother. Once the Malthusian demon had been chained in industrial societies (to use Keynes's term), fears of population decline became apparent. During the interwar period and during World War II, many committees or commissions were set up in various countries to study this threat and its possible consequences. In Britain, the Royal Commission on Population was—in the

words of one of its members—"set up at a time when there were relatively few babies and a lot of money and reported at a time when money was short, but babies seemed to be relatively plentiful." By the time its report was published in 1949, the threat of imminent population decline seemed to have evanesced, and the report was never even debated in the House of Commons, which was occupied with what seemed at the time to be more pressing problems. However, to the best of my knowledge, no member of the demographic profession predicted the upsurge in births that was recorded in most industrialized countries during the 1950s and 1960s, the true nature of which has not been satisfactorily explained to this day. So massive was the boom in births and so high were fertility rates, both in more and in less developed countries, that the demon of overpopulation seemed to have once more broken out of his chains. During the 1960s, public discussion of population problems was once again dominated by the threat of excessive rates of growth. Demands for an antinatalist population policy came from a number of quarters; in Britain I need only remind you of the reports from the House of Commons Committee on Science and Technology, and in the United States of the Commission on Population Growth and the American Future. In Britain, the government set up a Population Panel to study the evidence. The situation in which members of the Panel found themselves was almost a mirror image of that faced by the Royal Commission a quarter century earlier. Set up in response to fears of excessively high rates of population growth, it deliberated at a time when numbers of births were once again falling rapidly and was able to report—no doubt much to the government's satisfaction—that nothing needed to be done at the time. On the wider global scale, too, slight reductions in the rate of population growth resulted in a diminution of interest in population problems and helped—to use a phrase attributed to Lord Whitelaw—"to stir up apathy."

Demographers may, in fact, have cried "wolf" once too often, for the two demons—overpopulation and underpopulation—have attracted rather less interest during the last 15 years or so. In Britain, the number of births has been insufficient to ensure the long-term replacement of the population since the early 1970s, but this has occasioned very little comment. When numbers of births first began to fall, this could have been attributed to a postponement of fertility that might have been expected to recover once conditions had improved—a change in the tempo rather than in the quantum of fertility. However, with the passage of time, such an explanation became increasingly difficult to maintain. Public interest, however, is much more muted than it was half a century ago. Some concern has been expressed about the implications of changes in the age distribution of the population that will make it more difficult to meet the increasing burden of dependency and to maintain the larger proportion of the elderly that is an inevitable consequence of a cessation of population growth. But these effects will not

materialize for another 25 years or so, and only a few people worry about them. In other countries in which fertility is even lower than in Britain, the situation is not very different.

Government attitudes to population, too, have changed considerably during the last 20 years. During the 1960s and 1970s many European governments, as well as the government of the United States, were expressing concern about high rates of population growth, particularly in the less developed countries, for such high rates of growth were seen as a major obstacle to the economic and social development of the Third World. At the World Population Conference in Bucharest in 1974, governments of the industrialized countries drew up the so-called World Population Plan of Action, designed to encourage a reduction in growth rates. However, many delegates from the less developed countries did not see the situation in this way. Thus, the Chinese delegation's slogan was "A country's greatest wealth is its people," and many governments in Latin America, Africa, and Asia suspected that the West's support for curbing population growth was not entirely disinterested, but was motivated by a desire to preserve existing international inequalities and a higher standard of living in the West. They may well have been right in their attribution of motives, but this did not in any way change the facts. Considerable and convoluted backstage negotiations were necessary to secure approval even for the somewhat anodyne proposals contained in the eventually much-amended Plan.

At the next World Population Conference, held in Mexico City ten years later, attitudes had changed. Governments of the less developed countries, having experienced another decade of high growth rates, were becoming increasingly convinced that such rates did, indeed, constitute an important obstacle to their attempts to raise standards of living in their own countries. They were more prepared than in 1974 to consider adopting measures designed to reduce birth rates. The most extreme *volte-face* was that of the government of China, whose pronatalist stance in 1974 had been replaced by the one-child family program and where the reduction of fertility had become an important part of government policy. Curiously enough, however, official policy in the more developed countries had shifted in the opposite direction. Belief in the efficacy of government intervention in the social and economic fields was becoming less fashionable, and, once again, much was heard about human populations being self-regulating systems. Only this time, regulation was supposed to have been brought about, not through a biological mechanism operating on the death rate, but through the forces of the market—Adam Smith's "invisible hand"—which would achieve their effects by changing numbers of births. Unfavorable aspects of population growth were played down, favorable consequences were stressed. For reasons connected with internal politics in the United States, the Reagan administration opposed population control programs that included assistance to countries

or organizations permitting or offering abortion as a means of controlling fertility. The view that population growth stimulated rather than hindered development was supported by some economists, such as Julian Simon, who had earlier experienced an intellectual conversion on this subject and who propounded his new views with all the zeal commonly found among converts.

It is important to realize that these changes in government attitudes were not based on any improved understanding of the factors that affect individual decisions relating to reproduction or fertility. The scenarios that were discussed were constructed from statistical extrapolations of the components of population growth, and could easily be upset by unexpected developments. For instance, if some of the more alarming forecasts relating to the spread and virulence of the AIDS epidemic in Africa were to eventuate, population projections for that continent could prove to be seriously in error even as regards mortality, the component of population growth about which those who projected future developments were most confident in the past. Projections about the future of fertility are even less securely based, and as John Bongaarts has recently written: "Optimism about continued rapid decline [of fertility in developing countries] to the low fertility prevailing in the developed countries is not justified unless family size drops well below current levels. If this stalling phenomenon becomes more widespread and prolonged, then population growth rates in the Third World could well exceed current expectations in the near future."³

Evidence relating to fertility in the less developed countries is conflicting. In some countries, China being the foremost example, fertility has fallen at a pace which, until recently, most experts would have regarded as unlikely to be achieved, though some of the methods that were used to bring about this reduction have not met with universal commendation. In other countries of Southeast Asia and South and Central America, smaller, though significant, declines in fertility have taken place. But it is possible to point to other parts of Africa and of Latin America where fertility has fallen only slightly, if at all. In the industrialized countries of the West, on the other hand, fertility is now generally below the level (and in some European countries, well below the level) required for the long-term maintenance of population size. Thus, at present, both demons appear to be thriving, even though they operate in different parts of the globe. Nor can we be at all certain about their future prospects. Technologically, the means used to control human fertility have been improved and have become increasingly available throughout the world. Research undertaken for the World Fertility Survey suggests that women in many countries still bear more children than they would ideally like to have, but this finding does not necessarily imply that, even in these countries, they would avail themselves of the means of fertility control were these to be brought within their reach, nor that they would necessarily reduce

fertility sufficiently to bring the growth rate of the population down to replacement level. In countries in which fertility control has been adopted by the majority of the population, on the other hand, we are no nearer to knowing the factors—presumably operating through individual choice—which affect the desire for children.

An attempt to fill this gap has recently been made by some economists, notably in the United States. They have tried to fit reproductive decisions into the framework of the economic theory of consumers' choice by comparing the costs and utilities derived from children—both in terms of money and of time—with those obtained from other consumption goods. Their studies have provided interesting and valuable information about the costs of bearing and rearing children in developed countries. But unless the concepts "satisfaction" and "utility" are defined in terms so broad as to be little more than tautologous, it seems doubtful whether the elaborate theoretical apparatus of individual utility maximization is the right instrument to lead to operationally verifiable generalizations about reproductive behavior. The costs of childbearing and childrearing can be quantified and measured; the utilities and satisfactions derived from childbearing and childrearing are much less tangible. Nor are the assumptions that underlie the theory of consumers' choice and behavior necessarily satisfied in this field. Those who make reproductive decisions do not always possess the information necessary to make it possible for them to make informed choices; they cannot assess with any degree of accuracy either the costs or the benefits that will result from their action or lack of action. It is also doubtful whether reproductive behavior is always governed by strictly rational considerations. No doubt, some element of reason enters into the decisions that couples make in this area, but it is quite a different kettle of fish to suggest that family size is determined entirely by reason. One is reminded of Duesenberry's aphorism: "Economics is about how people make choices; sociology tells them why they don't have any choices to make."

Other considerations point in the same direction. The decision to produce or not to produce an additional child must, in most cases, be made jointly by two individuals of different sexes. Very little is known about the process of decisionmaking in the family in general, particularly in those cases where the interests of the male and the female members do not coincide. Most of the studies with which I am familiar treat the couple as the decisionmaking unit, and tacitly ignore the possibility that the interests of the two members may conflict. Nor do I personally find the tradeoff postulated by the theory distinguishing between "quantity" and "quality" of children to be either convincing or realistic. (I hasten to add that in these discussions a child of "higher quality" is not necessarily one with a superior genetic endowment, but rather one who, owing to his or her parents' socioeconomic status, requires goods and services of higher quality to be provided for him

or her.) Attempts to explain changing fertility behavior in macroeconomic terms have not been conspicuously successful either.

If the economists have not succeeded in constructing an operationally verifiable theory of reproductive behavior, the sociologists have not so far been any more helpful. Most sociodemographic research in the past has been concerned with documenting the existence and measuring the extent of differences between the fertility of members of various social groups, or of members of the same social group at different times. Many of the generalizations that have been put forward have proved to be specific to particular cultures or particular historical periods. None of them has proved helpful in constructing a general theory of fertility behavior.

We must not, of course, throw the baby out with the bath water. I would not wish to deny that what we have learned, for instance, about differences between the fertility of various social groups whose members have received different amounts or kinds of education has proved valuable in interpreting the fertility transition in particular countries. And, I think it very likely that further extension of education, particularly the education of girls, will lead to a reduction of fertility in countries where it is at present still high. But I would not be prepared to put my shirt on this happening, for example, in Muslim countries where girls and young women receive a segregated education. And in a country like Britain, where fertility is low, we have seen within our lifetimes a reversal of educational differences in fertility, with women who have received a higher education, who at one time constituted the group with the lowest fertility, producing families well above average in size during the 1950s and 1960s.

Where then does all this leave us? Since Malthus's day we have learned a great deal about population dynamics: we have devised more precise and sophisticated measures of population growth and fertility, and we know much more about the demographic history and condition of many countries in the world. Technical progress in methods of fertility control has resulted in a situation in which there is no practical reason why what Sir Dugald Baird called "the fifth freedom"—freedom from excessive fertility—should not be brought within reach of the whole world's population. By making it possible for individuals to control their own fertility, full rein can be given to what Malthus called "the passion between the sexes," while avoiding some of the consequences that he warned against. Moreover, we have reduced the importance of some of the biological constraints on population growth. Not, of course, all of them, because there can be little doubt that the potential power of human beings to reproduce themselves considerably exceeds their capacity to produce more resources. I doubt whether even Julian Simon would regard the present rate of population growth in Kenya, which implies a doubling of population every 20 years or so, as being sustainable for more than a very short period. The demon of overpopulation

could certainly still use the Malthusian checks as an ultimate stop to excessive growth. But we are no nearer to understanding the factors that determine population growth in this new situation. Some economists believe that Adam Smith's "invisible hand" will replace Malthus's demon, and economic constraints those of biology. This view is by no means universally shared; the American demographer Paul Demeny, in his recent presidential address to the Population Association of America,⁴ gave what seems to me cogent reasons why such a process of self-regulation is unlikely to be accomplished, and similar conclusions have recently been reached in Britain by John Cleland and Christopher Wilson.⁵ The only honest answer we can give to the question "What determines population growth?" is one of nescience.

This leads me to the second word in the title of my lecture, "democracy." In the past, governments have not been indifferent to the sizes of the populations they administered. The Maoist slogan "A country's greatest wealth is its people" can be found in many guises—from that of Pitt, who thought that "A man enriched his country by producing a number of children, even if the whole family were paupers," to the more strident demands of some French politicians for 100 million Frenchmen, or of the prime minister of Malaysia for 70 million Malays. Politicians have more often been readier to advocate a larger population than a smaller one, generally for reasons of emotional exhortation rather than by rational argument. A few have agreed that over-rapid growth is undesirable, but the only official document that I have seen in which a reduction of the population of the country is actually welcomed comes from the Netherlands.⁶ In a world divided into sovereign states, many governments seem to feel that it would be a good thing if there were "more of us," even though they may admit that it would also be desirable if there were "fewer of them."

However, in most democratic countries today (France being the major exception), official policy toward population is one of studied neutrality. There are several reasons for this. The prevailing attitude in many of the democratic countries today is not sympathetic to collective action in the economic or social fields, and the old orthodoxy that individuals will maximize collective welfare if they are left to themselves has once again become fashionable. There is particular reluctance to give the impression of wanting to interfere in so intimate and private an area as reproductive behavior. A cynic might add that the majority of those responsible for making decisions in democratic countries have reached a stage in their lives where the consequences of long-term demographic change are of purely academic interest to them, as their expectations of life will extend for only another quarter century at most. Nor are they likely to derive much political advantage from an advocacy of population policies. Those liable to be adversely affected by such policies will notice the effect immediately; any benefit will take at least

a generation to become apparent. A more charitable explanation would be that politicians recognize the limits to their capacity to devise policies likely to be effective in bringing about demographic change. Certainly most pronatalist policies in the past have not been conspicuously successful.

Not all antinatalist policies have been successful either. Thus, it is generally believed that support for fertility control was an important contributory factor that led to the defeat of Indira Gandhi's government in India in the general election of 1977. And, some aspects of the one-child family policy that has been adopted in China can hardly be described as democratic, nor are some of the methods that have been used to support the policy such as would be generally welcomed elsewhere.

Following an upsurge in concern about population problems during the 1960s, the falling birth rate in the industrialized countries and the reduction in fertility rates in other parts of the world have resulted in a marked diminution of interest in the problem during the 1970s. In Britain's general election campaign of 1987, none of the manifestoes of the major political parties mentioned population, except possibly in relation to problems likely to be caused by the aging population for the provision of medical and welfare services. And yet, contemporary demographic trends are likely to raise many problems that merit the consideration of democratic governments. At present the world is divided not only economically, socially, and politically, but also demographically. In the richer industrial countries, populations are growing slowly, if at all. In what are, sometimes rather optimistically, called the "developing countries," populations are increasing, and, for reasons of demographic momentum alone, will amount to a considerably larger fraction of the world's population than in the past. In the richer countries, particularly in those where the population is of European origin, and also in East Asia, the small-family system has taken root; and, although nothing can be certain in this sphere, there are no indications that it is likely to be abandoned in the near future. Moreover, while fertility has begun to fall in some, though by no means all, of the less developed countries, there is nothing in the figures to suggest that the fall will be fast enough to avoid the major problems associated with rapid growth, nor that a zero growth rate will be reached within a reasonable time. In their most recent projections of global population, the United Nations and the World Bank assume that world fertility will have fallen to replacement levels roughly by the end of the first third of the twenty-first century. On the UN's medium assumptions, by 2100 the world population will amount to some 10.5 billion persons. Different assumptions on the speed of fertility decline lead to projections that bracket that figure between lower and upper limits of 8 and 15 billion, respectively. To put this in context, in 1985 the world's population was estimated to amount to 4.8 billion. These projections are statistical extrapolations of present trends and cannot in any way be regarded as prophecies of what will

actually happen. I have already referred to Bongaarts's warning that growth rates might well exceed expectations in the near future. I suspect that some of the assumptions relating to fertility that posit a decline to replacement level were adopted as much for political as for scientific reasons, and that the statisticians who constructed them were as reluctant as the next man to be the bearers of evil tidings. It is, however, only fair to state that there are some who believe that the decline in fertility has been underestimated in these projections.

One of the problems that governments of countries in which populations are increasing slowly or not at all will have to face is to reach a *modus vivendi* with governments of other states in which growth rates are high, and where population pressures seem set to continue in the foreseeable future. Inhabitants of the latter countries will be tempted by the opportunity to improve their lot through migration, particularly in an era when mass communications depict the attractiveness of affluent lifestyles throughout the world, and their governments may well perceive the wealthier countries as providing an outlet for their own excess numbers. These increased pressures from the supply side may well be reinforced by demand for labor in the industrialized countries, where the size of the labor force is likely to fall before long. Some of the shortfall will, no doubt, be taken care of by increased automation, but it is unlikely that it will prove possible to avoid all labor shortages in the more advanced economies, particularly for the less pleasant jobs which the natives may well be increasingly reluctant to undertake. These pressures need to be seen against a background in which political obstacles to migration in the industrialized world are, if anything, becoming more stringent, and their enforcement is proving increasingly difficult, as is evidenced, for instance, by the difficulties that the US government is facing along its border with Mexico. Nor is it entirely fanciful to suggest that more stringent methods of immigration control may constitute a threat to civil liberties.

Unfortunately, xenophobia appears to be one of the more enduring, if less endearing, features of the human condition, and the inhabitants of countries in which fertility is low are unlikely to welcome, or even to accept, large numbers of newcomers from countries with very different traditions and cultures. Moreover, today's migrants, unlike past migrants to industrialized countries, can often be distinguished from the native population by the color of their skin or other physical features, and, therefore, experience greater difficulties in merging with the native population than was the case with migrants in the main destination countries during the nineteenth century. I see little evidence of constructive and rational discussion of these problems by democratic politicians at present, and little prospect of the situation changing in the foreseeable future. At the moment, governments of the industrial countries appear to be more preoccupied with attempts to encourage the repatriation of migrants who have already settled, as in the Federal Republic of Germany or in Switzerland, with restricting the flow of

further immigration, as in the United States and in Britain, or with ensuring that the door remains permanently closed, as in Japan. Such restrictive policies have much greater political appeal, and one of the less pleasant consequences of immigration and of migration pressure has been the growth of extreme political movements that appeal to xenophobic prejudices and threaten democratic institutions, and that are often based on a fundamentally flawed interpretation of the results of research in human biology.

If migration pressures continue, the democratic countries of the West will, in future, contain a larger proportion of inhabitants who will be either immigrants or the children of immigrants. In anticipation of these circumstances it might have been expected that efforts would have been made to facilitate the absorption and assimilation of immigrant groups. However, only in the Netherlands have there been attempts to disperse the admittedly small numbers of newcomers from the former Dutch colonies, in order to discourage their concentration in specific areas that would result in the creation of cultural enclaves. A *laissez faire* policy in this regard will inevitably, and not unnaturally, result in a situation in which migrants will wish to settle in areas which are already inhabited by previous arrivals from their countries of origin. It is ironic that, in the past, attempts to integrate newcomers into their host societies were considered to provide evidence of a liberal outlook, whereas today so-called progressive opinion appears to favor a policy of multiculturalism, which often includes support for separate educational facilities for the children of migrants. Encouragement of migrants to assimilate and acculturate to their host society does not imply any suggestion of superiority, nor an attribution of greater value to any specific culture. In any case, any sizable body of migrants is bound to affect, as well as to be affected by, the culture and norms of the receiving society. But, sad though this may be, social cohesion and social harmony do not appear to be fostered by the coexistence within the same territory of sizable bodies of individuals with different traditions or cultures. We need only point to Northern Ireland, Sri Lanka, or Fiji for contemporary examples. Nor does it seem to me to be oppressive to suggest that migrants who have left their countries of origin in order to improve their economic situation or to benefit from politically more liberal systems should be prepared to adjust to and accept the values and practices of their host society.

I have mentioned migration as one problem that current demographic trends will present to democratic governments, both in their internal and their external policies. It is not difficult to think of others. In those countries in which current fertility is low (i.e., in Europe and in other Western countries), the progressive aging of the population poses another problem. In these societies, the very old form the most rapidly growing segment of the population, and the cost of providing health and welfare services for them is rising steeply and will continue to rise. To what extent will the population of working age, who provide the goods and services needed to support the

elderly (irrespective of the way in which these are financed), be prepared to deny themselves sufficient amounts of their own consumption to enable members of the older generations to sustain their standard of living, let alone share in any increase that might be brought about in these standards by economic growth? In democracies, pensioners have votes and can, therefore, exercise political power. It is possible to visualize a situation in which conflicts of interest between members of different generations could put considerable strain on the democratic process itself. It is perhaps worth noting that, in Britain, policies designed to support families with young children and to reduce the disadvantages suffered by families with children relative to those of childless families seem to be given much lower priority now than was the case 40 or 50 years ago.

The list of problems to which population trends are relevant can be lengthened considerably: education, housing, the geographic distribution of the population, and the protection of the environment are all examples. Economists have, on the whole, played down the importance of the demographic variable. They may well be right in their contention that there are no technical reasons why the world could not support a much larger population than at present, or, conversely, make do with fewer people. However, the problems of adjustment to rapid changes in either direction are more likely to be political and social than economic, and these have been given much less consideration than have economic problems.

If this view is accepted, it is difficult to be satisfied with the present Micawberish or—to use a more polite term—“reactive” attitudes that democratic governments appear to be taking to problems of population change. The view that governments should or, indeed, can distance themselves from the demographic situation in their own countries or that of the world as a whole seems to me to be an illusion.

Most governments have subscribed to the United Nations World Population Plan of Action, which states that “all couples and individuals” have the right “freely and responsibly” to decide on the “number and spacing of their children.” The term “freely,” at least, is relatively unambiguous. It presumably rules out such measures as compulsory sterilization or forced abortion, on one hand, and the prohibition of the sale of contraceptive appliances or of the dissemination of contraceptive information (and, in my personal view, also forcing a woman to carry to term an early pregnancy which she does not want) on the other. It does not rule out fiscal or similar incentives which are designed to affect the relative position of couples with different numbers of children and childless persons and which may influence the reproductive behavior of individuals. But it is much more difficult to know what is meant by “responsibly” in this context. In relation to whom or what are couples meant to behave responsibly? To themselves and to their immediate or extended families? To their local community? To their country? To the world as a whole? “Responsible” demographic behavior may well

mean very different things, depending on the answer that is given to this question. As John Caldwell, among others, has pointed out, forms of procreative behavior that are perceived by individuals as being of advantage to themselves or their families and that could, therefore, be regarded as "responsible" could well entail unfavorable consequences for the community as a whole. This is yet another reason why market forces on their own are unlikely to provide an automatic solution to many of the problems posed by demographic change, and why it seems desirable for governments to define their attitudes to the demographic situation, and legitimate for them to take action designed to modify trends perceived as being unfavorable.

It is easy to be critical, much more difficult to be constructive. I have argued the need for collective action to tackle some of the problems raised by present demographic trends and to modify those trends which are regarded as unfavorable. I have maintained at the same time that we do not yet fully understand the nature of the factors that shape demographic behavior. Obviously, in this situation it would be foolish to suggest specific policies. The almost instinctive reaction of an academic in this position is a plea for more research. I would not necessarily dissent from such a plea, and would stress particularly the need for a careful monitoring of population trends and changes in these trends. In the less developed countries there is great need for improving the accuracy and comprehensiveness of statistical data, for, at present, we often have to rely almost exclusively on estimates for even the most basic demographic information. In countries in which the data are of good quality, research on the demographic behavior of subgroups of the population is important. Such research is not expensive in comparison with research in other disciplines, but because it is impossible to guarantee that its results will be capable of immediate application, it may well prove difficult to finance it in a social climate in which short-term payoff is increasingly regarded as the major criterion by which funding for research can be justified. It is also important that what information is collected should be brought to the notice of the people in the countries concerned and not remain as esoteric pieces of knowledge understood only by a coterie of specialists. But it would be idle to pretend that we have sufficient time to await the results of further research before attempting to tackle some of the immediate problems facing us. As Gunnar Myrdal said in his Godkin Lectures, which he delivered at Harvard University in 1938: "[P]olitical decisions, leading both to action and to inaction, must always be taken, however far behind social fact-finding lags."⁷ In the absence of exact knowledge, policies can be framed only by trial and error, and we must be prepared to accept that some of the attempts which will be made to modify present trends may prove to be ineffective or mistaken, or entail unforeseen consequences.

We must return to our demons, overpopulation and race suicide. Both are thriving in different parts of the world today. In the absence of any self-

regulating mechanism which governs population growth, we shall have to become used to their continued existence and to a struggle with them to avoid the more damaging consequences of their activities. Under present circumstances, it is probably the Malthusian demon of overpopulation who is the more dangerous and against whom the struggle should be concentrated. But we must not forget his brother either, for he, too, if left unchecked, can pose a threat to democracy as we know it. The struggle is unlikely to be easy; if one were not apt to be so closely affected by its outcome, it would be an interesting struggle to watch!

Notes

The 27th Darwin Lecture, sponsored jointly by the Institute of Biology and the Eugenics Society, was delivered on 17 November 1987 at the Natural History Museum, London.

1 Charles Darwin, *Autobiography*, ed. Nora Barlow (New York: Harcourt, Brace & Co., 1959), p. 120.

2 George Drysdale, *The Elements of Social Science, or Physical, Sexual and Natural Religion with a Solution of the Social Problem*. By a Doctor of Medicine (London: Edward Truelove, 1892), p. 273.

3 John Bongaarts, "The transition in reproductive behavior in the Third World," in *World Population and U.S. Policy: The Choices*

Ahead, ed. Jane Menken (New York: W. W. Norton, 1986), p. 132.

4 Paul Demeny, "Population and the invisible hand," *Demography* 23, no. 4 (1986): 473-488.

5 John Cleland and Christopher Wilson, "Demand theories of the fertility transition: An iconoclastic view," *Population Studies* 41, no. 1 (March 1987): 5-30.

6 *Bevolking en welzijn in Nederland*. Rapport van de Staatscommissie Bevolkingsvraagstuk, December 1976.

7 Gunnar Myrdal, *Population: A Problem for Democracy* (Cambridge, Mass.: Harvard University Press, 1940), p. 30.

Copyright of Population & Development Review is the property of Blackwell Publishing Limited. The copyright in an individual article may be maintained by the author in certain cases. Content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.