THOMAS MALTHUS

AND THE MAKING OF THE MODERN WORLD

Alan Macfarlane

CONTENTS

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My work on Malthus over the years has been inspired by many friends and teachers. It is impossible to name them all, but I would like to pay especial tribute to Jack Goody, John Hajnal, Keith Hopkins, Peter Laslett, Chris Langford, Roger Schofield Richard Smith and Tony Wrigley, who have all helped in numerous ways. Other acknowledgements are made in the footnotes. Gabriel Andrade helpfully commented on several of the chapters.

As always, my greatest debts are to Gerry Martin, with whom I often discussed the Malthusian Trap, and to Sarah Harrison who has always encouraged my interest in population and witnessed its effects with me in the Himalayas.

REFERENCES, CONVENTIONS AND MEASURES

Spelling has not been modernized. American spelling (e.g. labor for labour) has usually been changed to the English variant. Italics in quotations are in the original, unless otherwise indicated. Variant spellings in quotations have not been corrected.

Round brackets in quotations are those of the original author; my interpolations are in square brackets.

The footnote references give an abbreviated title and page number. The usual form is author, short title, volume number if there is one (in upper case Roman numerals), page number(s). The full title of the work referred to is given in the bibliography at the end of the book, where there is also a list of common abbreviations used in the footnotes.

Where several quotations within a single paragraph are taken from the same author, the references are given after the last of the quotations. Each page reference is given, even if it is a repeated page number.

Measures

A number of the quotations refer to English systems of measurement, some of which are now no longer in use.

Value: four farthings to a penny, twelve pennies (d) to a shilling (s), twenty shillings to a pound (£). One pound in the seventeenth century was worth about 40 times its present value (in 1997).

Weight: sixteen ounces to a pound, fourteen pounds to a stone, eight stone to hundred-weight (cwt) and twenty hundred-weight to a ton. (Approx one pound (lb) equals 0.454 kg.)

Liquid volume: two pints to a quart, four quarts to a gallon. (Approx one and three quarter pints to one litre)

Distance: twelve inches to a foot, three feet to a yard, 1760 yards to a mile. (Approx 39.4 inches to 1 metre).

Area: an acre. (Approx 2.47 acres to a hectare).

PREFACE

This is a different kind of book to the others in the series. The other works, on Montesqieu, Adam Smith, Tocqueville, Maitland and Fukuzawa, are largely based on an intensive encounter over a few months of intensive reading and writing – although there may have been earlier shorter periods when the author's work influenced me (as with Tocqueville or Maitland) and certainly the after-effects of the intense reading has continued over the years.

In the case of Thomas Malthus (1766-1834), however, his work has provided a foil and framework for three of my books and I keep returning to his ideas. Thus this book is arranged chronologically to reflect three periods of influence. There is some overlap between the treatments, but I have not altered the particular chapters; to do so would have meant writing a very different book.

The first period lasted from my undergraduate days until I finished my second doctorate, that is to say my twenties and thirties, between 1963-1978. In this phase it was Malthus' general theory of the relation between population and resources that interested me. His ideas formed the framework for my Ph.D. work in the Nepal Himalayas, later published as *Resources and Population* (1976). I was deeply concerned about the looming world crisis of over-population, a concern that was felt by many people in the 1970s, then faded somewhat, but has now returned in a new form.

The second period covered my middle life, around my late thirties to late forties (1979-1990), when I was working on the history of English villages and in particular the nature of love and marriage in England. Here Malthus' work on marriage and fertility again provided the framework for a book of a different kind – *Marriage and Love in England* (1986).

The third was in my fifties, that is 1993 to about 2000, when I was trying to compare the demography of England to that of Japan. Here the focus switched from marriage to death – war, famine and disease. Malthus again provided the framework, this time for a third book *The Savage Wars of Peace* (1997). Whether my sixties will also erupt with another Malthusian work, it is difficult to say. But for one thinker to be the underpinning of three books in three different decades has been unique in my life.

It seems appropriate to abstract these encounters into one volume and link them to Malthus, even if the format is rather different from the other major encounters. There is no sustained treatment of Malthus' life or his methodology. And much of the detailed examination of the data that his questions threw up is in the three books themselves. Yet any account of my life's work that did not indicate what a huge debt I owe to Malthus would give a very skewed impression. It is pretty evident to me now that I look back over my intellectual life that climbing Mount Malthus has had more influence on me than any other encounter. And while people are always wishing him away or believing he has been 'disproved', unlike many other prophets, he is still very much alive and his warnings are still relevant in the twenty-first century.

THE ENCOUNTER WITH MALTHUS[1]

My first memory of being really stirred by the question of the possible origins of industrial civilization, and in particular the relations between population and economic development, was as an undergraduate reading history at Oxford. I was writing an essay on the causes of the industrial revolution in England. I surveyed the state of the argument as to whether it was rising birth rates or falling death rates which had led to the surge of population from the middle of the eighteenth century, it appeared that scholars were almost equally divided on the degree to which population growth was a cause or a consequence of the industrial revolution and what caused that growth. I still remember my excitement at discovering a problem that was so clearly a puzzle to some of the best historians of the period.

It seemed obvious that mortality was dropping, yet all the theories to explain why this happened were clearly inadequate. 'Higher living standards' seemed to be important, but what these were was left vague; of particular medical changes, the disappearance of plague was mentioned though it was not clear why this had happened; changes in the habits of lice, better nutrition, absence war, improvements in hygiene, medical improvements, even a change in the virulence of disease were canvassed. Scholars appeared to be circling round a large problem yet unable to resolve it - better at knocking down theories than building them up. It was possible for me as an undergraduate to show that the decline of plague had happened too early (it disappeared two generations before the rapid growth of population); that there was no evidence of viral changes; that the medical improvements were insignificant, with the possible exception of smallpox inoculation, that the nutritional improvements were very questionable, as were improvements in hygiene.

Then there was a similar puzzle in relation to fertility. An almost equal number of authors believed that this was the crucial variable. But what caused the rise in fertility? The only reasons given were that it was due to the same rising living standards that affected mortality, perhaps by allowing people to marry younger. Yet again the arguments and evidence seemed weak and inconclusive.

Part of the difficulty appeared to be caused by the fact that data on mortality, nuptiality and fertility was so poor, as it was based on aggregative analysis (totals of baptisms, marriage and burials from parish registers). I did not then know that French demographers were developing a new technique, 'family reconstitution', which would transform our understanding of the past by giving much more precise statistics on marital fertility, infant mortality and age at marriage. E.A.Wrigley first applied the method to English data in his work on Colyton in Devon. Along with the exploration of early listings of inhabitants by Peter Laslett, this made the period of the mid-to-late sixties an enormously exciting one in English historical demography. The academic work was given practical relevance by a growing awareness of ecological and demographic problems at a world level.

[1] Modified from the introduction to *Savage Wars of Peace*. There is a more detailed account of my involvement with demography at http://www.alanmacfarlane.com/savage/ROOTS1.pdf and ROOTS2.pdf

Some of the results of these new findings were summarized in my first publication, an article in *New Society* (10 Oct. 1968) reproduced below, in which I wrote that 'We are discovering that there was birth control in Stuart England; that Europe had a "unique marriage pattern", combining high age at marriage with a large proportion of never married persons; that the small "nuclear" family predominated in most of the pre-industrial west; that one of the major factors permit- ting the accumulation of capital and hence industrial expansion in the late eighteenth century was late marriage and the consequent slow population growth - roughly one quarter of one percent per annum in the 200 years before industrialization.'

Despite the new data and frameworks, the questions I had encountered in the early 1960s were still wide open. It seemed difficult to proceed any further in solving the large question about the relations between industrialization and population by remaining within the European context. This was one of the lessons to be drawn from the great step forward taken when, in 1965, John Hajnal published his essay on the European marriage pattern.[1] By setting the west European marriage data alongside that for Eastern Europe and Asia, he was able to see both the major peculiarities of the west (late age at marriage and selective marriage) and the fact that there was a pattern or system. On a more limited scale a number of other demographers made such contrasts within Europe, for instance Wrigley between France, England and Scandinavia. Thus it became clear that only through a wider method of contrast would make many of the central features of the English demographic past become visible at all. In order to broaden my framework into a comparative one I went to Nepal in December 1968 for fifteen months, to work as an anthropologist among a people called the Gurungs.

It is difficult to analyse the effects of this experience, and of many further trips since 1986, in altering the way I approached the English past. Much of the influence was at a deep level of perceptual shift that alters both the questions one asks and the implicit comparisons one has in mind when evaluating evidence.

Witnessing the perennial problem of disease, the sanitary arrangements, the illness of young children, the difficulties with water, the flies and worms, the grueling work and the struggle against nature in a mountain community made clear to me in a way that books or even films alone could never do, some of the realities that the English and Japanese faced historically.[2] Of course it was different. Each culture is different. But to feel in the blood and heart and to see with one's eyes how people cope with a much lower amount of energy, medical care and general infrastructure makes one aware of many things. Without this experience I know that I could not have written this book. Trapped in late-twentieth-century western affluence it would be impossible to feel or know much of what has been important to the majority of humans through history. Watching and studying a village over the years also makes one more deeply aware, as does all anthropological work, of the interconnectedness of things, the holistic view of a society.

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[1] Hajnal, *European Marriage*.

[2] My general account is in Macfarlane, *Resources* and a preliminary account of the medical situation is in Macfarlane, *Disease*.

It is important to stress this experience, for in the body of this text Nepal is seldom mentioned despite the fact that much of what I have seen when examining England and Japan has become visible by setting them against a backdrop of Nepal. De Tocqueville once explained, 'my work on America.... Though I seldom mentioned France, I did not write a page without thinking of her, and placing her as it were before me.'[1] Nepal helped me to understand the Japanese case and Japan helped me to get England into perspective. A straight, two-way, comparison of either England-Nepal or Japan- England would not have been enough.

At the theoretical level, the Nepalese experience enabled me to look at England, and indeed the whole of Western Europe, from the outside and to see more clearly its demographic and economic peculiarities. In the last chapter of my book *Resources and Population*, reproduced below, I tried to characterize these peculiarities by developing a model which incorporated both the work of European historical demographers and my Nepalese data. The model differentiated between what I called 'crisis' regimes, such as that in Nepal in the past, where the rapid rise in population over the last hundred years was due to the elimination of war, famine and epidemic disease, and 'homeostatic' regimes, such as England in the past, where fluctuation in population were mainly due to changes in fertility rates.

When I returned with a whole set of new data, the English historical world began to look different. The work of Wrigley, Laslett and others inspired me to undertake my own family reconstitution studies to help resolve the puzzles. But since it was clear that demography was embedded in the wider economic and social context, Sarah Harrison and I developed a technique of 'total reconstitution' which used all the surviving documents of a community.[2] This enabled us to reconstruct the parish of Earls Colne and to a lesser extent Kirkby Lonsdale in Cumbria. This resolved a number of the factual questions method and one could make some progress.

The combination of a large data collecting and analysis project and the pressures of starting to teach anthropology meant that I only came up for air in 1977 and it was then that I explicitly realized that my perception of English history had completely changed. Using the comparative anthropological framework, I suspected that much of the theory that had been developed to understand English history since the 1950s needed revision.

In 1977, 1 was tugged away from the themes of marriage, family and fertility about which I had long been brooding and felt compelled to write *The Origins of English Individualism* that represents a re-assessment of aspects of English history in the light of my Nepalese experience and of my growing immersion in comparative anthropology. Hardly had the main writing of this book been finished when I returned to the subject of English fertility, in particular reflecting on what effects my shift of interpretation of the English past had on my understanding of that part of the demographic puzzle concerned with fertility, as described in the section on 'Modes of Reproduction' below.

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[1] Tocqueville, *Memoir*, 1, 359.

[2] Macfarlane et al., *Reconstructing*, and for the documents themselves see the Earls Colne website off <www.alanmacfarlane.com>.

Looking back, my book on English individualism helped to break a deadlock in my own thought. Wrigley and Hajnal had shown that the marriage and fertility side of the English situation were very important. But the puzzle of why there was this unusual marriage pattern remained. It seemed that peasantry, or a domestic mode of production, was deeply association with high fertility and a low age at marriage. Yet England deviated from this. The assumption that the English had been 'peasants' in the normal anthropological sense appeared to be wrong. The general theory connecting high fertility and peasantry remained, it was just that England might well be an exception.

In essence, I began to understand why fertility was often low and attuned to the needs of a market economy in England. In true 'peasant' societies, based on the domestic mode of production, to expand family size was rational. In England, with its early concepts of private property and individual rights, there were considerable 'costs' in having children. These ideas were expanded and published in my book on *Marriage and Love in England 1300-1840* (1986) in which I attempted to explain the reasons for the unusual demographic history of England and in particular that part concerned with restrained fertility. The three introductory chapters and conclusion are reproduced below.

It had become obvious since Hajnal's work that the key lay in the European marriage system and in particular a late and selective marriage pattern which could be varied in some sort of complex relation to the economy. I explored the various pressures that lay behind a system which Thomas Malthus recognized in his discussions of the 'preventive check' in the second edition of his *Principles of Population*. In the final chapter I attempted to show how marriage was linked to economic growth, and arose out of the early capitalist and individualistic nature of English society that I had described in *Individualism*. With this book I felt I had come to grips with the conundrum which Wrigley had identified - how did the marriage system work and what were its correlates.

The other half of the problem, that concerning mortality, had not been addressed. I had noted that historically English mortality patterns seemed to be unusual.[1] Yet I had made no progress in analysing this other side of the demographic puzzle. This was partly because the difficulty of solving the problems in the field of mortality was even greater than those in relation to fertility. With fertility, the mechanism of how certain levels were maintained in Western Europe had become clear after Hajnal's paper. In the case of mortality none of the arguments put forward to explain the sudden decline in English mortality from the middle of the eighteenth century carried conviction. We knew that it happened, but we did not know either how or why it happened. With fertility, one is mainly out in the open, dealing with visible human motivations and institutions. With mortality, the solutions are less visible, involving complex chains of bacteria and viruses affected by many human and non-human forces.

Apart from posing fresh questions by suggesting a great contrast between the English and Asian case, the Nepalese experience did not really help in its solution. Nepal's rapid population growth from the middle of the nineteenth century confirmed that medical improvements were not needed for

[1] Macfarlane, *Culture*, 155-6.

population growth to occur. It showed that the elimination of war and famine was enough to let natural fertility cause a doubling of the population in each generation. But none of this really helped with the English puzzle. I had come to an insurmountable obstacle and it was only a chance invitation to visit Japan in 1990 that opened up another way of approaching the problem.

I had long been struck by the similarity of England and Japan. Both were islands, both passed through an authentic 'feudal' period, both were noted for a puritanical form of world religion, and both became pioneers of industrialization in their respective regions. As I studied and re-visited Japan in the 1990s, the similarity in the shape of the population graph in England and Japan and the fact that both seemed, early on, to have separated production and reproduction suggested that it might be worth investigating the matter further.

What was particularly intriguing was that there now seemed to be two exceptions to the 'normal' population patterns, as represented by Nepal. By investigating these two cases side by side, might it be possible to resolve some of those problems which still baffled historians and demographers? The possibility of real advance was made more likely by the rapid developments in social and demographic knowledge in both England and Japan. The general shape of what had happened in England was becoming much clearer, especially through the publication in 1981 of E.A.Wrigley and Roger Schofield's Population *History of England*. Furthermore, the work of a number of Japanese and foreign scholars, who had applied the methods of European demographers to the voluminous Japanese records, particularly that of Hayami, Saito, Yamamura, Hanley, Thomas Smith and, more recently in relation to epidemics, Jannetta, now made a real comparison possible for the first time.

In *The Savage Wars of Peace,* I started to investigate the problem of how some nations able to break out of the Malthusian trap of war, famine and disease. War and famine are the obvious starting place since their containment was the foundation upon which any sustained development would be built. If a country is subject to war or constantly ravaged by famine, or, more often, by both, there is little chance of proceeding to a level where the next threat, epidemic disease, can be overcome.

It is not too difficult to see how, through the chance of islandhood, England and Japan escaped from the interlinked curses of war and famine. But though this gave them an advantage it is still very difficult to understand how they increasingly avoided epidemic disease. While it was known that a number of diseases did decline in England from the later seventeenth century, and in Japan some centuries earlier, none of the possible causes for the decline seemed convincing.

There seemed few grounds for believing that the mortality decline could be the result of medical improvements, of environmental changes, of changes in the virulence of disease organisms, or even improvements in nutrition. It was much easier to prove that each cause was insufficient; even combined they could not be shown to lead to the decline that was to be explained.

In attempting to find an explanation I adopted several strategies. Having dealt with war and famine as two parts of the mortality pattern, I decided to distinguish the various classes of disease. The obvious division was between the

ways in which diseases were transmitted. Here I followed Macfarlane Burnett's distinction between three of the major branches of infectious diseases: those passing through water and food, those borne by insect or other vectors, and those traveling through the air.[1]

By examining each class of disease in parallel in England and Japan I found that a new set of questions emerged. For instance, the absence or presence of certain diseases in Japan threw light on the situation in England and vice versa. It became clear that the differences were the result of material and cultural features of the environment. The shock of difference led the search towards a number of aspects of the environment that would have remained largely invisible if one had remained within one culture area.

I felt that the way to proceed was to see which environmental factors were associated with each of the major branches of disease. This approach worked reasonably well with those bacterial diseases that are directly affected by human practices such as the keeping of animals, the nature of clothing, eating, washing and so on. Yet even when an explanation was given of how a certain set of environmental factors caused the rise or decline of a disease, there was often an area of cultural practice that in turn needed explanation. In the final section on disease I dealt with those diseases that are most difficult to explain, namely the air-borne epidemics where the direct environmental approach seemed less likely to be fruitful.

The lowering of mortality was only one part of the escape. Having achieved less than maximum mortality a country was faced with the second of the Malthusian traps - runaway population growth. Malthus had foreseen that humans sometimes achieve, through a windfall resource or a new technology, a temporary lowering of their death rate for a generation or two. But this would shortly be offset by a rapid rise in population as the perennial high fertility rate operated. This would in turn bring them face-to-face with war, famine and new kinds of disease. How could this second trap be avoided?

Having established that English and Japanese fertility seems to have been kept well below the theoretical maximum over long periods at a time when wealth was increasing, I examined the three ways in which this could be achieved. I begin with exposure to sexual intercourse, that is the pattern of marriage and sexual relations that brings women and men together. I then look at the impediments to conception, in other words the biological factors (such as sick-ness, work strain, lactation) and contraceptive technologies which prevent conception in the first place. I then look at the third area, that is the treatment of unwanted conceptions, in particular abortion and infanticide. Yet even when I had established the different mechanisms used in the two countries which led to their lowered fertility, there was still the question of motivation, which I discuss in relation to heirship.

The difference between research and writing creates a contradiction which it may be helpful for readers to be aware of. As I proceeded I became more and more aware of the symbiotic relations between all aspects of what I was studying. This was true of the relations between different types of disease, for instance the vector-borne and water-borne diseases. It was true of the relation between mortality and fertility, for example the ways in which infants

[1] Burnett, *Infectious*, ch.8.

were fed was important in both respects. The interrelations between war, famine and disease were equally strong. The connections and mutual inter-effects of housing, clothing and hygiene were very powerful. My central theme became the complex set of links between hitherto apparently rather remotely connected phenomena.

Yet the book has to 'murder to dissect', to split apart in order to be read sequentially. Only in the conclusion is it possible to bring all the threads together by considering the chains of cause and consequence which led to the unusual outcome whose effects we see around us now. I make some conjectures about the extent to which the developments suggest conscious design or random chance, in other words how far they indicate the Darwinian process of 'blind variation and selective retention'. Thus, starting with Malthus I ended with Darwin.

THOMAS MALTHUS AND HIS THEORY

The Reverend Thomas Robert Malthus was born in 1766 and died in 1834. He was the son of a clergyman and one of eight children. He was educated at Jesus College, Cambridge and later became Professor of History and Political Economy at the East India Company's College at Haileybury in Hertfordshire. His most famous work, the *Essay on the Principles of Population*, was published in 1798 when he was 32. It has been seen partly as a reaction to the Utopian thought of William Godwin and others, as well as that of Malthus' own father. It is as an extension and formalization of the ideas of the classical economist Adam Smith and others who had laid down some of the basic ideas concerning the tendency of population to outstrip resources.

Malthus' theory in brief was that humankind is permanently trapped by the intersection of two 'laws'. The first concerned the rate at which populations can grow. He took the 'passion between the sexes' to be constant and investigations showed that under conditions of 'natural' fertility (with early marriage and no contraception, abortion or infanticide), this would lead to an average of about fifteen livebirths per woman. This figure is confirmed by modern demography. Given normal mortality at the time, and taking a less than maximum fertility, this will lead to what Malthus called geometrical growth, namely 1,2,4,8,16. It only needs 32 doublings like this to lead from an original couple to the present world population of over six billion persons.

The second premise was that food and other resource production will grow much more slowly. It might double for a generation or two, but could not keep on doubling within an agrarian economy. Thus there could, in the long run, only be an arithmetic or linear growth of the order of 1,2,3,4. Incorporated in this later theory was the law of diminishing marginal returns on the further input of resources, especially labour. Underpinning the scheme was the assumption that there was a finite amount of energy available for humans through the conversion of the sun's energy by living plants and animals. The conclusion was that humankind was trapped, a particular application in the field of demography of the more general pessimism of Adam Smith. Populations would grow rapidly for a few generations, and then be savagely cut back. A crisis would occur, manifesting itself in one (or a combination) of what he called the three 'positive' checks acting on the death rate, war, famine and disease.

After the publication of this theoretical account of the 'laws' of the trap, Malthus undertook a great deal of empirical research, travelling through Europe and reading widely in history and anthropology. On the basis of this he published what is termed the Second Edition of *The Principles* but is, in effect, a very different book. Basically he turned his laws of population into tendencies, likelihoods or probabilities, to which there were exceptions. The trap became avoidable. For he had discovered in England itself, as well as Switzerland and Norway, that there were what he called 'preventive checks' which could act to keep down the fertility to a level which would be in line with resource growth. He divided these into 'moral restraint' (celibacy and

delayed marriage) and 'vice' (contraception of all kinds, abortion and infanticide), of which he disapproved.

Malthus believed that the only force strong enough to overcome the biological drive to mate was a set of desires created in a society and culture where people were affluent, unequal and ambitious for social status. They would forgo the delights of large families for other goals. A mixture of human avarice and human reason could lead people to avoid the trap.

Malthus' work was hugely influential at the practical level. He contributed significantly to the discussion of the reform of the Poor Law and to the ideas of how to run the British Empire, many of whose administrators he taught at the East India Company's College. He is also the only social scientist who has had a revolutionary effect in the biological sciences. His idea that humans normally suffer from very high mortality rates, that war, famine and disease periodically cut swathes through historical populations, was seminal. Entirely independently, both Charles Darwin and A.R.Wallace described how reading Malthus' *Principles* provided them with the key to unlock the secret of human evolution, that is the principle of the survival of the fittest, of random variation and selective retention.

Malthus wrote before the huge resources of energy for humankind locked up in coal and then oil became widely available. For a while, from the middle of the nineteenth century, it looked as if the Malthusian trap was no longer operative. A combination of science (in particular chemistry) and of new resources had made it possible to more than double production in each generation. First England, then parts of Europe, Japan and elsewhere escaped from the trap. His laws could be inverted. Population grew slowly, resources exponentially.

Yet now in the early twenty-first century, as the resources reach their limits and the external costs of the massive use of carbon energy become apparent in pollution and global warming, it appears that the ghost of Malthus has arisen again. Likewise, as we realize the ability of micro-organisms to outpace human medicine, our overcoming of disease in an increasingly crowded world seems at risk. Finally, the tensions that lead to war are further aggravated by shortages and crowding.

Malthus' realistic message that we can postpone the crises of war, famine and disease, but that they will almost certainly strike again in a much more serious way within an increased total population, again makes sense. His advice, that only by stabilizing and probably reducing total population levels through the rational control of fertility, seems ever more salutary. Like all traps, the Malthusian one can be avoided. Yet it can only be circumvented if we are constantly aware of its nature as specified by the lucid first theoretical exponent of the biological limits imposed by human nature and the physical world.

PART ONE: MALTHUS

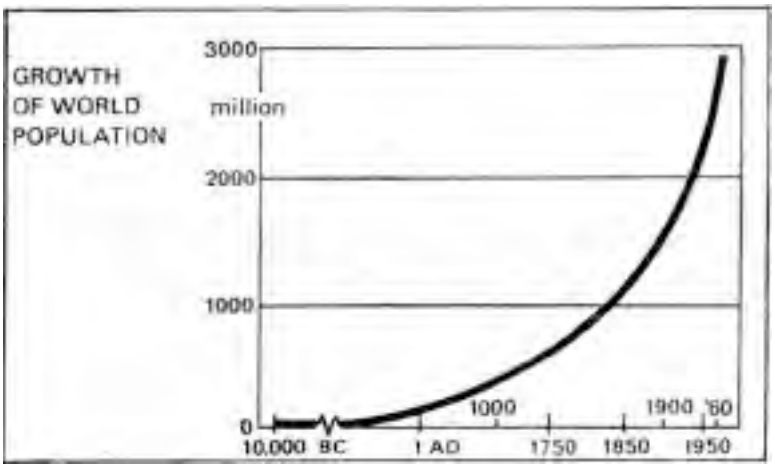
(1963-1978)

POPULATION CRISIS: ANTHROPOLOGY'S FAILURE[1]

[1] I would like to acknowledge my debt to the late Professors D. V. Glass and Keith Hopkins of the London School of Economics, whose stimulating lectures clarified a number of the issues raised in this article. The International Planned Parenthood Federation provided help in a number of ways.

We are rapidly moving towards a population catastrophe which will make past plagues and two world wars seem insignificant by comparison. There will not be enough food to go round. By 1900, world population had reached about 1.2 billion: by the year 2000 it will be at least six billion, unless it is halted by thermonuclear war or massive epidemics.

In 1953 the United Nations warned people that it was 'easily possible that the means of producing the necessities of life will not be increased as rapidly as population grows, and that the level of living of the world's peoples will be depressed as their numbers increase.' Today, with the general failure of most family planning campaigns and a growth of population that in the 1960s outstrips even the highest United Nations projections of the early 1950s, the situation looks much grimmer. Probably islands - Mauritius and Java, for instance - will suffer first. Then America will no longer be able to feed India. When the 'third world' collapses, our markets and supplies of raw materials will be closed. The western economy will topple.



What contribution may social anthropologists make to the urgent research needed to mitigate this disaster (it is already too late to completely avoid it)?

To live for a while in a pre-industrial society is a necessary part of a social anthropologist's training. This soon brought home the importance of birth, marriage and death to the early field-workers. These ' vital statistics' and the social framework of reproduction (kinship and marriage) might have made ardent demographers of anthropologists. Surprisingly, this did not happen.

Demography is basically concerned with changes *over time* in the structure of population. Most anthropological studies have tended to be static cross-sections of a particular society at the point at which it was visited by the field-worker. Perhaps because of this, investigators have showed only a slight interest in demography. The normal field-situation means that the evidence gathered from informants is impressionistic and non-statistical. The

description is either of what *ought* to happen or what was *thought* to happen. There has been the fatal tendency, inherent in every discipline, to let the nature of the evidence dictate the problems, rather than to start with the problem, and range through the evidence for answers. Anthropologists are urged by their handbook, *Notes and Queries in Anthropology*, to collect 'urgently needed' material 'for the study of the relation between demographic conditions and social institutions.' But they have seldom gone beyond broad classifications of the population by overall number, age and sex. Any latent enthusiasm for demographic information waned when it became clear that most native informants were hazy about their age and even hazier about past trends in population figures. Without written records, all attempts to assess population changes seemed doomed.

There are some exceptions to this picture; and from social surveys some extremely useful statistical data were extracted, particularly on Africa. But the continued absence of a general interest in the subject is shown by the various mouthpieces of the anthropological profession. *The Biennial Review of Anthropology* for 1959 to 1965, the *Journal* of the Royal Anthropological Institute, *Man*, the various monographs of the Association of Social Anthropologists and even the *British Journal of Sociology* scarcely contain any references or articles on population by British anthropologists. Practically the only worthwhile contribution is an article by Mary Douglas in the *British Journal of Sociology* for September 1966, which shows the vital importance of prestige, rather than direct economic factors, in determining population control.

Nor, to judge from the *American Anthropologist*, are American colleagues more interested. The textbooks offered to anthropology students scarcely mention demographic features. Neither 'population' nor 'demography' will be found in the indexes of the recent general textbooks by Beattie and Lienhardt.

If we compare the situation in anthropology to that in allied disciplines, the gaps seem even worse. In the last ten years the forceful application of demographic methods to historical material has not only revolutionized demography, it has cleared the space for a whole new discipline - historical sociology.

Already important works have appeared and special institutes have been set up to study 'population and social structure' - for instance, that at Cambridge under Peter Laslett and E. A. Wrigley. Collections of essays such as *Population in History* edited by Glass and Eversley, and the very stimulating spring 1968 issue of the American magazine *Daedalus*, which is entirely devoted to 'historical population studies,' show the sophisticated state that analyses have already reached. The detailed examinations of particular regions in France and England by Goubert, Wrigley and others have destroyed many of the accepted theories and suggested others.

We are discovering that there was birth control in Stuart England: that Europe had a 'unique marriage pattern,' combining high age at marriage with a large proportion of never married persons; that the small 'nuclear' family

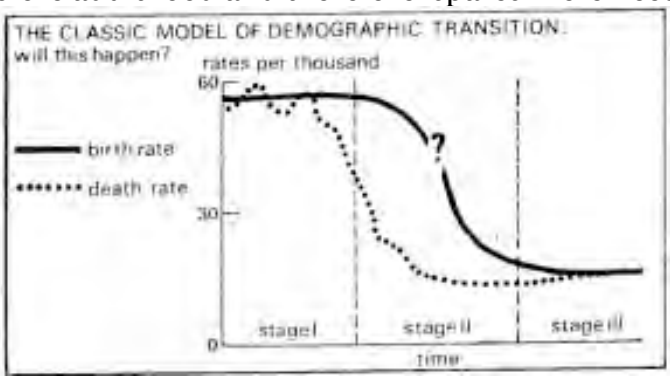
predominated in most of the pre-industrial west; that one of the major factors permitting the accumulation of capital and hence industrial expansion in the late 18th century was late marriage and the consequent slow population growth-roughly one quarter of 1 per cent per annum in the 200 years before industrialisation.

As usual, as many problems have been created as solved. Why were there such differences in preindustrial fertility decline between different groups and different areas? Why did the fertility of the British peerage fall steadily between about 1620 and 1740? Why did so many people remain unmarried? Why was marriage age so high - between 20 and 30 for both men and women - and what consequences did such a marital structure have on sexual norms? Why was birth control introduced in parts of 18th century France and what methods were used to limit families in 17th century England? Why did plague die out in England in the 17th century when mortality from other diseases was rising and when there had been no significant advances in medical techniques for dealing with epidemics?

The impetus from French demographers is paralleled by the enormous energy of American sociologists. In the construction of 'analytic frameworks for the study of variables affecting fertility,' in many detailed analyses of areas of South America, the United States and the Far East, Kingsley Davis, Judith Blake, J. Mayone Stycos, Frank Lorimer and others have - like the historical demographers - suggested a mass of hypotheses which it will take the skill of all the social sciences working in collaboration to test. Much of this stimulating work was summed up some time ago by Ronald Freedman in a report in *Current Sociology* for 1961-62, and there are proliferating studies in the periodical *Demography*.

Where could the anthropologists begin to contribute?

There is now a considerable literature on the social factors which influence fertility rates. Until recently it was argued that fertility would be high in non-industrialised societies. Children were desired and cheap to raise; the extended family spread the cost of increasing population; the system of inheritance encouraged the subdivision of holdings. People wanted children both for emotional and 'religious' reasons - to continue the line, pray for them when dead, or satisfy the gods - and as an insurance against sickness and old age. They realised that, with very high infant and child mortality, many heirs would be lost before adulthood and therefore 'spares' were needed.



Then, according to the older hypotheses, comes the demographic and economic revolution. Prolonged education makes children more expensive, and factories mean that the labour of a new generation goes to employers rather than into the family holding. The nuclear family emerges, freed from its wider ties, and there is not such a wide group to share the cost of producing many children. Other institutions take over insurance against sickness and old age.

Increasing mobility, both geographical and social, emphasises the value of having a small family. The death rate has dropped and people see that it is no longer necessary to have many children to ensure the survival of some. There are new consumer goods to invest in - cars, houses, leisure - and children as sources of prestige, insurance and spiritual welfare seem less attractive. Contraceptive techniques improve and become easily available.

Unfortunately this automatic transition, which, if swift enough, might have saved the world from the disastrous consequences of introducing death control without corresponding birth control, is clearly not occurring. The rapid rise in American population in recent years, the fact that urbanised Africans show no sign of having smaller families than those living in rural areas, the fact that Indians who live in nuclear families have as large families as those living in extended groups: all these and other evidence show that what happened in 19th century Europe was not a *necessary* result of economic and social change, bound to happen wherever industrialisation occurred. It was the result of these changes in a society which already had a particular system of kinship and marriage, and considerable capital reserves.

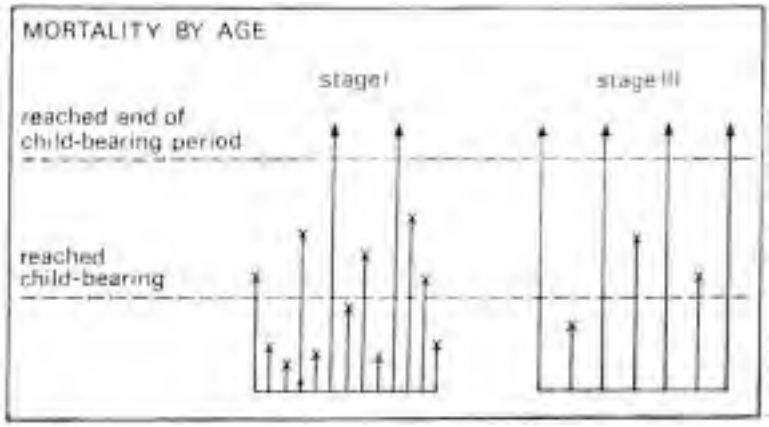
We urgently need further research on the effects of various factors on fertility. Why, we may ask, did fertility decline in Spain, a deeply Catholic, strongly rural society with low social mobility and late, limited industrialisation from the late 18th century onwards? The whole hypothesis of the 'demographic transition' is now in question and hence all optimism based on it is suspect.

Research is also needed on the methods and effects of fertility changes. What happens to the status of women, family life and the labour market when birth control is introduced? How does information flow on family planning; along what lines of communication, by what pressures? How do reactions vary with different techniques, different social structures?

The cost of very high fertility to the individual mother in terms of time, pain and insecurity, is becoming steadily more obvious. The wider economic effects of very rapid population growth on the economy are also becoming clearer. The United Nations *Determinants and Consequences of Population Trends* some time ago made it clear that the growth rates in many parts of the underdeveloped world make capital accumulation impossible and increase unemployment. The growing school of 'economic anthropology' could well explore these issues.

Less studied have been the non-demographic effects of various mortality rates. Until recently the average Society studied by anthropologists

would have an expectation of life at birth of between 20 and 35 years. Roughly a quarter of the children born alive would be dead at the end of their first year of life. Approximately a quarter of the marriages would last the full child bearing period without one of the partners dying. More than half a dozen of a person's close relatives would have died by the time he was 25 (brothers and sisters, parents, uncles and aunts). That is assuming that he reached the age of 25, for there was only a small chance of doing so.

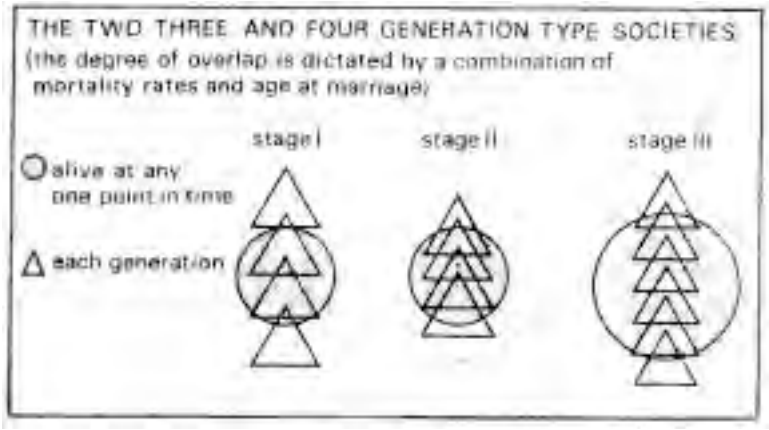


If one reads anthropological accounts of primitive societies, one seldom gains an insight into this world of continual disease and frequent death. As an article in the *Biennial Review of Anthropology* for 1963 made clear, 'medical anthropology' is still at a very rudimentary stage. The difficulties of transmitting 'culture' when a third of the total population dies off every ten years; the huge waste of resources (calculated to be 23.5 per cent of the national income in many underdeveloped countries by the United Nations) through the loss of children before they become producers; the effects of constantly broken homes on emotional relationships within the family; the disincentive to spend much on specialised education when people are so likely to die - and hence the training of replaceable 'role-performers' rather than individualists: these are some of the possible consequences of high mortality. The constant assertion that ties, especially with children and between husband and wife, are never deep because they are likely to be terminated at any moment by death, is only one of the hypotheses open to anthropological and comparative study.

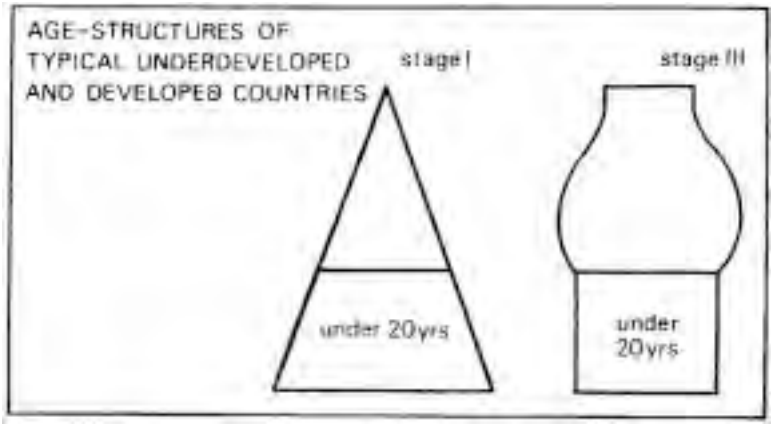
To probe further into the traditional hunting grounds of anthropologists: it is becoming clear, as V. W. Turner has pointed out, that endless discussions of witchcraft and other beliefs about the causation of illness *must* contain discussions of medical and demographic factors. How true is it, for example, that medical improvements in modern Africa will rescue the 'disease-logged' societies from what many western observers consider to be 'irrational' fears? The whole realm of the interrelation between demographic features and 'cosmologies' has scarcely been scratched: beliefs about ancestors, the causation of misfortune, the after-life, space and time, all are likely to be affected by the current demographic movements which are radically changing life-expectations and experiences.

Many other aspects of demography would greatly contribute to anthropological discussions. A comparative analysis of the effects of various age-structures on attitudes and institutions would be rewarding. Pre-industrial England, with fairly high adult mortality rates, and also high age at marriage, probably had a structure which we might call two-generational. Two generations would, normally, be alive simultaneously.

When expectation of life remains roughly the same, but age at marriage is much lower (as in many traditional 'primitive' societies), there would be a three-generation overlap. But when, as in present-day America, and, to a lesser degree, parts of Europe, fairly low marriage age is combined with a tremendous increase in expectation of life, then we have the unprecedented 'four-generation family.'



The dramatic effects of these structures on intergenerational relationships, and the transmission of power and wealth, are obvious but unstudied. The different shapes of the age-pyramids in the typical pre- and post- 'demographic transition' situations are equally important.



The society where over 50 per cent of the population is under 20 years of age has given way, in our own century and in England, to a structure more weighted towards middle and old age. There is growing debate about the consequences of this for the old. But the many other repercussions, and the situations where it is happening ten times faster than in Britain, have been little analysed. Anthropologists were, at one time, fond of discussing 'joking

relationships' between grandparents and grandchildren. They seldom seem to have stopped to consider whether the demographic situation would leave any grandparents alive to joke with.

Likewise, population density and the speed of population growth will not only affect the economic structure, they may well shape personality and perception. There have been few advances in this field since David Riesman bravely attempted to relate personality-types to curves in population trends in *The Lonely Crowd*. Here, as elsewhere in the relations between population and society, the fundamental problem is one of the most exciting in the social sciences - and one raised by, among others, Durkheim and Levi-Strauss - namely, what are the relations between statistical tendencies and social attitudes?

Anthropologists often speak of the world as their 'laboratory,' with various societies as their 'experiments.' At present the 'laboratory' for the anthropologist interested in demography is in a particularly curious state.

At one extreme, there are some western societies like our own, with patterns of longevity, large numbers of old people, few marriages broken by death, death mainly caused by degenerative rather than epidemic diseases. These societies present unprecedented features which have only emerged during the last fifty years. At the other extreme, there are still societies which exhibit those classic characteristics associated with high fertility and mortality. In between there are many societies moving from 'primitive' to modern European patterns. I have suggested some of the social and mental repercussions of all these different situations. What appears likely to happen, however - and to provide the final terrible dimension to the overall picture - is that some societies will start sliding downhill again.

Signs of this on an economic level are beginning to appear. In 1967, we are told, each person on earth had 2 per cent less to eat - although, obviously, the loss was unequally divided. In the 1970s this process will accelerate. Some of the consequences in the field of social administration and maintenance of order have been outlined in Professor Titmuss's recently reissued work on Mauritius. But the effects of growing ill-health, increasing epidemics, deterioration of housing, widespread malnutrition, leading into absolute starvation, have scarcely been explored by social anthropologists. Fieldworkers are going to find their investigations increasingly impinged on by such factors. Unequipped intellectually for such a situation, they are likely either to continue to ignore the evidence of misery or to be completely baffled.

When Professor Titmuss investigated the Mauritian population he was forced to 'try to break out of western specialisations and combine the insights of the economist, historian, anthropologist, demographer, political scientist and doctor.' Future work to mitigate the population crisis will need to follow such cross-disciplinary teamwork. The 'anthropologist,' who seems to be growing increasingly interested in statistics and urban sociology and hence likely to be receptive to demography, will both benefit from and advance such research. He will provide a constant reminder of the importance of studying values and attitudes, as well as the more strictly material aspects of the

problem. He will find that demographic analysis, which is, above all, an attempt to describe social process, will help him to make the long-announced transition from static analysis to a framework which can deal with social change.

Not only will he analyse new topics, but his discussions of conventional topics such as kinship, land tenure, witchcraft, will be improved considerably. Equipped with the United Nations manuals on methods and the training in basic demography, which so few university departments of anthropology now provide, he will he well placed, in his small-scale way, to collect the detailed statistics and attitude surveys which are urgently needed. It is hoped that he will also not shrink from the larger task of making heroic speculations.

RESOURCES AND POPULATION

One major hypothesis concerning the interrelation between resources and population is represented by the work of Malthus. As somewhat over simplified by his critics, Malthus' position appears to be a variety of Parkinson's Law: population expands to absorb the food resources available, and a little bit over. Certainly this is one of the arguments put forward by Malthus. He stated that 'population has this constant tendency to increase beyond the means of subsistence'.[1] He also argued that 'population invariably increases when the means of subsistence increase', unless halted by one of the three 'preventive checks' of moral restraint, vice or misery.[2] Furthermore, he did see the chain of causation to be one that led from physical resources, particularly food, to population. Thus he wrote that 'agriculture may with more propriety be termed the efficient cause of population, than population of agriculture...'

[1] Malthus, *Population*, I, 6.
[2] Malthus, *Population*, I, 314-5, 304.

Yet the determinism is not as simple as it may seem, for he continues the passage by stating that 'they certainly react upon each other, and are mutually necessary to each other's support'.[1] Malthus did not merely see population growth as a reaction to increases in food production, it had a momentum of its own. Thus he wrote:

> We will suppose the means of subsistence in any country just equal to the easy support of its inhabitants. The constant effort towards population, which is found to act even in the most vicious societies, increases the number of people before the means of subsistence are increased. The food, therefore, which before supported eleven millions, must now be divided among eleven millions and a half.[2]

To this extent population growth is an independent variable. But what Malthus is unwilling to concede is that such growth will *necessarily* have beneficial effects on agriculture. Since his argument on this subject anticipates the major counter-thesis put forward since his time, it is worth quoting the passage in full. He writes:

> That an increase of population, when it follows in its natural order, is both a great positive good in itself, and absolutely necessary to a further increase in the annual produce of the land and labour of any country, I should be the last to deny. The only question is, what is the order of its progress? In this point Sir James Stewart ... appears to me to have fallen into an error. He determines, that multiplication is the efficient cause of agriculture, and not agriculture of multiplication. But though it may be allowed, that the increase of people, beyond what could easily subsist on the natural fruits of the earth, first prompted man to till the ground; and that the view of maintaining a family, or of obtaining some valuable consideration in exchange for the products of agriculture, still operates as the principal stimulus to cultivation ... We know, that a multiplication of births has in numberless instances taken place which has produced no effect upon agriculture, and has merely been followed by an increase of diseases; but perhaps there is no instance where a permanent increase of agriculture has not effected a permanent increase of population somewhere or other.[3]

Here Malthus agrees with those who argue that population growth stimulates agricultural growth. He goes on to say, however, that there is no inevitability about this causal chain. Population *may* grow autonomously *without* leading to agricultural growth. If so, there will be disaster. We will see that Malthus is fairly close to his later critics in this view. He also shares their basic psychological premise concerning man, namely that he is lazy and uninventive, or, put in another way, that he places leisure above every other good. Thus Malthus speaks of 'the natural indolence of man' and argues that 'A state of sloth, and not of restlessness and activity, seems evidently to be the natural state of man.'[4]

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Malthus' four main propositions can conveniently be summarized as follows.

A. Population growth *sometimes* leads to agricultural growth.

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[1] Malthus, *Population*, II, 144.
[2] Malthus, *Population*, I, 15.
[3] Malthus, *Population*, II, 144.
[4] Malthus, *Population*, II, 25 and I, 59.

B. Resource growth *always* leads to population growth (though he later qualified this).
C. Population will always grow, unless curbed by moral restraint, vice or misery.
D. Population grows geometrically (exponentially), resources grow arithmetically.

There are a number of major criticisms that can be made of these propositions, some of which are based on evidence which has been accumulated since Malthus wrote. There is little disagreement with Proposition A, indeed it is the central tenet, in a strengthened form, of those who criticize him most forcefully.

The second proposition can be shown to be invalid as a universal generalization, even though many agricultural historians would agree with Slicher van Bath that 'In an agricultural society, favourable economic conditions almost inevitably lead to an increase of population'.[1] It is ironic that it is English history, in the century before his birth, that provides one of the best negative examples to this thesis.

It is generally agreed that between about 1650 and 1730 the population of England remained static, despite considerable improvements in agriculture and communications and hence a growing gross national product and per capita income.[2] Increased wages 'instead of occasioning an increase of population exclusively, were so expended as to occasion a decided elevation in the standard of their comforts and conveniences'.[3]

Another type of counter-argument has emerged from the study of what happens after a sudden high mortality. It appears to be a logical extension of Proposition B that if resources become more abundant, then population will grow quickly to absorb them, whatever the cause of resource increase. It would seem to be predicted that if an epidemic or famine significantly reduced population, without destroying the resource base, fertility would increase or expectation of life improve, so that the newly vacant resources would quickly become absorbed. This is found to be the case in certain societies, for example seventeenth century France,[4] but England is again a negative instance. In the high mortality of the 1630s, for example, the crisis was succeeded not by a rapid spate of marriages and births but the reverse.[5] Likewise, after the Black Death in England, population continued to decline for another century. The sum of all this is that Proposition B is false; increased resources do not always lead to an immediate expansion of population.

[1] Slicher Van Bath, *Agrarian History*, 314.
[2] The evidence concerning population, wages and cost of living is conveniently summarized in Wilkinson, *Poverty and Progress*, 71.
[3] Flinn, *Industrial Revolution*, 66 is here quoting Malthus; the same point is made by Chambers, *Population and Society*, 59.
[4] Graphs 18-20 in the supplement to Goubert, *Beauvais*, show that baptisms, marriages and deaths moved together until the middle of the eighteenth century.
[5] Wrigley, *Population and History*, figure 3:4.

Proposition C is also untrue. Even in the absence of 'vice, misery and moral restraint' population does not necessarily grow. A good example of this negative finding seems to be Tibet, whose population appears to have been declining since it reached its peak between A.D. 600 and 800. There are no obvious ecological or economic reasons to explain this; resources have been plentiful. Social and psychological factors have intervened.[1] Studies of animal behaviour support this negative conclusion. It is impossible to explain fluctuations in animal numbers merely in terms of food resources or to assume that numbers will always rise if there are resources available. Quite the opposite is true.

> All the animal populations which have been the subject of observation have been found to suffer periodic declines in numbers which are not generally the result of starvation. These declines often continue in successive generations under conditions in which there could be no question of a shortage of food, and yet may result in the near-annihilation of a local population.[2]

It is, of course, just possible to reconcile these findings with Malthus's argument by defining 'vice' and 'moral restraint' very widely so that they include territoriality, the selective neglect of the young and the old, animal migrations, delayed marriage. Restated in this more general way the proposition would be 'Population will always grow unless there are physical or cultural checks which prevent it growing'. Although this appears to be a tautology, it does contain one central and crucial truth, namely, that, unimpeded, population always grows rapidly. If maximum fertility is allowed and there are no checks, there will be a huge expansion of any population. Given this premise, the problem is to analyse the checks. This would appear to be a more helpful way to look at problems than to assume that populations are normally in equilibrium, loss of which is the problem.

The final proposition concerns the speed of growth; exponential growth of population as opposed to arithmetical growth of food resources. With figures for world population in our mind there is no need to emphasize Malthus' prescience.

Technological growth however has made the growth of resources appear to be exponential also. This, for example, is the background to the remark by Gellner that 'one is tempted to invert Malthus and observe that technological advance makes resources grow geometrically, whilst population growth becomes at most arithmetical'.[3] This is one of the cases where changes have occurred since Malthus' time which have made his analysis over simple.

The other enormous change, which in many ways only reinforces his warnings, has been in death control. Public health measures and antibiotics have added a new element to the debate, especially as they are not necessarily related to social and economic developments of other kinds.[4] Malthus' argument is based on changes in fertility, for this alone was really within the control of man when he wrote. The problem as he envisaged it was that fertility rose to absorb

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[1] Ekvall in Spooner (ed.), *Population Growth*, 269.
[2] Stott in Vayda (ed.), *Environment and Cultural Behaviour*, 91.
[3] Gellner, *Thought and Change*, 118; Wrigley, *Population and History*, 53, make a similar point.
[4] As Lord Balogh, among others, has pointed out in the preface to Dumont and Rosier, *Hungry Future*, 10.

an increase in resources. What he could not have foreseen was that there would be huge decreases in the death rate, not only in wealthy countries but also in materially poor countries. To take but one example, in Jamaica the deaths per thousand dropped from 26.9 in 1916-20 to 9.5 in 1956, while over the same period the births per thousand increased marginally from 36.4 to 37.3.[1]

The other major advance since Malthus' day has been in what he would have termed 'vice', namely contraceptive technology. Although, so far, birth control has proved immeasurably weaker than death control, there is a new element in the various equations.

As Malthus stated, the causal chain between population growth and resource growth is the 'hinge' on which the whole argument turns. If he is right, the picture is extremely pessimistic. Although population *may* grow autonomously it will *certainly* grow as a result of any technological advance. Mankind is trapped he quotes approvingly the remark that 'distress and poverty multiply in proportion to the funds created to relieve them'.[2]

It follows from this position that the only way to break out of the vicious spiral is to control population rather than to increase resources; 'Finding, therefore, that from the laws of nature we could not proportion the food to the population, our next attempt should naturally be to proportion the Population to the food'.[3]

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It is not surprising that such a hypothesis should have many critics. Here we will consider the most powerful of these anti-Malthusian arguments, that put forward most cogently by Boserup[4] and given statistical backing by Clark[5] and historical and anthropological support by Dumond and Wilkinson.[6]

The basic aim of what we shall call the Boserup thesis is to turn Malthus on his head, in other words to return to the position of Sir James Steuart and the eighteenth century agriculturalists. Boserup states that 'population growth is here regarded as the independent variable which in its turn is a major factor determining agricultural developments'.[7] Or, as Clark puts it, 'population increase generally comes first, and then, usually with great reluctance, people adopt technically more efficient methods because they have to provide for the

[1] Blake, *Family Structure in Jamaica*, 7,8. These crude rates do not take into account changing age structure and are therefore only a very rough index.
[2] Malthus, *Population*, I, 274.
[3] Malthus, *Population*, II, 172.
[4] *Conditions of Agricultural Growth* (hereafter cited as *Conditions*).
[5] *Economics of Subsistence Agriculture* with Margaret Haswell; *Population Growth and Land Use*. Geoffrey Hawthorn has pointed out to me that Boserup and Clark are proposing crucially distinct theses; the former applying to the transition from hunting and gathering, through swidden, to settled agriculture, the latter to all socio-economic systems. It is therefore only at the most general level that the two can be bracketed together. He also rightly suggested that some of Boserup's theses can be saved by re-formulating them and limiting them strictly to hunting and gathering or swidden systems.
[6] Dumond, 'Population Growth', was published in the same year as Boserup's work, yet the two seem to have had no influence on each other. Dumond's argument (especially on 313, 318) that population growth is often a cause of economic growth is identical to Boserup's.
[7] *Conditions*, 11.

increased population'.[1] As Boserup admits, the historical and anthropological evidence for such a thesis is really too thin to prove that the chain of causation runs one way or the other. She therefore argues from *a priori* grounds as follows.

Proposition A. People prefer leisure to all other goods.
Proposition B. The intensification of production, for example the move from hunting and gathering to swidden cultivation and then from swidden to settled multi-cropping, always brings more work for less rewards.
Proposition C. The only force strong enough to force people to intensify production is increased population.
Proposition D. Since population growth can no longer be explained by growth in resources (since the chain works the other way) some other cause of such growth must be suggested, apart from improved living standards. The suggestion is that this is a purely technical improvement in health due to medical and sanitary developments.
Proposition E. Given the above propositions, population growth is not an evil, indeed it is necessary. For example, it is true to assert, as Boserup does, that 'primitive communities with sustained population growth have a better chance to get into a process of genuine economic development than primitive communities with stagnant or declining population'.[2]
Proposition F. Population growth is not only a *necessary* cause of economic development, it is also implicit that it is a sufficient cause. It will, except in exceptional circumstances, trigger off such development.

When this supposedly automatic development does not occur it is explained away as a 'special case' rather than dismantling the whole model. For example, Clark cites a number of cases of 'extreme congestion' or 'rural over-population' from all over the world and then explains that they 'represent an unhappy by-road from the normal course of economic development'. Yet he remains puzzled and concludes that 'It is hard to give any generalized reason as to why this state of affairs should come about. On the whole we must seek for political and historical rather than for narrowly economic reasons. Historically, some deficiency in the political order often prevented or impeded the development of towns and of commercial activities....'[3] Since it is basically in this last proposition that the emotional appeal of the model lies, we will return to it later.

The assertion that people prefer leisure to all other goods, though echoing Malthus, seems untenable as a universal generalization, as any anthropologist could show. Status and prestige, power, material wealth, merit or other religious rewards, all these and other goods are frequently desired more than leisure. People may be inventive or work harder in pursuit of such goods irrespective of population growth. Once this is accepted, much of the rest of the model evaporates.

The second proposition, that the intensification of production always brings more work for less rewards, has a considerable measure of truth. No longer is it

[1] Allison (ed.), *Population Control*, 231.
[2] *Conditions*, 118.
[3] *Economics of Subsistence Agriculture*, 159, 162.

possible to assert that the more primitive the means of production, the harder people have to work. For example the! Kung bushmen, who are hunters and gatherers, have been calculated to have a working week that varies from 1.2 to 3.2 working days per adult: Lee concludes that 'hunters may actually enjoy more leisure time per capita than do peoples engaged in other subsistence activities'.[1] But while there is much truth in the proposition, it is not universally valid. Ethnographic evidence can be brought against it, for example Waddell in a detailed study of a New Guinea society concludes by arguing that there is 'little to suggest that extensive systems are inherently more productive than intensive ones' per unit of labour input.[2]

Another complication explains a certain ambivalence in the use of this argument. Boserup and Clark are not merely prepared to accept that economic development automatically leads to less productive labour. They hope to show that at a certain point 'cultural and social' development will also occur, which requires growing leisure. Their case would hardly be a strong one if mankind were on a treadmill, working ever harder to feed more mouths. Thus it is necessary for Boserup to argue that 'a period of sustained population growth would first have the effect of lowering output per man-hour in agriculture, but in the long run the effect might be to raise labour productivity in other activities and eventually to raise output per man-hour also in agriculture'.[3] This appears to contradict Proposition B, and the reason why advanced industry should be able to free mankind from drudgery while advanced agriculture cannot do so is not made clear.

The third proposition, that the only force strong enough to force people to intensify production is increased population, is linked with Proposition A, the leisure hypothesis, which has already been disputed. Counter-evidence of a historical nature can also be adduced. There is evidence for a considerable 'agricultural revolution' in England during the period 1650-1730, yet this occurred in a period of static population in this country. Surpluses were produced to export and to raise the standard of ostentation of the rich and the standard of living of the middling, *not* merely as a response to threatened starvation. In fact the whole Weber-Tawney thesis of 'acquisitive capitalism' is centred on the attempt to show how certain societies pursue economic growth apparently for its own sake, pushed on by the 'work ethic' beyond customary targets.

Proposition D states that since population growth are not the result of growth in resources, some other external cause must be found and that this is medical improvement in the widest sense. Thus the emphasis is on a decline in mortality rather than, as Malthus argued, a rise in fertility. Although this is not a subject of central importance to Boserup for, as she says, 'our inquiry is concerned with the effects of population changes on agriculture and not with the

[1] Lee in Vayda (ed.), *Environment and Cultural Behavior*, 62, 74. A general summary of the data is contained in Sahlins, *Stone Age Economics*, ch.1.
[2] Waddell, *Mound Builders*, 218.
[3] *Conditions*, 118.

causes of these population changes',[1] yet it is rather essential that some alternative to agricultural growth as the cause of population growth be offered.

Thus Colin Clark saw England's population growth during the late eighteenth century and onwards as due to a fall in mortality owing to the disappearance of plague and in the nineteenth century as due to the elimination of smallpox and discoveries such as anaesthetics.[2] Boserup also assumes that, 'medical invention and some other factors', other than food production, explain population growth.[3] Clark realized that finding such an explanation 'may seem to some trivial or irrelevant. But it is not. Here we find the underlying cause, for better or worse, of the increase in the rate of world population growth which has been going on ... since the middle of the eighteenth century'.[4]

Recent studies of demographic history suggest that Clark's interpretation is over simple and mostly incorrect. Medical improvement and a decline in the death rate do not seem to have been the causes of population growth. A detailed comparison of two English communities based on the technique of family reconstitution has shown that it was a lowering in the age at marriage and hence a rise in fertility, as Malthus argued, that caused population growth, rather than a decline in mortality.[5] More generally, as we have noted, the data from Nepal and other parts of the world shows that rapid increases in population have often occurred long before any medical improvements can have been effective. Thus Proposition F is also incorrect.

If the previous propositions had been correct, it could be argued, as in Proposition E, that population growth is not an evil; in fact it is a *necessary* cause of economic growth. Since the causal chain has been disputed at every point, the proposition has little force. It is further weakened by a large number of studies which tend to show that population growth makes economic growth more difficult, rather than easier.[6]

Having rejected the earlier propositions, it is even more difficult to accept the final proposition, namely that population growth is not only a necessary but also a sufficient cause of economic growth. Although Boserup does not state this to be an iron law, her message is essentially optimistic. She argues that 'the scope for additional food production in response to population growth is larger than usually assumed' and dismisses the negative examples that could be brought forward as follows. 'Growing populations may in the past have destroyed more land than they improved, but it makes little sense to project past trends into the future, since we know more and more about methods of land preservation and are able, by means of modern methods, to reclaim much land, which our

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[1] *Conditions*, 14.
[2] *Population Growth and Land Use*, 50-1.
[3] *Conditions*, 11-12.
[4] *Population Growth and Land Use*, 50-1.
[5] McKeown and Brown, 'Medical evidence' in Glass and Eversley (eds.), *Population in History*. David Levine, 'The demographic implications of rural industrialization' (Cambridge Univ., Ph.D., 1974).
[6] Major studies by Coale and Hoover, Hoover and Perlman, Ruprecht, Enke, Newman and Allen, are discussed by Jones 'Population growth' in the *New Guinea Research Bulletin*, no. 42. All the studies show that per capita income will increase faster with lower fertility. A less dramatic conclusion is reached in the survey of the problem by Easterlin in Ford (ed.), *Social Demography*.

ancestors have made sterile'.[1] Yet Boserup admits that there is no inevitability of a technological advance occurring after population growth. 'If it is true . . . that certain types of technical change will occur only when a certain density of population has been reached, it of course does not follow, conversely, that this technical change will occur whenever the demographic prerequisite is present'.[2]

This nod in the direction of the many great famines which have afflicted most of the great civilizations, India, China, France, has an implicit optimism and belief in 'technology' behind it. This was perhaps understandable in 1965 before Bihar and Sahel and the growing starvation of the last few years.

While the emotional appeal of the Malthusian and counter-Malthusian arguments lies in rigid predictions, which are not likely to be true, there is a principle, which lies behind both positions that has very great implications for social anthropology. This is that while there is a two-way link between population and agriculture and social structure, population growth is, in itself, an important force for change. This is more explicitly recognized by Boserup and her followers.

By asserting that population growth is the in dependent variable, mainly the result of forces outside the control of individuals, they let loose a chain of causation which is powerful enough to explain much of what anthropologists observe. Population is an independent variable, restructuring the world as we know it, altering institutions and modes of thought inexorably, if practically invisibly. If this is true, then it is patently the concern of the anthropologist.

Yet this conception of population growth as the prime mover lies embedded in Malthus also. We have seen that he admitted the possibility that population growth could occur autonomously. In a sense, expansion of resources does not cause population growth, it *permits* it. Such resource growth merely relaxes for a while the vicious controls which normally hold back the operation of this immensely powerful 'natural law'. The 'natural law' of population growth to which he subscribes is that the superfluous fecundity of human beings which arises from the 'passions of man kind', is independent of all human institutions. Population expansion is more powerful than political and social systems; only death, from disease, famine, or war, can hold it in check. Arguing against the Utopian Godwin, Malthus wrote that 'though human institutions appear to be, and indeed often are, the obvious and obtrusive causes of much mischief to society, they are, in reality, light and superficial in comparison with those deeper-seated causes of evil which result from the laws of nature and the passions of mankind'.[3] The accidental amelioration of the environment by expansion of resources only allows such laws to operate to their full.

Without committing oneself to a full Malthusian position, it is easy to see that both Malthus and his critics present a strong case for believing that population trends, rather than economic changes, provide a framework for understanding the current world. It certainly appears to justify the method

[1] *Conditions*, 43.
[2] *Conditions*, 41.
[3] Malthus, *Population*, II, 12.

adopted in this treatment of a Nepalese community where population growth has been taken to be the determining variable, while resources and social structure are treated as dependent.

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In order to be convincing, however, we do not need merely to know *why* population grows, but also *how* it grows and how it is held in check. We need, therefore, to investigate actual models of population change. The search for such models led to the growth of what has been called 'transition theory', that is an attempt to correlate demographic patterns with the major social transformation since Malthus' day, namely industrialization. The model is a fairly simple one. It divides population situations into three kinds as follows:

1. That in which neither mortality nor natality is under reasonably secure control and where the potential growth is large despite a possible current low rate of increase.
2. That in which, while both natality and mortality are declining, natality decreases at first less rapidly and then more rapidly than mortality, and the population grows until it reaches the third stage.
3. That in which natality and mortality are low and under secure control, and the population is stationary or in a state of incipient decline.[1]

This is illustrated in Fig.1. Superficially such a model seems to fit with historical experience in the West fairly well. It also has the comforting virtue of predicting that all will be well in the end. Furthermore it offers some hope of fitting demographic change with stages of economic and social growth.[2] It goes further in that it also suggests reasons for the changes from stage to stage. These have been summarized as follows:

> Transition theory assumes that pre-modern populations maintain stability of numbers by balancing high, though fluctuating, death rates with high birth rates. As they begin to experience the effects of modernization, improvements in nutritional and health standards reduce mortality while fertility remains high and rapid growth ensues. Later, urbanization and other social changes associated with the more 'mature' stages of industrialism create pressures favouring smaller families, and the birth rate falls, once again approaching balance.[3]

This theory is anti-Malthusian in that population growth is the dependent variable, medical changes and life styles the moving forces.

Fig. 1. The demographic transition: classic model

[1] From U.N. *Determinants*, 44.
[2] For example, those suggested by Ryder and summarized in Hawthorn, *Sociology of Fertility*, 70.
[3] Wrong, *Population and Society*, 18-19.

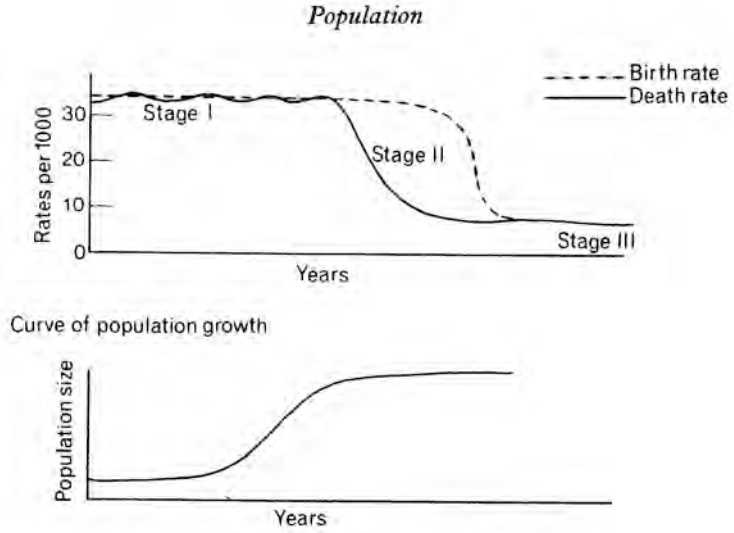

Fig. 16.1. The demographic transition; classic model.

A number of powerful criticism can and have been made of this model. At the general level it fails to separate causal from descriptive propositions. It generalizes from the historical pattern of population growth followed by western Europe in the past three centuries, but such generalizations, even if they were based on much sounder historical evidence, would not necessarily apply to the rest of the world. Even as a descriptive model, however, recent evidence from a variety of sources casts doubt on its empirical accuracy.

Three major criticisms are as follows. Firstly, there is no parallel between Europe before the industrial revolution and the contemporary Third World. It appears that fertility in Europe was much lower than in Asia and Africa and that population densities were not as high as in the main paddy areas today. Nor, as we have seen, is it clear that it was a drop in mortality that caused population growth in the late eighteenth century; a rise in fertility may have been just as important. Crucial differences between the West and the contemporary Third World in stages two and three of the model have become obvious. For example, mortality has already declined in a number of non-Western countries far more rapidly than it declined in Western Europe in the nineteenth century. Nor does industrialism and urbanism always bring a drop in fertility a number of cities, for example, have very high fertility rates.[1] Yet the stereotype lies at the back of much thinking on the subject and is therefore worth a closer examination. Since most social anthropologists have traditionally worked within societies that would be classified as in 'Stage One', or 'Stage Two', it is at these traditional patterns that we will look.

The major characteristic of 'Stage One' or what we will call 'Traditional' societies, according to the above thesis, is that there is little population growth because of high death rates which cancel out high birth rates. According to Boserup, for example, 'until recently rates of population growth were low or very

[1] Some of the evidence is summarized by Boyden in Harrison and Boyce (eds.), *Structure of Populations*, 426.

low in most preindustrial communities'.[1] The logic behind the argument seems cogent and has been stated by Warren Thompson.

> There is mathematical proof that birth and death rates must have been at about the same level, on the average, throughout most of human history. This proof is quite simple. If population grows steadily at any given rate, even a very low rate, it will double in a given period of time ... Man has had a high death rate until rather recently because of what Malthus called the positive checks to population growth - disease, famine, and war.[2]

Such a hypothesis has several important implications. It suggests that the main control on population has been perennial malnutrition and everyday disease. It also seems to suggest that fertility is high *because* mortality is high; in other words, people see that they have to breed in order that the race survive. It would then seem logical to argue that 'One hard-headed argument for continuing efforts to lower mortality rates is that fertility is unlikely to be brought down very much until mortality rates are lowered'.[3]

A closer look at both data and logic suggests many flaws in this hypothesis. While it may be true that on the average human population has grown at an extremely low rate over long periods, this may conceal an entirely different short-term pattern than that implied above. This pattern has been well out lined by Kunstadter as follows.

> A more nearly accurate model of demographic conditions in the small hunting and gathering or agricultural communities within which most non-modern men have lived may have been high fertility (beyond the level needed for replacement in normal years) with low-to-medium death rate, with occasional or periodic variations in death rates due to natural disasters (floods, earthquakes, climatic fluctuations disrupting the normal environmental relations, insect plagues, crop failures ... etc.), and probably more recently, epidemic diseases. Chronic food-shortages must also have been a limiting factor on population growth.[4]

This alternative pattern, which we may term a 'crisis' model in accordance with its description by French historical demographers, may be understood more easily by way of Fig. 2, which contrast it with the original model implicit in the demographic transition hypothesis.

Although we have no long-term data for hunting and gathering communities, it is possible to examine the history of various agrarian societies. Diagrammatic evidence for Chinese population 500-1953,[5] for Egyptian population 700 B.C.-1966,[6] and for French seventeenth-century parishes,[7] all show a pattern similar to that suggested by the 'crisis' model. In normal years there is a fairly rapid growth, which is cut back periodically by massive disasters of various kinds.

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[1] *Conditions*, 56.
[2] Thompson, *Population and Progress*, 16.
[3] Jones, 'Population growth' in *New Guinea Research Bulletin*.
[4] In Harrison and Boyce (eds.), *Structure of Populations,* 315.
[5] Clark, *Population Growth and Land Use*, 72.
[6] Hollingsworth, *Historical Demography*, 311.
[7] Goubert, *Beauvais*, 45. The concept (and term) 'crisis' has been adopted from the work of the French historical demographers.

The important consequence of establishing this alternative traditional pattern is that it throws open again the whole question of why population growth has recently been occurring in many parts of the world. It is no longer satisfactory to explain it in terms of lowering of everyday very high mortality as a result of medical improvements or an improved standard of living. It is more profitable to look at the elimination of periodic crises. This is especially important for the study of Nepalese demographic history since it appears likely that, like most societies, those in Nepal fitted the 'crisis' pattern. To explain the growth of population from at least 1890s, therefore, we need to look to the elimination of crises.

Fig. 2 Two models of pre-transition populations.

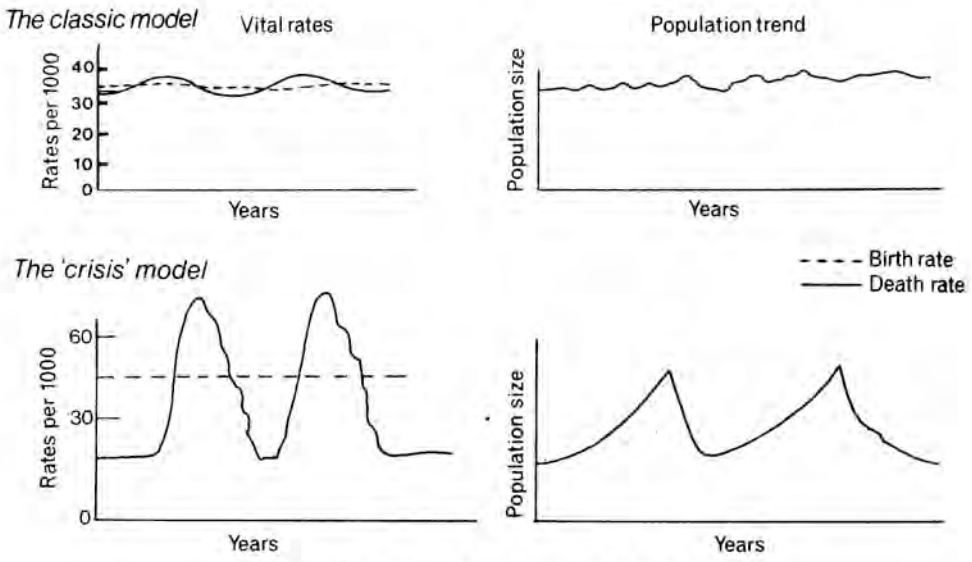

Fig. 16.2. Two models of pre-transition populations.

Of what nature, we may wonder, were such crises? If we look at the eight events which are believed to have led to massive declines in Egyptian population, it appears that five were conquests, in other words 'war'. Many of the Chinese declines were also caused by conquest; the invasions and devastations of the Mongols are thought to have reduced the Chinese population to half its former level within fifty years, over 60 million people dying or failing to be replaced.[1] One of the results of the conquest of Central Mexico by the Spanish was the appalling drop in the population from about 25 million in 1519 to 2.5 million in 1608.[2] The Thirty Years War, on a cautious estimate is reckoned to have lowered the population of Germany from 21 to 13.5 million.[3] But warfare, with its major side-effects of starvation and plague, has declined as a major check during this century. The two World Wars together are estimated to have led to the death of up to 60 million persons □ a little more than the Mongol

[1] Clark, *Population Growth and Land Use*, 72.
[2] Hollingsworth, *Historical Demography*, 135.
[3] Russell, *Violence*, 182. Dr Wrigley has pointed out that the type of disease circulated by the Spanish invasion of Mexico external) and by the armies in the Thirty Years War (internal) were very different.

conquest of one nation, China.[1] The demographic impact of war, the localized famines and epidemics it brings, have been minimized and the percentage of world population destroyed by it this century will probably, on present levels, be the lowest for many centuries.

While war has evidently been a major check to the growth of large agricultural civilizations, the same is probably true in many of the smaller hunting and gathering societies studied by anthropologists, of whom the Gurungs, until recently, were an example. The lack of historical records makes it difficult to establish this fact but Brookfield and Brown, in their study of the Chimp of New Guinea, argue that warfare and epidemics were common in the past and continued until the early part of the present century.[2] The elimination of such endemic warfare under external pressure is among the reasons for population growth. It is easy to see that the same may be true in many parts of Asia and Africa. In societies which are small and close to subsistence level, even a small skirmish at the wrong time of year can have disastrous effects on production and lead to high mortality. The effects of such mortality may last for several generations.

If this second model is correct it helps to explain the previous puzzle of why population growth in many parts of the world seems to have started well before any medical advances or rise in the standard of living. For example, the population of Nepal, Java, Ceylon, Northern Thailand, and elsewhere seems to have been growing from at least the early nineteenth century. This could not be explained by the earlier model. If, however, there had been a 'crisis' pattern, all that would be needed would be more effective peacekeeping, by an external force such as The British in India, to prevent periodic wars. This explanation fits well with the hypothesis developed by Vayda and others that warfare is often developed, or acts, as a form of population control.[3]

The improvements in communications and agriculture that prevent localized famines have also helped to allow natural growth to occur. This is a complex phenomenon since technological changes are only a part of the explanation. As Kunstadter has put it:

> With regard to famine as a limit of population, perhaps as important as the introduction of new food technologies has been the introduction of social changes. The effect of these is to cushion the temporary fluctuations in availability of foods. Money, credit, markets, and wage-labour opportunities have meant the expansion of economic activities far beyond the bounds of primitive community ecosystems.[4]

Again, what has probably happened is not that yearly production has been increased dramatically, but rather that the periodic crises caused by bad weather, pests, or other phenomena which might reverse a generation's population increase in one year, have been eliminated. This process has been observed at work in eighteenth-century Europe and probably helped to

[1] The figures are from Russell, *Violence*, 9.
[2] Brookfield and Brown, *Struggle for Land*, 73.
[3] Vayda (ed.), *Environment and Cultural Behavior*, ch. 10. Some striking evidence from medieval Europe and from China, as well as a similar argument to that in the preceding paragraphs, is presented in Dumond, 'Population growth', 304-7.
[4] In Harrison and Boyce (eds.), *Structure of Populations*, 328.

eliminate the crisis pattern, in France.[1] This may not be such an important factor in some Third World countries since, as Wilkinson has observed, 'starvation appears to have been a rarity before the disruptive effects of European contact'.[2] Yet, during the last century, such changes have been important in allowing continued population growth.

It is also difficult to estimate the importance of the eradication of disease. As a correlate of warfare, epidemics have taken a huge toll. It is worth reminding ourselves, as a recent author has pointed out, that pestilence and malnutrition are often assumed to have 'always been a feature of human existence until ... the advances of medicine in the past half century'. 'In fact, for well over 90 percent of man's time on earth, before the Neolithic development, neither pestilence nor malnutrition is likely to have been a common cause of ill health or death'.[3] The major virus diseases of today, cholera, dysentery, plague, tuberculosis, typhoid, are all-dependent on high human densities and can therefore have been prevalent only in fairly recent times.[4] Like warfare, they appear to have been a phase through which world societies passed when a certain density occurred. Like warfare and localized famine, however, they appear to have been temporarily eliminated on a large scale. The influenza epidemic in India in 1918-19 was the last great mortality; up to twenty million lives were lost.[5] As a proportion of the total population of India today, some 50 million deaths would be the equivalent. Even the current tragedies in Bangladesh, Sahel, Bihar and elsewhere are not, as yet, on this scale.

The model above suggests that population growth is the normal condition of mankind, only held back by periodic crises. This view has been held by a number of historians and anthropologists.[6] It helps to explain much of the data we have, for though there clearly have been some societies with the classic features of perennial high mortality and high fertility, probably a greater number have followed the 'crisis' pattern. Yet these two models do not account for all the pre-transition populations of which we know. A third model that needs to be developed is one where there is a homeostatic adjustment between births and deaths that keeps fertility below its maximum. Here the check is not mortality, but social controls on fertility. We shall call this third model the 'homeostatic' pattern.

This pattern has been observed in England between the fifteenth and eighteenth centuries, in France during the later eighteenth century and in Norway[7] at the same date. In the latter two countries it developed out of an earlier 'crisis' pattern. The 'crisis' and 'homeostatic' patterns are illustrated in Fig. 3. Perhaps the best example of the homeostatic pattern in action is in England during the period 1650-1730 when population was kept level, not by very high mortality rates, but by keeping fertility below its maximum. Here

[1] Goubert, *Beauvais*, ch.3.
[2] Wilkinson, *Poverty and Progress*, 23.
[3] Boyden in Harrison and Boyce (eds.), *Structure of Populations*, 415.
[4] *Idem*.
[5] Quoted in Thompson, *Population and Progress*, 125.
[6] For example, Helleiner, 'Vital revolution' in Glass and Eversley (eds.), *Population in History*, 79-86; Kunstadter in Harrison and Boyce (eds.), *Structure of Populations*, 348.
[7] Wrigley, *Population and History*, ch.3; Drake, *Population in Norway*, 39.

England was strongly contrasted with France with its 'crisis' pattern.[1] In England it was marriage patterns and, possibly, the use of contraception, which kept population level with resources. In England this pattern even allowed resources to increase while population was static.

Fig. 3. Two models of population patterns.

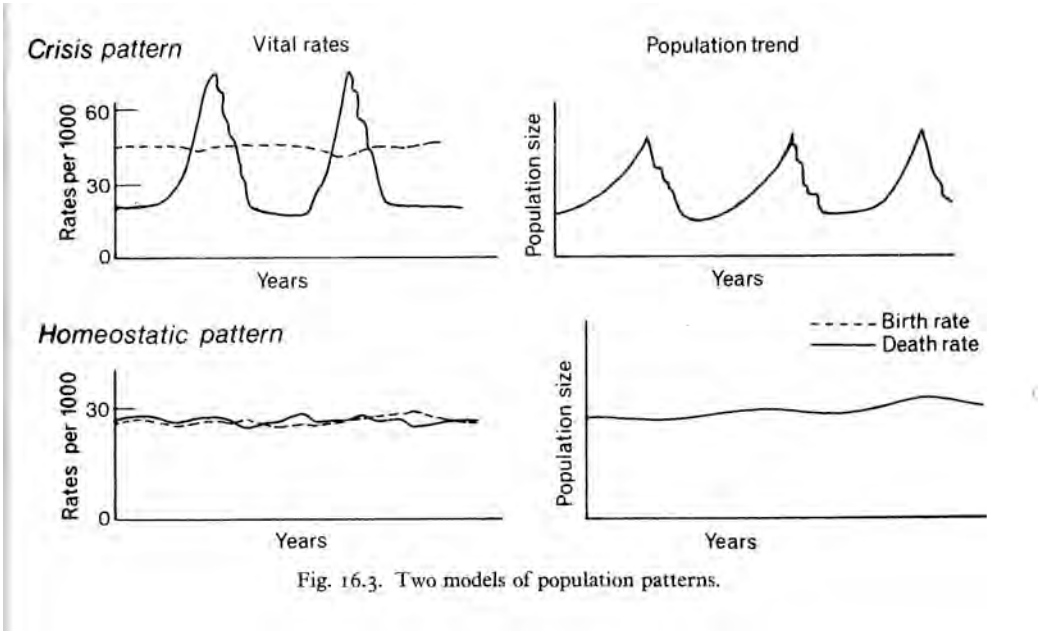

Fig. 16.3. Two models of population patterns.

Interestingly, animal populations also appear to exhibit both 'crisis' patterns and 'homeostatic' ones. The 'crisis' pattern is very similar to that described above. Here is one description of the process.

> Some of them (i.e. animals) accept crowding and violence as a recurrent situation, and populations of these animals have regular cycles of rise and decline, with crises that cut them down to size every four or five generations. These species include voles ... and muskrats.... At the beginning of the cycle, the population builds up rapidly, in an uncontrolled way. When a certain density is reached the animals become extremely aggressive ... many pairs are forced into poor feeding grounds; but this reduction in density is only attained at the cost of savage fighting, including lethal attacks on the young ... The after-effects of violence ... persist after the density has been lowered, and it takes some time before the population recovers and begins a new cycle of growth.[2]

This description of war and violence appears to be a good account of the situation in some of the societies we have examined. But there is another, homeostatic, pattern, especially among birds. The data and the thesis to explain it are particularly associated with the work of Wynne-Edwards. The argument is that what dictates fertility is not physical resources, in other words food and shelter as Malthus tended to argue, but social resources, particularly the availability of 'social space'. Though the food supply may increase, the population of some animals will remain constant because social space has not expanded. Mating behaviour, care of the young, and many other crucial determinants of population growth are all affected by the availability of territories. Large numbers of birds, for example, will not breed if there are no

[1] The various patterns are well described in Wrigley, *Population and History*, especially ch.3.
[2] Russell, *Violence*, 158.

territories. Hierarchy is also a mechanism that intervenes to stop the easy flow from resources to population. Some of the animals dominate, others are pushed out. Animals and birds exhibiting this pattern rarely breed up to a point where they starve to death.

On the other hand these 'social controls' are often vicious. There is often a very high infant mortality rate arising from infanticide, abortions, and neglect. Among some small songbirds up to 90 % of the eggs never produce chicks that grow to adulthood. One author has argued that 'Animal populations would seem to be adapted to their food resources by a variety of built-in physiological and instinctive mechanisms rather than by starvation, and these come into play in response to signals of incipient overcrowding in advance of serious shortage of food'.[1]

Although, as Benedict has pointed out,[2] territorial and hierarchical behaviour among humans has 'conspicuously not led to a control of population' in many societies, and it is necessary to add many other cultural factors to the rather simple model of animal behaviour, the homeostatic model is a useful one. It helps us to understand certain population patterns, for instance that of England, and it is possible that there are a number of societies, particularly, perhaps, those inhabiting confined areas such as islands, which have kept their fertility well below maximum in this way.

Where this homeostatic pattern is present the explanation of sudden population growth is more likely to be a decline in the controls over fertility than in the elimination of perennial or crisis mortality. It is perhaps not a coincidence that Malthus, living in one of the first large-scale civilizations known to exhibit this pattern, should have concentrated on fertility changes as the major determinant of population growth.

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The model that appears to fit the Gurung case best is the second one, though the evidence is very scanty. It seems unlikely that their present medium to low mortality is solely the result of modern medical improvements. Thus they are unlikely to have had their population over the last few hundred years held in check by perennial disease and high infant mortality. Nor is there evidence that they have controlled population by maintaining a homeostatic control of fertility, either through contraception, high age at marriage, or very considerable use of abortion and infanticide. This leaves the middle pattern. Their subsistence life and the frequent wars of pre-nineteenth century Nepal make this at the least a plausible explanation.

If this hypothesis is correct it has several important implications. As far as the resources and population argument is concerned, it suggests that both

[1] Scott in Vayda (ed.), *Environment and Cultural Behavior*, 113. There is, as one might expect, considerable disagreement about 'animal' population dynamics and this is consequently an over-simplification. One good summary of different views is in the appendix to Lack, *Population Studies of Birds*. I owe this reference to Geoffrey Hawthorn.
[2] In Harrison and Boyce (eds.), *Structure of Populations*, 82.

Malthus and Boserup are both right and wrong. Malthus is right in arguing that population will expand to fill the resources available to it, but wrong if taken rather over simply to mean that resources expand first in time, to be followed quickly by population growth. On this issue Boserup is probably correct to believe that, in the absence of crises, population was the propelling force, driving the Gurungs into settled arable farming, for example. She was wrong, however, to believe that the cause of population growth was medical change. Peace and order were enough.

The practical implications of accepting this model are extremely grave. There are reasonable grounds for believing that as the moderately high mortality rates are cut back further, population will grow even faster than at present. There are only three ways in which an inevitable equilibrium will be reached. Firstly, there is the prospect of day to day mortality rising steeply to balance high fertility, perhaps with a rapid rise in infant deaths. Secondly, there could be a return to the 'crisis' pattern from which, for a short time, Nepal and the Gurungs have escaped. Thirdly, there is the possibility of establishing a control of fertility by a very considerable rise in the age at marriage combined with use of contraception on a scale beyond the dreams of family planners. The alternatives to this third solution are bleak. The growing unemployment, inequality, landlessness, malnutrition, soil erosion and other effects of population growth which have been discussed in the account of Gurung agriculture in the first half of this work are likely to accelerate rapidly. Finally, population will be stabilized by a rise in the death rate.

MODES OF REPRODUCTION[1]

Each day now world population increases by over two hundred thousand persons. The unprecedented growth is occurring in geographical areas where anthropologists have traditionally worked. There has been an increasing realisation that the main reason for the failure of attempts to control fertility is not technical but lies in the fact that in many societies people want more children than they normally produce, not fewer.

There is a widespread belief, in the areas of rapid population growth, that the best way to maximise happiness is to maximise reproduction. Previous theories to account for this desire for extra children are not satisfactory. Desire for children is not entirely explained by either increased affluence, as Malthus argued, nor by an inherited need to compensate for high mortality, nor by the degree to which technology makes capital, not labour, the scarce factor in production. This last view, which implies that the desire for children will decline as mechanisation of agriculture reduces the need for human labour has recently been argued by Mamdani (1972) but it is inadequate.

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England's history between the thirteenth and eighteenth centuries is well documented. Its economy was based on plough cultivation and its population grew relatively slowly. Between 1380 and 1750 the number of inhabitants tripled from about two to six million. It provides a test case of the influence of the means of production on reproduction. It is the classic exception to Malthus' law, for resources grew steadily while population grew slowly or remained stationary (Wrigley 1969). This slow growth appears to have been the result of attitudes and institutions which discouraged high fertility.

In many peasant and tribal societies marriage is primarily undertaken in order to produce children. English evidence shows that marriages were primarily to increase personal happiness by finding a loving spouse, for companionship and in order to find an economic partner. The wife's reproductive ability was of minor importance. Consequently, infertility was not treated with the pity or scorn that we find in many societies and was not a ground for separation or divorce. A woman's major role was not as a reproductive machine but as a business partner. The status of women did not increase as they produced more children. There was a singularly apathetic attitude towards female virginity before marriage, with no bridal sheet testing or 'honour and shame' complex. The chastity belt, of which there is evidence in many parts of Europe, was absent, except as a joke, in England.

[1] This piece was originally delivered as the Malinowski Lecture at the London School of Economics in 1978. It was summarized in this form in the journal *Man* (new series), volume 13, 657-8. The longer version was published in the *Journal of Development Studies*, vol. 14, no.4 (July 1978) and in a special volume of that volume entitled *Population and Development* edited by Geoffrey Hawthorn (1978). I am grateful to Geoffrey Hawthorn for his early comments on drafts of this article. The article, slightly modified, was published as chapter 2 of Alan Macfarlane, *The Culture of Capitalism* (1987).

Other indicators of an emphasis on reproduction and a high desire for children are also absent. There is no evidence of permitted testing of female fertility before marriage. First marriage occurred at a very late age for both men and women, on average in the mid-twenties for the latter (Hajnal 1965). Large proportions of both sexes never married; marriage was not a universal life-cycle state. The absence of adoption and fostering, the evidence for the use of contraception and abortion, the treatment of pregnancy as a time of unpleasant sickness, all these point in the same direction.

Furthermore, the statements people made about general attitudes to having children makes it clear that offspring were regarded as either the price one paid for sexual pleasure or, at the best, as a source of emotional gratification. They were not believed to be important either spiritually or economically to their parents. There seems, in fact, to have been a conflict between production and reproduction.

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The reason why England breaks the hypothesis that links the means of production and the attitude to reproduction is that, as Marx realised in his criticism of Malthus, it is not the productivity or necessity of children's labour that is the key to the matter, but rather the value of children to their parents and kin (Marx 1973:606). The solution lies in the realm of the relations of production, in other words kinship and concepts of property. What is now becoming clear is that in most 'peasant' societies, where the 'family is the basic unit of peasant ownership, consumption and social life' (Shanin 1971:241), in order to maximise production one must also increase reproduction. The social and the demographic units overlap.

The problem is that England has been regarded as yet another 'peasant' society by Marx, Weber and subsequent historians and sociologists, and we would therefore have expected an emphasis on fertility. It is now becoming clear that from at least the thirteenth century England seems to have been different from other recorded peasantries, whether in Europe or Asia, in its fundamental economic and social structure.

There was no concept of 'family property'. The basic unit was not a group of parents and children but the individual. This was enshrined in the thirteenth century maxim *Nemo est heres viventis,* no one is the heir of a living man (Pollock and Maitland 1968: 308). A child was not part of a property-owning group, a productive and consuming unit, with his parents. England for centuries before the industrial revolution had no 'domestic mode of production'.

This view of English history, which runs contrary to the received wisdom, helps to explain why there was such an unusual fertility pattern. It also helps to explain many other features which are associated with the peculiar intellectual, social, political and economic history of England (Macfarlane 1978).

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We may distinguish two 'modes of reproduction'. There are those where, as in most large peasant societies, the basic unit of society is a family or kin group, each new child is an asset, contributing to the welfare of the group, increasing prestige and political power as well as economic well-being. In this situation family planning goes right against the interests of both the group and the individual.

The other extreme case is well documented for hunter-gatherers and modern industrial societies. It is the one where the individual is not subsumed into a family group. Here children do not provide the means to affluence or prestige, but must be chosen as one among a set of alternative paths to happiness and security. England in the centuries before the industrial revolution is also an example of this case and suggests that the pattern is not connected to the techniques of production as such but rather to the nature of ownership and the distribution of wealth.

Where the units of production, consumption, ownership and reproduction are one and the same, people will desire children and fertility will be high; where the individual is the basic, unit, operating in different spheres with different people, then children will not be desired in the same way. Until this fact is fully appreciated, attempts to bludgeon unwilling 'peasants' to give up what they perceive to be their economic livelihood are bound to fail. [1]

[1] Some useful criticisms of the earlier, demographic, part of the argument in the version of the paper published in the *Journal of Development Studies* are contained in Simons and Dyson. Among the points they rightly make are the following: that certain hunter-gatherer groups neither control their fertility nor have conspicuously low fertility; that the individualistic mode does not necessarily lead to low fertility, as in the case of the relatively high fertility in England in the nineteenth century; that it is difficult in practice to classify societies as purely 'individualistic' or purely 'peasant'. A fuller and less dichotomized statement of the thesis is developed in later sections of this book.

PART TWO: MALTHUS AND MARRIAGE

(1979-1990)

CHARLES DARWIN AND THOMAS MALTHUS

In 1838 Charles Darwin was contemplating marriage. His thoughts on the subject are revealed to us in intimate detail by the chance survival of a scrap of paper. Darwin was now aged twenty-nine, having made his famous voyage round the world after leaving Cambridge. Without a regular job, yet with a small private income, marriage to his cousin Emma Wedgwood was both an attractive and a worrying prospect. In order to help him resolve the question of whether to marry, Darwin decided to set out a balance sheet of the advantages and disadvantages. In pencil on a blue sheet he drew up a cost-benefit analysis.[1] The very setting out of such a sheet is extraordinary. First, at twenty-nine Darwin was quite old by the standards of many societies to be contemplating his first marriage. Secondly, he clearly assumed that the decision was in his own hands. Above all, he saw marriage like some trading venture - as a choice. It was a decision involving costs and benefits which could, as in classic accounting, be balanced against each other. Equally interesting are the arguments Darwin put forward on each side. His sheet was laid out as follows:

This is the question

Marry Not Marry

Under 'Marry', moving almost immediately from the subject of children to that of a possible wife, and underlining, inserting brackets and crossing out (see the phrase below), he wrote:

> Children - (if it please God) - constant companion, who will feel interested in one (a friend in old age) - object to be beloved and played with - better than a dog anyhow - Home, and someone to take care of house - Classics of Music and female Chit Chat - These things good for ones health - (forced to visit and receive relations - [crossed out]) but terrible loss of time - My God, it is unthinkable to think of spending one's whole life, like a neuter bee, working, working, and nothing after all No, no won't do - Imagine living all one's days solitarily in smoky dirty London House - Only picture to yourself a nice soft wife on a sofa with good fire, and books and music perhaps - compare this vision with dingy reality of Grt Marlb[orough] Str.
>
> Marry. Marry. Marry. QED.

Thus the arguments for marriage were that there might be children, about whom nothing more is said, and then, basically, the advantages of companionship with a wife. A wife would be useful in keeping away loneliness, particularly in old age; she would be a superior pet, 'better than a dog anyhow'. Furthermore, life would not have been entirely wasted, for propagation would also produce something more than a 'neuter bee' would - an apt thought for Darwin in the year that he discovered the mechanism of the origin of species through natural selection.

Under 'Not Marry' Darwin started by elaborating further some arguments which would more logically have come under 'Marry'. Not to marry would mean 'No children (no second life) no one to care for one in old age -

[1] Darwin Papers, Cambridge University Library, DAR.210.10.

what is the use of working without sympathy from near and dear friends - who are near and dear friends to the old except relatives.' Hence, again, there is stress on old age and loneliness and on leaving a reminder of one's existence.

He then listed the advantages of not marrying and remaining a bachelor:

> Freedom to go where one liked - choice of Society and little of it. Conversation of clever men at clubs - Not forced to visit relatives, and to bend in every trifle - to have the expense and anxiety of children - perhaps quarrelling - Loss of time - cannot read in the Evenings - fatness and idleness - anxiety and responsibility - less money for books etc - if many children forced to gain one's bread (But then it is very bad for one's health to work too much). Perhaps my wife won't like London, then the sentence is banishment and degradation with indolent, idle fool.

Real costs - the costs of children, the costs of a wife - were therefore set in Darwin's mind against the advantages of companionship and comfort. Such disadvantages would possibly make life less comfortable and there would certainly be a loss of time and leisure. On the reverse side of the sheet is the following:

> It being proved necessary to Marry. When? Soon or Late. The Governor says soon for otherwise bad if one has children - one's character- is more flexible - one's feelings more lively and if one does not marry soon, one misses so much good pure happiness - But then if I married tomorrow: there would be an infinity of troubles and expense in getting and furnishing a house - insisting about no Society - morning calls - awkwardness - loss of time every day (without one's wife was an angel, and made one keep indentures) - Then how should I manage all my business if I were obliged to go every day walking with my wife - Ehem!! I never should know French, or see the continent, or go to America, or go up in a Balloon, or take solitary trip in Wales - poor slave - you will be worse than a negro - And then horrid poverty (without one's wife was better than an angel and had money) - Never mind my boy - Cheer Up - One cannot live this solitary life, with growing old age, friendless and cold, and childless staring one in one's face, already beginning to wrinkle - Never mind, trust to chance
> Keep a sharp look out - There is many a happy slave -

Having summed up the costs and benefits, Darwin made his choice. On 29 January 1839, just before his thirtieth birthday, the marriage with Emma was solemnized.

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In the same year that he came to balance the advantages and disadvantages of marriage and reproduction, Darwin succeeded in solving the problem of how species evolved through natural selection. The key was provided by an accidental reading of Thomas Malthus' *Essay on Population*, which showed him how high mortality could lead to the survival of only the fittest. Malthus' work may also have been helpful to Darwin when considering his feelings about his individual decision to reproduce. For what Malthus provided was an elegant theoretical model of the marriage system in England in the early nineteenth century, of which Darwin's ruminations are such an enlightening illustration. The *Essay on Population* explains why so many people weighed up the costs and benefits in ways similar to Charles Darwin.

Malthus drew attention to four facts. The first is that mankind is very strongly motivated by a desire for sexual intercourse, or, in his words, 'the passion between the sexes is constant' and very strong. All else being equal, men and women will mate as soon as possible. If mating is only allowed within marriage, 'such is the disposition to marry, particularly in very young people, that, if the difficulties of providing for a family were entirely removed, very few would remain single at twenty-two.[1] The second fact is that, given low mortality, such early mating will lead to rapid population growth. We know of human groups that have doubled their population every fifteen years. Rapid doublings, mean that by geometrical or exponential growth, vast numbers of human beings can be created very quickly. It would have taken 32 doublings of an original couple to raise world population from the original two to our present five thousand million plus. A few more doublings now, and every square inch of the earth would be covered. The third fact is that economic resources cannot keep pace with such growth. This is largely due to the law of diminishing marginal returns, which is implicit in his work. There are periods when rates of three or four per cent per annum economic growth, equivalent to a population doubling in twenty or fifteen years, have been sustained for a few decades. Yet we now know again that these are exceptions to the rule that economic growth tends to be much slower. The final fact is that there is a tendency for any growth in resources to be quickly absorbed by mounting population. A rise in affluence will decrease mortality and also enable people to give freer expression to the 'passion between the sexes'. Population will rise rapidly. It will then meet the inevitable control - namely, the positive checks of 'misery', specifically death by war, famine and disease.

In this theory, as he himself admitted, Malthus was only putting more clearly and with much documentation, the arguments of the political economists of the eighteenth century. In Adam Smith's *Wealth of Nations*, for example, we have a very similar set of assumptions. At the heart of the argument is the statement that 'every species of animal naturally multiplies in proportion to the means of their subsistence, and no species can ever multiply beyond it.' Mankind was included, for, 'men, like all other animals, naturally multiply in proportion to the means of their subsistence.' Furthermore, Smith pointed out that an improvement in wealth would lead to a decline in mortality among the common people, hence more children would survive and the population increase. Likewise, increased wealth through increased wages would lead to increased propagation. 'The liberal reward of labour, therefore, as it is the effect of increasing wealth, so it is the cause increasing population', or, as it is glossed in a marginal note, 'high wages increase population.'[2]

Smith, however, was not appalled by this prospect, for he took the argument one stage further. He argued that it was not food or technology as such which regulate population, but the demand for labour. 'If this demand is continually increasing, the reward of labour must necessarily encourage in such a manner the marriage and multiplication of labourers, as may enable them to supply that continually increasing demand by a continually increasing population.' For 'the demand for men, like that for any other commodity,

[1] Malthus, *Population*, II, 52.
[2] Smith, *Wealth*, I, 89, 163, 90.

necessarily regulates the production of men; quickens it when it goes on too slowly, and stops it when it advances too fast.' In other words, the laws of supply and demand could account for population growth and retraction. 'It is this demand which regulates and determines the state of propagation in all the different countries of the world, in North America, in Europe, and in China; which renders it rapidly progressive in the first, slow and gradual in the second and altogether stationary in the last.[1] Now this rosier picture - although it fails to go into the ways in which population is held stationary, which may include high mortality and misery and hence conform to Malthus' predictions - is not so far from Malthus' own thinking. Similar views to those we shall analyse for Malthus were also advanced by the Scottish political economist Dugald Stewart. He read and approved of the first *Essay on Population* and undertook a very similar analysis to that of Malthus. He placed primary stress on fertility as the major determinant of changes in rates of population growth, and on the effects of ideology and social structure on people's attitudes to marriage and childbearing.[2]

Malthus' arguments were revised in the almost totally new second edition of the *Essay* published in 1803, and there was a substantial alteration. Previously he had elaborated the premises as laws; now he spoke of them as hypothetical tendencies which would naturally work themselves out if all else was equal - or, as we would call it nowadays, a model. The new dimension that altered the whole situation was the 'preventive check', an idea which was in some ways merely an application of Smith's optimism. For Malthus had noticed that while many great civilizations encouraged marriage at as early an age as possible - for example, India or China - this was not the case in Western Europe.[3] During travels in Norway between the first and second editions of the *Essay* he had witnessed various pressures which led to the postponement of marriage, or a moral 'preventive check' (as opposed to contraception and infanticide which he termed 'vice'). In Norway, recruitment to the army so that a man could not marry without producing a certificate of army service, and the informal refusal of certain ministers to perform the marriages of people who were unable to support a family, as well as the absence of employment and housing for the peasantry, all tended to delay marriage.[4] In fact, speaking of Europe as a whole, Malthus wrote that 'it can scarcely be doubted that in modern Europe a much larger proportion of women pass a considerable part of their lives in the exercise of this virtue [i.e., late age at marriage] than in past times and among uncivilized nations.' Thus a delay in marriage, he believed, was 'the most powerful of the checks which in modern Europe keep down the population to the level of the means of subsistence'. In other words, Europe was on the way to escaping from 'misery'.[5]

Malthus did not need to travel to Norway to find an exception to his earlier 'laws' or tendencies. As subsequent historians have pointed out, and as Malthus was fully aware, the most extreme case of the preventive check,

[1] Smith, *Wealth*, I, 89-90.
[2] Stewart, *Works*, VIII, 95-104.
[3] Malthus, *Population*, I, 115, 119, 129.
[4] Malthus, *Population*, I, 155-7.
[5] Malthus, *Population*, I, 315.

through late marriage and non-marriage, was England itself.[1] 'The most cursory view of society in this country must convince us, that throughout all ranks the preventive check to population prevails in a considerable degree,' 'the preventive check to population operates with considerable force throughout all the classes of the community'.[2] Having located the restrained fertility caused by an unusual marriage pattern, Malthus proceeded to provide a fascinating analysis of how, uniquely, the link between growing resources and growing population was transformed.

He looked at each of the four major groupings in English society - the wealthy, the middling, the wage-earners and the servants. The wealthy were reluctant to get married because they would be unable to maintain the standard of living to which they had been accustomed when single. They could not 'afford' to get married. The analysis is so central that we will quote his explanations fully:

> a man of liberal education, with an income only just sufficient to enable him to associate in the rank of gentlemen, must feel absolutely certain that, if he marry and have a family, he shall be obliged to give up all his former connections. The woman, whom a man of education would naturally make the object of his choice, is one brought up in the same habits and sentiments with himself, and used to the familiar intercourse of a society totally different from that to which she must be reduced by marriage. Can a man easily consent to place the object of his affection in a situation so discordant, probably, to her habits and inclinations? Two or three steps of descent in society, particularly at this round of the ladder, where education ends and ignorance begins, will not be considered by the generality of people as a chimerical, but a real evil ... These considerations certainly prevent many in this rank of life from following the bent of their inclinations in an early attachment.[3]

Thus, in Malthus' analysis, there is a combination of economic and social pressure: a mixture of fear of poverty, of loss of social status, of loss of leisure and pleasure, which will hold back the wealthy of both sexes from marriage. Furthermore, 'among the higher classes, who live principally in towns' people 'often want the inclination to marry, from the facility with which they can indulge themselves in an illicit intercourse with the sex. And others are deterred from marrying by the idea of the expenses that they must retrench, and the pleasures of which they must deprive themselves, on the supposition of having a family.[4] Put very broadly, marriage was viewed as something which bore considerable social and economic costs, which had to be weighed against its advantages.

The pressures on the middling wealthy, the very large group of farmers and tradesmen for which England had always been conspicuous, were a little different, Malthus believed.

> The sons of tradesmen and farmers are exhorted not to marry, and generally find it necessary to comply with this advice, till they are settled in some business or farm, which may enable them to support a family. These events may not perhaps occur till they are far advanced in life. The scarcity of farms is a very general complaint; and the competition in

[1] Flinn, *Industrial Revolution*, 66; Chambers, *Population*, 59.
[2] Malthus, *Population*, II, 236, 238.
[3] Malthus, *Population*, I, 236.
[4] Malthus, *Population*, I, 236.

> every kind of business is so great, that it is not possible that all should be successful. Among the clerks in counting-houses, and the competitors for all kinds of mercantile and professional employment, it is probable that the preventive check to population prevails more than in any other department of society.[1]

At this level, people were restrained from marriage by the shortage of remunerative employment, of farms or businesses, and of a sufficient salary in merchant and professional employments to permit them to keep a wife and family. On this last group, Malthus' opponent William Godwin was in entire agreement:

> There is a very numerous class in every great town, clerks to merchants and lawyers, journeymen in shops, and others, who either never marry, or refrain from marriage till they have risen through the different gradations of their stations to that degree of comparative opulence, which, they think, authorises them to take upon themselves the burden of a family.[2]

Again, of course, the pressures are not just economic. People could have sacrificed their careers and their station in life in order to marry; but, as with the wealthy, it would have probably meant slipping down several rungs of that steep social ladder upon which everyone was poised.

The next major stratum was wage-labourers. They too were faced with the double hazard of economic cost and social humiliation if they made a mistake and married too young, or in some cases, at all.

> The labourer who earns eighteenpence or two shillings a day, and lives at his ease as a single man, will hesitate a little before he divides that pittance among four or five which seems to be not more than sufficient for one. Harder fare and harder labourer he would perhaps be willing to submit to for the sake of living with the woman he loves; but he must feel conscious that, should he have a large family and any ill fortune whatever, no degree of frugality, no possible exertion of his manual strength, would preserve him from the heart-rending sensation of seeing his children starve, or of being obliged to the parish for their support.[3]

Here, plainly, the battle was between a desire to marry, or 'love', and the rational realization of the likely hazards. Again, the rewards for labour were so structured that while a single person could manage, the rearing of a family was very difficult.

But what happened, then, to all the young people who, in many societies, would have been married off at, or soon after, puberty? These were the people who would be under the most severe biological pressure to seek a mate and hence to marry. In England many of them were servants; once again, as Malthus points out, they found the economic and social pressures against marriage very strong.

> The servants who live in the families of the rich have restraints yet stronger to break through in venturing upon marriage. They possess the necessaries, and even the comforts of life, almost in as great plenty as their masters. Their work is easy and their food luxurious, compared with the work and food of the class of labourers ... Thus comfortably

[1] Malthus, *Population*, I, 237.
[2] Quoted in Place, *Population*, 162.
[3] Malthus, *Population*, I, 237.

> situated at present, what are their prospects if they marry? Without knowledge or capital, either for business or farming, and unused and therefore unable to earn a subsistence by daily labour, their only refuge seems to be a miserable alehouse, which certainly offers no very enchanting prospect of a happy evening to their lives. The greater number of them, therefore, deterred by this uninviting view of their future situation, content themselves with remaining single where they are.[1]

Like celibate fellows of Oxford and Cambridge Colleges in the past, or monks, they would lose the advantages of security and assured income if they married. If they were apprentices, rather than servants, they would lose their apprenticeships if they broke their contract and married.

What Malthus was in fact describing was a situation where those contemplating marriage had to make a choice. Marriage was not something automatic and universal, arranged by others and occurring like any natural event. It was something to be chosen, a conscious decision which could be made early or put off, and there were costs and benefits in any solution. Godwin agreed with Malthus that people calculated in this way. He thought that early marriages were infrequent in England because

> every one, possessed in the most ordinary degree of the gift of foresight deliberates long before he engages in so momentous a transaction. He asks himself, again and again, how he shall be able to subsist the offspring of his union. I am persuaded, it very rarely happens in England that a marriage takes place, without this question having first undergone a repeated examination.[2]

Malthus was aware of some of the benefits that pulled a person into marriage. Apart from the assuaging of that 'passion between the sexes', the biological urge, there was the desire to live 'with the woman he loves'. Marriage could also bring social advantages, of which, incidentally, he disapproved. He described as 'little better than legal prostitutions' those marriages between fair young women and unattractive older men which had resulted from the 'superior distinctions which married women receive, and the marked inattentions to which single women of advanced age are exposed'. These forced women through 'the fear of being an old maid, and of that silly and unjust ridicule, which folly sometimes attaches to this name' into 'the marriage union with men whom they dislike'.[3] Such costs must be explained to people before it could be fairly said that 'with regard to the great question of marriage, we leave every man to his own free and fair choice.'[4] Yet against these biological, social and occasional economic advantages must be weighed the costs.

The cost at one level was an economic one. In essence, it was more expensive to be married with children than to be single. 'We must on no account do anything which tends directly to encourage marriage, or to remove, in any regular and systematic manner, that inequality of circumstances which ought always to exist between the single man and the

[1] Malthus, *Population*, I, 237-8.
[2] In Place, *Population*, 162.
[3] Malthus, *Population*, II, 184.
[4] Malthus, *Population*, II, 185.

man with a family.[1] Malthus agreed with the judge who claimed 'that the growth and increase of mankind is more stinted from the cautious difficulty people make to enter on marriage, from the prospect of the trouble and expenses in providing for a family, than from anything in the nature of the species.'[2] This economic cost was mixed up with social costs, hence trouble and expenses.

In an assessment of the preventive check, Malthus isolated various considerations, which would drive an ordinary man to hold back from marriage:

> [A man] cannot look around him and see the distress which frequently presses upon those who have large families; he cannot contemplate his present possessions or earnings, which he now nearly consumes himself, and calculate the amount of each share, when with very little addition they must be divided, perhaps, among seven or eight, without feeling a doubt whether, if he follow the bent of his inclinations, he may be able to support the offspring which he will probably bring into the world.'[3]

The cost is also social. In a stratified society such as England, Malthus observes, 'will he not lower his rank in life, and be obliged to give up in great measure his former habit?' Is it not true that the utmost effort he may make will not be able to save his family, if he should have a large one, 'from rags and squalid poverty, and their consequent degradation in the community'? A man will have to work much harder. 'Will he not at any rate subject himself to greater difficulties, and more severe labour, than in his single state?' Furthermore, his children may be downwardly mobile: 'will he not be unable to transmit to his children the same advantages of education and improvement that he had himself possessed?'[4] In effect, a mixture of social and economic arguments was balanced against the psychological and biological pressures towards marriage.

In such a situation, Malthus had no doubt that most people would act in an economically rational way and delay their marriages. Hence, there was no necessity to make laws against early marriages. 'I have distinctly said that, if any person chooses to marry without having a. prospect of being able to maintain a family, he ought to have the most perfect liberty so to do ... I am most decidedly of opinion that any positive law to limit the age of marriage would be both unjust and immoral.[5] As contraception was both 'vice' and unnecessary, so was such a law both immoral and ultimately unnecessary. But how could Malthus be so sure that people in England would behave in a way which so conspicuously differed from that elsewhere? It appears that he saw the key in the combination of four features, all of which were developed to a very considerable degree in the England of his day.

These four things were a general acquisitive ethic which encouraged people to pursue economic and social gain; a ranked and unequal society which meant that people were constantly striving to move up a ladder and not to sink

[1] Malthus, *Population*, II, 223.
[2] Malthus, *Population*, I, 238.
[3] Malthus, *Population,* I, 12.
[4] Malthus, *Population*, II, 64.
[5] Malthus, *Population*, II, 64.

down; the institution of private property, secured by a just and powerful government, which would enable people to hold on to their gains; and a general standard of living well above subsistence so that people would have grown to appreciate the comforts and advantages of civilization. It was this combination which made the situation uniquely propitious for the preventive check to work in England. England, a 'nation of shopkeepers', was famed for its pursuit of gain and wealth through trade and industry. It was noted for having infinite gradations of status and easy mobility between them, whereby wealth could be turned into status. It was the bastion of private property and had long enjoyed powerful government and law in support of such property. It was notably the most affluent country in Europe, and the comforts and luxuries were spread widely through the population in a way unparalleled in the world. Malthus presumed and documented these things as the background to the preventive check.

He saw the acquisitive ethic as the central feature.

> The desire of bettering our condition, and the fear of making it worse, like the *vis medicatrix naturae* in physics, is the *vis medicatrix reipublicae* in politics, and is continually counteracting the disorders arising from narrow human institutions ... it operates as a preventive check to increase.[1]

Despite exhortations on the duties to marry,

> each individual has practically found it necessary to consider of the means of supporting a family before he ventures to take so important a step. That great vis *medicatrix reipublicae*, the desire of bettering our condition, and the fear of making it worse, has been constantly in action ... Owing to this powerful spring of health in every state the prudential check to marriage has increased in Europe.[2]

This force operates most powerfully where it is relatively easy to climb or fall. For labourers there was the easy slide to pauperdom.[3]

It was private property and political security which kept the ladder upright and ensured that an individual's efforts to better his condition would not be wiped away. 'That this natural check to early marriages arising from a view of the difficulty attending the support of a large family operates very widely through all classes ... cannot admit of the slightest doubt. But the operation of this natural check depends exclusively upon the existence of the laws of property and succession.' Abolish inequality, abolish private property, and one would revert to those natural tendencies which could then only be controlled by 'vice' or 'misery'. The 'strong desire of bettering the condition (that master-spring of public prosperity)' led to a 'most laudable spirit of industry and foresight', included in which was the foresight to postpone marriage. 'These dispositions, so contrary to the hopeless indolence remarked in despotic countries, are generated by the constitution of the English government and the excellence of its laws, which secure to every individual the produce of his industry.[4] Such past security, combined with the desire to better one's

[1] Malthus, *Population*, II, 53.
[2] Malthus, *Population*, II, 257.
[3] Malthus, *Population*, I, 12-13.
[4] Malthus, *Population*, II, 206-7.

condition, had created the final precondition for the preventive check - widespread affluence. 'Above all, throughout a very large class of people, a decided taste for the conveniences and comforts of life ... are observed to prevail.[1] It was a circular process. A widespread taste for 'decencies and comforts', for good food, good housing, good clothes and leisure would develop; people would become accustomed to that pleasant cushion between mere subsistence and their present lifestyle and wish to increase it. Such a wish would act as a further incentive to civilization and delayed marriage, and would prevent increased wealth being put straight back into reproduction. People would be forced to choose and would grow to prefer their raised standard of living. 'In a civilized country, such as England, where a taste for the decencies and comforts of life prevails among a very large class of people',[2] people would be less prepared to risk all by early marriage. This is what intervened between rising wages and population and broke the vicious spiral. 'It is under these circumstances, particularly when combined with a good government, that the labouring classes of society are most likely to acquire a decided taste for the conveniences and comforts of life.[3]

Malthus believed that once a circular process had begun, then it would continue and benefit all. He was concerned about the poor, but believed that the solution to their plight was not charitable hand-outs, as in the old Poor Laws. Such indiscriminate charity encouraged early marriages. 'A poor man may marry with little or no prospect of being able to support a family without parish assistance', and this merely led to a situation where the laws 'create the poor which they maintain.'[4] Much better, he argued, to encourage the taste for other things than children and hence improve the bargaining position of the poor. 'This prudential restraint if it were generally adopted, by narrowing the supply of labour in the market, would, in the natural course of things, soon raise its price.' The delay in marriage would also allow people to save for their marriages, so that when they did marry they had enough to support themselves. Thus 'all abject poverty would be removed from society.'[5] Yet Malthus added one further refinement. He argued that it might well be necessary for economic growth that population did grow, possibly rapidly. This he believed was possible under such a regime.

Elaborating on the framework of Adam Smith, he argued that the forces of supply and demand were bound to operate in the end - and the demand for labour would finally produce labour. The crucial thing, however, was the way in which this occurred and the delay in achieving the increased labour. 'The operation of the preventive check in this way, by constantly keeping the population within the limits of the food, though constantly following its increase, would give a real value to the rise of wages and the sums saved by labourers before marriage.'[6] But how, exactly, did a rise in wealth get delayed in this way; what exactly was the connection between the market and marriage? Here Malthus provided further insights.

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[1] Malthus, *Population*, II, 206.
[2] Malthus, *Population*, II, 185.
[3] Malthus, *Population*, II, 135.
[4] Malthus, *Population*, II, 48.
[5] Malthus, *Population*, II, 161.
[6] Malthus, *Population*, II, 161.

His main point was that in a complex market economy such as England, the determining pressure was not simply the level of wages as such, let-alone the cost of grain. More important was a heavier demand for labour within the economy. A single man's wages, for example, might be relatively high, but if they were not coupled with a demand for women and children's labour, they might not be conducive to a drop in the age at marriage: 'it will evidently be the average earnings of the families of the labouring classes throughout the year on which the encouragement to marriage, and the power of supporting children, will depend, and not merely the wages of daylabour estimated in food.[1] It was the total earnings over the whole year that was important. 'An attention to this very essential point will explain the reason why, in many instances, the progress of population does not appear to be regulated by what are usually called the real wages of labour.'[2] A combination of factors prevailed, including the possibility of parish relief, the presence of cheaper foodstuffs, and the availability of piece-work.

Malthus drew on the history of eighteenth -century England to describe the intervening mechanisms that meant that one had to think of total real income, rather than merely the wages of labour.

> In our own country, for instance, about the middle of the last century, the price of corn was very low; and, for twenty years together, from 1735 to 1755 a day's labour would, on an average, purchase a peck of wheat. During this period, population increased at a moderate rate; but not by any means with the same rapidity as from 1790 to 1811, when the average wages of day-labour would not in general purchase so much as a peck of wheat. In the latter case, however, there was a more rapid accumulation of capital, and a greater demand for labour; and though the continued rise of provisions still kept them rather ahead of wages, yet the fuller employment for everybody that would work, the greater quantity of task-work done, the higher relative value of corn compared with manufactures, the increased use of potatoes, and the greater sums distributed in parish allowances, unquestionably gave to the lower classes of society the power of commanding [i.e., purchasing] a greater quantity of food, and will account for the more rapid increase of population in the latter period, in perfect consistency with the general principle.[3]

Thus, in a society where people were well above subsistence level, it was no longer the supply of food which determined population. In Ireland, where the standard of living was much lower, with the widespread use of potatoes and with low expectations, population would rise rapidly as the food supply increased.[4] But it was the demand for labour combined with people's expectations that would affect the situation in England, and one might even get the curious situation of population rising while the food supply shrank.

> When the demand for labour is either stationary, or increasing very slowly, people not seeing any employment open by which they can support a family, or the wages of common labour being inadequate to this purpose, will of course be deterred from marrying. But if a demand for labour continue increasing with some rapidity, although the supply of food be uncertain, the population will evidently go on.[5]

[1] Malthus, *Population*, II, 139.
[2] Malthus, *Population*, II, 139.
[3] Malthus, *Population*, II, 139.
[4] Semmel, *Papers of Malthus*, 44.
[5] Malthus, *Population*, II, 140.

Malthus was very aware that it was aspirations and attitudes that determined the effects of economics. Two principal examples of this were the attitudes to the purposes and functions of marriage, and the attitude to what was considered an acceptable life. The former was interrelated with the religious and mental systems. The Chinese, Malthus suggested, 'acknowledge two ends in marriage; the first is that of perpetuating the sacrifices in the temple of their fathers; and the second the multiplication of the species ... In consequence of these maxims, a father feels some sort of dishonour, and is not easy in his mind, if he do not marry off all his children.'[1] In India (quoting from a translation of the ancient Indian Laws of Manu), 'marriage is very greatly encouraged, and a male heir is considered as an object of the first importance.' 'By a son a man obtained victory over all people; by a son's son he enjoys immortality; and afterwards by the son of that grandson he reaches the solar abode.'[2] Such views of marriage 'cannot but have a very powerful influence'.

> The man who thinks that, in going out of the world without leaving representatives behind him, he shall have failed in an important duty to society, will be disposed to force rather than to repress his inclinations on this subject; and when his reason represents to him the difficulties attending a family, he will endeavour not to attend to these suggestions, will still determine to venture, and will hope that, in the discharge of what he conceives to be his duty, he shall not be deserted by Providence.[3]

Religion and social pressure combined with the 'passion between the sexes', Malthus believed, could well overwhelm economic prudence.

The force of the economic arguments would again depend very heavily on what was considered an acceptable living standard. If a person was prepared to put up with absolutely basic food and accommodation, and the humiliation of parish relief, then a population could marry early for a long time before it hit the absolute levels of starvation and pestilence. But if a person expected a few of the comforts of life, like some leisure, privacy, warmth, food above and beyond rice, potatoes or black bread, then he or she might be held back from early reproduction. This was a contrast between the English and Irish poor, as Malthus observed it, a difference arising from the fact that the English had grown to think of certain minor comforts as necessities. 'One of the most salutary and least pernicious checks to the frequency of early marriages in this country is the difficulty of procuring a cottage, and the laudable habits which prompt a labourer rather to defer his marriage some years in the expectation of a vacancy, than to content himself with a wretched mud cabin, like those in Ireland.'[4] Thus we see that a consideration of why the preventive check had become so powerful in England led Malthus deep into a consideration of politics and law, of private property, equality and inequality, of religion and views of the ancestors and after-life, of aspirations and 'habits'.

The applicability of Malthus' analysis to Darwin's case is obvious. What has been less clear until very recently is the great importance of the marriage

[1] Malthus, *Population*, I, 129.
[2] Malthus, *Population*, I, 116.
[3] Malthus, *Population*, II, 184-5.
[4] Malthus, *Population,* II, 250.

mechanisms which Malthus outlines. Their significance in explaining the nature of English economic and demographic development has been obscured by a problem which has only recently been overcome. The solution to that problem places Malthusian marriage at the centre of the historical investigation.

THE IMPORTANCE OF MALTHUSIAN MARRIAGE

One of the unanswered questions concerning the recent past is the relationship between economic and demographic growth in eighteenth- and nineteenth-century England. The sudden spurt in population from roughly the middle of the eighteenth century, after a hundred years of minimal growth, is puzzling. The period of slow growth allowed for the accumulation of the infrastructure for industrialization, and the population explosion provided labour for industrial and colonial expansion. What were the reasons for the change in population dynamics?

In the hundred and forty years of continued speculation on this problem, between Darwin's reflections on marriage in 1838 and 1978, there were three major theories put forward to account for the change. The most popular argument, which became enshrined in 'demographic transition theory' and hence vastly influential in population analysis throughout the world, was that the determining variable was mortality. England conformed to the usual pattern observed in many developing countries. There were three stages. Up to the middle of the eighteenth century high fertility was balanced by high mortality. There were then improvements in health and the disappearance of plague. For a while high fertility continued, but the babies and young mothers ceased to die in such numbers and population soared. The balance was achieved over a hundred years later when fertility was brought down through the introduction of birth control. This seemed plausible enough, and since it was clearly what was happening in many other parts of the world, it was widely accepted.

In such a solution, the important topic to study is health and disease. Fertility is a biological constant and unimportant in explaining the change. The argument when applied to earlier periods would be that the reason for continued drops in population after the Black Death was recurring outbreaks of disease. The reason why population was stagnant after the middle of the seventeenth century was the recurrence of further and new diseases. The implications are that this pre-industrial society was at the subsistence level and constantly bumping against Malthus' positive checks. England escaped first from 'the horsemen of the apocalypse' through a number of accidents and discoveries: the curious disappearance of plague, perhaps an improvement in child health through better diet and particularly the increased consumption of milk, the invention of vaccination, and the development of medical care in general.

This view has been the dominant one. The position in 1980 was much the same as it was in 1953 when H. J. Habakkuk wrote, 'Few generalizations are so well established in the books as that which ascribes the increase in the population of England and Wales in the second half of the eighteenth century to a fall in the death rate caused primarily by improvements in medicine, medical skill,' and public health.[1] Thus in 1968 J. Spengler could write that the increase in population growth rates in the eighteenth and nineteenth centuries 'seems to have been attributable mainly, if not entirely, to a decline in

[1] In Glass, *Population*, 269.

mortality.'[1]An example of this approach can be found in the widely read work of Thomas McKeown. An early article in 1955 with R. G. Brown provides the basis for a full-length treatment. McKeown concludes that 'when the modern rise of population is considered as a whole it is clearly a substantial reduction of mortality that has to be explained.[2] Unable to find an explanation in medical or public health improvements, McKeown suggests that despite massive urbanization and industrialization, the majority of the English population must have experienced a substantial improvement in nutrition sufficient to lead to a dramatic fall in mortality. Although there are no figures to show that this did, indeed, happen, it must have been so.[3]

The other, minority, theory was that the rise was caused by changes in fertility, a view McKeown strongly challenged. Such an interpretation was put forward by T. H. Marshall in 1929, when he argued that 'so far as the Malthusians are concerned, it is evident that they were absolutely right to regard the birth rate as the key to the situation.' Marshall states that a rise in the economic value of children and a drop in constraints to stop servants and apprentices from marrying may have brought down the age at marriage.[4] This view was supported by Habakkuk in two articles. In 1953, while admitting that detailed parish register evidence still awaited analysis, he argued along the same lines as Marshall: new economic opportunities and resources could have led to a fall in the age at marriage, which in turn could account for the major part of the population increase. Habakkuk quoted K. H. Connell to the effect that 'the question of the age at marriage is at the heart of Irish population history', and added that 'this is probably true of most other pre-industrial societies.'[5] If this were the case it would have enormous implications. If a fall in mortality rates is the main cause of population increase, then 'it is reasonable to consider whether the Industrial Revolution was a response to the challenge of increasing population.' If, on the other hand, the rise of population was 'primarily a consequence of an increased demand for labour, we must look elsewhere for the mainsprings of economic change in this period.'[6] Attacked by McKeown and Brown, Habakkuk was thrown on to the defensive, though maintaining his general position in an article in 1958. 'I am not convinced that we must at this stage reject the possibility that a fall of two or three years in the age at marriage, plus some increase in nuptiality, could have caused an acceleration of the rate of growth of the sort we observe in the later eighteenth century.' Yet his lack of confidence is shown in the next sentence: 'The much more doubtful question is whether there were in fact changes in age at marriage of this order of magnitude.'[7]

Thus there was a. stalemate, neither side able to show, in the absence of detailed evidence, that their theory was correct. Who was right, the eighteenth -century writers, who tended to ascribe the upsurge of population to changes

[1] Spengler, 'Historical'.
[2] McKeown, *Population*, 43.
[3] A plausible case for linking a European decline in mortality to changes in public health is argued by Kunitz, 'Mortality'.
[4] In Glass, *Population*, 267: 260-1.
[5] Glass, *Population*, 275.
[6] Glass, *Population*, 271.
[7] Glass, *Population*, 153, see also 154.

in fertility, or the majority of later historians who on the whole thought that mortality was the crucial factor?

There were major objections to the eighteenth -century view of the crucial role of fertility. First, such a phenomenon - that is, the very rapid build-up of population being caused by changes in fertility - had nowhere else been observed. Many modern and past societies could be shown to have rapidly increased their population through a planned or accidental drop in death rates, but few if any through a rise in the birth rates, as McKeown pointed out.[1] Secondly, it was also argued by McKeown, from the analogy with Ireland, that 'an advance in mean age of wives at marriage of about 5 years would be needed to reduce the mean number of live births by 1.'[2] Thirdly, a logical objection was voiced by Dr Johnson. When it was mentioned that Russia was likely to become a great empire because of the rapid increase of population, Johnson replied, 'Why, Sir, I see no prospect of their propagating more. They can have no more children than they can get. I know of no way to make them breed more than they do.' When Boswell countered by asking, 'But have not nations been more populous at one period than another?', Johnson answered, 'Yes, Sir; but that has been owing to the people being less thinned at one period than another, whether by emigrations, war, or pestilence, not by their being more or less prolifick. Births at all times bear the same proportion to the same number of people.'[3] This was written in 1769, just as the great burst in population was under way. As Johnson looked around him, he concluded that it was impossible to increase fertility and that Malthus' positive checks, famine, war and pestilence, or emigration, were the forces determining population growth.

Thus, while there were those who saw the phenomenon as a combination of changes in mortality and fertility, the major consensus and the weight of historical and local evidence lay with those who believed that the solution lay in the elimination of Malthus' positive checks. What has happened in the last few years has been a complete overturning of the argument. Before looking at the very considerable implications of this historical reversal, we may look at how it has been established. It has occurred in two stages, the first in two articles in 1965 and 1966. In the first article, John Hajnal outlined the 'European marriage pattern in perspective'.[4] He showed that Western Europe, since at least the sixteenth century, exhibited a curious and possibly unique marriage pattern. The two central features were a very late mean age at first marriage for women, often at 25 years of age or over, and a very large proportion of never-married females, often up to fifteen per cent or more. This 'selective' marriage is just as unusual as late age at marriage. Such a pattern separated off those countries in Europe west of a line drawn from Trieste to Leningrad from countries to the east. It was a very different pattern from that found in contemporary Africa, Asia and other parts of the Third World. What, in effect, Hajnal had shown was that fertility was not biologically but socially determined; that there was a gap of ten years or

[1] McKeown, *Population*, 42-3.
[2] In Glass, *Population*, 297; McKeown, P*opulation*, 38.
[3] Hill, *Life of Johnson*, II, 101-2.
[4] Hajnal in Glass, *Population*.

more between sexual maturity and reproduction, and that many never married at all. This important finding was quickly corroborated and examined minutely in an article by E. A. Wrigley.[1] This demonstrated that English women's marriages had indeed been very late; in Colyton, Devon, the mean age at first marriage fluctuated between 26 and 30 in the period 1560 1750. Wrigley's article also showed that, within marriage, marital fertility was relatively low, so low at certain times that he suspected that his Devonshire families were controlling their fertility by the use of some form of birth control.

Unfortunately, it has not yet been possible to show definitely when this pattern of late and selective marriage began. Hajnal thought that it probably did so sometime between 1400 and 1650, but the evidence he put forward, and that of others who are forced to work indirectly from the records of manorial courts, or court rolls, is inconclusive. Poll taxes and other early documents are extremely difficult to interpret, and we cannot be certain about female age at marriage. It remains true that 'there is no convincing evidence to show the age at which medieval women married.'[2]

These two articles removed the logical objection of Dr Johnson, for it was clear that by changing one or more of the three factors (age at marriage, proportion marrying or marital fertility), people could indeed be 'more prolific'. Nor did there have to be such a dramatic shift in age at marriage as McKeown argued: his demographic analogies appear faulty.[3] This explains how we do, in fact, find that a much smaller change in age at marriage in England had a significant effect on fertility. The first objection, however, remains. If it can be shown that it was a rise in fertility that accounted for the population growth, this would indeed make England unusual. It is one matter to show that fertility could have been the important factor; it is another, as Habakkuk pointed out, to prove convincingly that it was.

That we are now in a position to resolve these questions, among the most important and contentious facing historians, is largely due to the work of the Social Science Research Council Cambridge Group for the History of Population and Social Structure. During the last twenty years they have reconstructed the population history of England through two separate procedures. They have worked out methods of 'back projection' which enable the historian to calculate fertility and mortality rates back to the sixteenth century, from aggregate figures derived from parish registers. This is complemented by the intensive study of parish registers through 'family reconstitution', that is, the linking of baptisms, marriages and burials, so that it is possible to work out ages of mothers at marriage, when giving birth, and at death. During the last four years the results of this work have been published, and it has transformed our understanding of the causes of these puzzling relations. We can now see that the unexpected solution is the right one.

[1] Wrigley, 'Family Limitation'.
[2] Hajnal in Glass, *Population*, 122; Macfarlane, *Individualism*, 158.
[3] Schofield, 'Review', 180.

We may briefly summarize the conclusions of the work of Schofield and Wrigley which has finally settled the argument. They have discovered that there was little change in the levels of marital fertility over time. The number of children conceived in each year of marriage hardly varied over the sixteenth to eighteenth centuries, and can consequently be discarded as a major solution to the puzzles we are investigating.[1] Throughout the centuries, when compared to France or Sweden, English marital fertility was surprisingly low, but that is another problem. What did change dramatically were the two features first stressed by Hajnal. The proportions never marrying dropped at the beginning of the eighteenth century. Schofield and Wrigley calculated that in the second half of the seventeenth century as many as 22.9 per cent of the population of both sexes between 40 and 44 years of age were still not married. There was a great change in the second half of the eighteenth century, when the equivalent figure was about 9 per cent not married: a change from about a quarter of the population to one tenth.[2] Thus one important difference in the pattern was the fact that one had moved from a Stuart England where many never reproduced themselves to a Georgian England where most people did so.

Yet the heart of the eighteenth century shift lay elsewhere - namely, in the drop in the age at which people reproduced themselves. In essence, the change hardly looks dramatic. Wrigley tells us that 'during the period in which intrinsic growth rates rose from zero to 1.67 per cent per annum ... age at first marriage of women fell by about three years.' The drop was from a mean age of 26 to a mean age of 23.[3] Both ages are by many countries' standards very high, and the modification may appear slight. But in the right circumstances, when mortality is relatively low and when it is combined with an increasing proportion marrying, this is enough to have a significant effect on population growth rates. 'Since the middle twenties is in the period of peak fecundity for women, a fall of three years in marriage age is sufficient to make a substantial difference to over-all fertility.'[4] The author estimates that 'the changes which occurred in marriage and marriage-related behaviour in the course of the eighteenth century were sufficient to have raised the annual rate of growth of the population from zero to 1.26 per cent, *even though there was no change in either mortality or age-specific marital fertility*'; hence he is able to argue convincingly that 'about three-quarters of the acceleration in the growth rate which took place over the period is attributable to the increase in fertility brought about by changing marriage behaviour.'[5] The other quarter he ascribes to possible changes in mortality.

One of the associated features of this change, which has led us to talk of 'age of reproduction' rather than age at marriage, is the link with illegitimate and pre-nuptial conceptions. It might have been expected that, as stiff controls which prevented many from marrying and delayed the marriages of

[1] Wrigley and Schofield, 'Population History', 168.
[2] Wrigley and Schofield, Population History', 176, originally put the figure at 5.9%, but Schofield now thinks a 'a minimum of 9% is probably nearer the mark' (personal communication); see also the dramatic graph in Outhwaite, *Marriage*, 151.
[3] Wrigley, 'Population', 131; Wrigley in Outhwaite, *Marriage*, 148.
[4] Wrigley in Outhwaite, *Marriage*, 148-9.
[5] Wrigley in Outhwaite, *Marriage*, 171.

others were relaxed, the pent up reproductive energies which had occasionally found outlets in bridal pregnancy and illegitimacy would diminish. The contrary happened. 'Age at marriage fell and with it the proportion of men and women who never married, and yet at the same time illegitimate fertility rose sharply and the proportion of pregnant brides also increased.'[1] This was very different from France, for example, where as marriage age was delayed, 'there was some tendency to more widespread liaisons outside marriage, as if there were a pent-up pressure.'[2] In England 'whatever constrained men and women to marry late also constrained them to avoid extra-marital intercourse, but when earlier marriage was countenanced, inhibitions on intercourse outside marriage were also relaxed.[3]

We have learnt several important things as a consequence of these discoveries. We know that England, during the sixteenth to nineteenth centuries, exhibited a particular kind of self-correcting, homeostatic regime connecting wealth and population. Instead of population immediately expanding up to the maximum that resources would allow and then being cut back, a comfortable margin was left by the working of the institution of regulated marital fertility. There was a gap which allowed considerable capital accumulation with little population growth, and which also slowed down growth when resources began to be stretched. This was linked to a second feature - what Wrigley calls a 'low-pressure' equilibrium. This had two characteristics. On the one hand, both mortality and fertility were below the maximum for many centuries. This was made possible by controlled fertility. In societies 'where fertility was high, mortality was of necessity also high.' But in England, where fertility was lower, mortality could also stabilize at more modest levels, as Malthus had earlier pointed out.[4] Such a lower-level equilibrium also led to advantageous effects on standards of living. 'A low-pressure equilibrium between population and the resources available to sustain it was consonant with relatively high standards of living. A high-pressure equilibrium was inevitably one entailing for the bulk of the population a life lived close to the margin of existence.[5] In this respect England was different from other traditional societies and other countries in Western Europe at the time.[6] In a lengthy comparison with France, Wrigley shows that the fertility and nuptiality patterns of the two countries were very different in the eighteenth century: 'the contrast between the history of marriage in England and France in this period is remarkable.' It was thus not mortality 'which appears to have distinguished England from other countries so much as her fertility history'.[7]

Above all we know that the crucial variable was marriage and associated sexual behaviour. 'Thus marriage now emerges holding the centre of the stage', for the 'changes in nuptiality in England in the early modern period were on a large enough scale in themselves to move population growth

[1] Wrigley in Outhwaite, *Marriage*, 146.
[2] Wrigley in Outhwaite, *Marriage*, 146.
[3] Wrigley, 'Population History', 209.
[4] Wrigley, 'Population History', 209; Malthus, *Population*, I, 240.
[5] Wrigley, 'Population History', 209.
[6] Wrigley and Schofield, 'Population History', 184.
[7] Wrigley in Outhwaite, *Marriage*, 174-6.

rates between the minimum and maximum to be found in pre-industrial societies.'[1] Marriage and the family system become of central importance in helping us to understand the unique and early development of England. As Wrigley points out, the work of Hajnal and Laslett had suggested in the 1960s 'the possibility that the pre-industrial west European family pattern - late marriage for women, a large proportion of women of childbearing age remaining unmarried, a separate household at marriage, small households comprising only a single conjugal family - was unique among all traditional societies'. This meant that the study of the family became of central importance.

> Was it a key to the understanding of the transformations of the eighteenth and nineteenth centuries? If it was not the industrial revolution that had produced the modern conjugal family system, might it not have been the existence of an unusual complex of marriage and co-residential patterns that helped to produce the radical economic changes of the industrial revolution period?

The connection is not merely temporal. It is possible to see how the homeostatic, low-level equilibrium structure of England could actually encourage, or at least not extinguish, economic growth.

> A pre-industrial society in which overall fertility is comparatively low because women marry late is one in which a comparatively favourable balance between population and productive capacity is attainable. Once attained, it is easier to sustain where age 'at marriage is sensitive to economic and social circumstances and not largely determined by a biological event such as menarche. Higher real incomes imply a different structure of demand and a greater chance of provoking the type of changes that precede and accompany an industrial revolution.[2]

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A set of long-standing puzzles has been solved and the solution has important implications. Yet, as Wrigley points out, in solving these a fresh set of problems has been raised. We now know that what needs to be explained is the pattern of marital and sexual relations which allowed population to behave in this way. We know that 'English society was so constituted that at times of low over-all fertility every aspect of the reproductive career of women up to the point of marriage was conducted conservatively.'[3] But how, exactly, was it so constituted, and why? Until we have an answer to this, we will not be able to answer the many new questions now thrown up: 'Why should nuptiality have increased so remarkably in eighteenth-century England? Why should illegitimacy and prenuptial pregnancy have such a distinctive relationship with nuptiality? And why should what is observable in England have contrasted so markedly with the parallel phenomena in France in the same period?[4]

Thus what now faces us as a central problem is the nature of the English pattern of marital and sexual relationships, and above all how the

[1] Wrigley, 'Population', 133.
[2] Wrigley, 'Reflections', 76-7.
[3] Wrigley in Outhwaite, *Marriage*, 184.
[4] Wrigley, in Outhwaite, *Marriage*, 183.

decision to reproduce was reached, either through marriage or outside marriage. Before embarking on analysis of this we may accept three further pointers from the work of Wrigley and Schofield. First, it is obvious that there is a relationship between decisions to reproduce and real income. It is argued that 'there was a tight relationship between the secular behaviour of prices and the rate of population growth from the sixteenth century until about 1800.'[1] Furthermore, 'there is evidence that the secular changes in nuptiality which took place ... were closely associated with the secular trends in real wages, with the former taking place some 20-30 years later than the latter.'[2] But, as Wrigley states, even if a relationship is demonstrated, this does not explain 'how economic changes became transmuted through social norms in a manner which resulted in an "appropriate" change in individual decisions about marriage and reproduction both within and outside marriage.[3] A particular problem is the lag of twenty years or so.

A second important suggestion is that we are dealing with a long-enduring pattern and that we need to look for a solution in the effects of enduring rules rather than changes in the rules themselves. At first, when the dramatic change of the mid-eighteenth century was pinpointed to changes in fertility, it seemed attractive to believe that this reflected some massive transformation in social structure or in the nature of marriage. One appealing argument was that as the labouring groups, those dependent entirely on wages, increased as a proportion of the population, so a hitherto minority pattern of early marriage became dominant. Thus changes in fertility reflected the growth of proletarianization.[4] Wrigley, however, points out that 'the downturn in nuptiality in the early nineteenth century', which seems to have once again reflected a downturn in real wages, 'is fatal to this viewpoint since proletarianization went forward steadily.'[5] Nor is there evidence of a major shift in the nature of marriage itself or of its relations to economics. Thus 'there appears to have been a substantial uniformity of reaction to changing real income trends between the sixteenth and nineteenth centuries.'[6] When trying to explain the shift in the middle of the eighteenth century Wrigley comments that 'it is highly probable that this did not reflect any major alteration in the way in which young people made their decisions to marry, to delay marriage or to remain single, but that instead the inducements to marry grew steadily greater and the disincentives less with rising real incomes over a period which lasted more than a century.'[7] In other words, it is possible that between the sixteenth and nineteenth centuries, and possibly earlier, we are looking at a framework of decision-making, a set of rules and customs, which remain broadly the same. What changes is the outcome produced by these rules in differing economic circumstances. Prima facie, this makes sense; it does not need a radical change in the structure and nature of marriage to change a mean age at first marriage for women from 26 to 23.

[1] Wrigley, 'Population', 136.
[2] Wrigley in Outhwaite, *Marriage*, 183.
[3] Wrigley in Outhwaite, Marriage, 183.
[4] Levine, *Family Formation*.
[5] Wrigley, 'Population', 144.
[6] Wrigley, 'Population', 144.
[7] Wrigley, 'Population', 148.

The final suggestion links the former two and provides a possible explanation for the difference between the English pattern on the one hand, and the French and Swedish on the other. In the continental variety, 'it is tempting to see in the nuptiality history . . . a "peasant" variant', while in England one has a 'wage' variant. 'In the former the number of viable holdings might be supposed to be growing less rapidly than the population, which might make matches harder to make, while in the latter a system of "ecological niches" had given way to one in which current and prospective earnings had replaced access to land as a criterion for eligibility to marry.' This, Wrigley states, is merely 'speculation', an 'hypothesis to be tested'.[1]

Solutions to the problem of how the Malthusian regime worked and when it became established have not only an historical but also a present-day significance. Rapid population growth is one of the gravest threats to world resources and peace. In the period between about 1950 and 1975 the population trends in the Third World led to extremely gloomy forecasts. Many governmental and other attempts to bring down fertility to match the lowered levels of mortality through family planning campaigns were failing, and a large literature arose to show why such schemes would be unlikely to succeed.[2] Then an extraordinary thing happened. In a growing number of countries, fertility rates started to drop. Rather like the strange fertility transition which occurred throughout most of Europe in the period 1870-1915, this change occurred across ethnic, religious, political and other boundaries. It was noticed particularly in islands (Mauritius, Taiwan, Japan, Sri Lanka) and in 'Confucian' cultures - Singapore, Taiwan, parts of Thailand, for example, and later, dramatically, in China.[3] But it also started to occur in large land-locked states, in Catholic as well as Protestant countries (for example, certain countries in South America). The one major exception, where fertility rates rose rather than declined, was sub-Saharan Africa. Like the fertility transition within Europe, the reasons remain a mystery. There is no obvious association with sociological or economic variables. In both cases it looks as if some kind of 'fashion' has changed. But it became apparent that in fact the fertility changes were due to two major changes - a Malthusian revolution to late age at marriage, and a neo-Malthusian one to contraception.

Using a simple model developed by the demographer Matras, we can point to four major types of fertility regime:[4]

		Fertility	
		Uncontrolled	Controlled
Marriage	Early	A	B
	Late	C	D

[1] Wrigley in Outhwaite, *Marriage*, 183.
[2] Davis, 'Population Policy'.
[3] Maudlin, 'Family Planning'; Tabah, 'Population'.
[4] Cited by Spuhler in Zubrow, *Demographic Anthropology*, 211.

In Western Europe today we employ D, though sometimes reverting to B. It was expected by many that when the hoped-for demographic transition occurred in the Third World it would involve a direct move from A to D. This has indeed sometimes happened - as with the massive campaigns in China where there has been some success in moving a quarter of the world's population in a few years from A to D, by way of late marriage and one-child families achieved through contraception and abortion. But equally common is the move from A to C, which may have a similar effect, but probably arises from different causes.

A brief summary of what is happening is provided by Ansley Coale. He points out that there is a 'Malthusian element in current population trends that is usually overlooked. The preventive check of "moral restraint" that Malthus proposed is contributing very significantly to the reduction in human fertility occurring in the past 10 or 15 years in the third world.'[1] He notes a significant rise in the age at marriage leading to a drop in fertility in Morocco, Tunisia, Kuwait, the Central Asian Republics of the Soviet Union, Sri Lanka, Singapore, Malaysia, Hong Kong, Taiwan, Korea and China. He cites, as an example, Korea. There, over the period 1930-75, the overall fertility declined by approximately a half, the birth rate dropping from 43 to 23 per thousand. This was due more to the rise in the age at marriage than to birth control; the proportion married among women of childbearing age declined by 33 per cent, and marital fertility decreased by 23 per cent. The decline in the proportion married among women aged 15 to 50 was 'wholly the result of a very large increase (from 16 to nearly 24 years) in age at first marriage.'[2] Coale notes that in Taiwan the mean age at first marriage rose from 18 in 1905 to 23 in 1970, in Sri Lanka from 18 in 1901 to 25 in 1975. The difficult case is China, for which little information was then available. Coale's hunch, based on fragmentary reports that there had been a substantial rise in the age at marriage there, now appears confirmed, and consequently the 'rising age at marriage has been as important as birth control in reducing Chinese fertility.'[3] If this is true, then Coale concludes that the Malthusian preventive check (later marriage) 'has been as effective in contributing to the recent reduction in the birth rate in the third world as the much more publicized spread of "family planning".'[4] Yet this has gone so totally unnoticed that there has been little speculation on the reasons for the change.

From the work of Malthus and certain recent demographic and economic historians we can draw certain conclusions. The relationship between economic growth, and population trends is central to an understanding of European economic growth and particularly the remarkable upsurge of wealth and productivity in England in the eighteenth and nineteenth centuries. An important distinguishing feature of Europe, the pivot on which the system turned, was the flexible marital regime, which allowed population to adjust to economy. Malthus had shown that population will tend to grow rapidly even before there is any economic growth; it will destroy any

[1] Coale, 'Malthus', 10.
[2] Coale, 'Malthus', 12.
[3] See recent issues of *Population and Development Review*.
[4] Coale, 'Malthus,' 12

chance of a rise in the standard of living, since it will increase as soon as mortality loosens its grip. Such population expansion will also make economic growth more difficult through the law of diminishing marginal returns on further labour input. What was needed was a breathing space. 'The constant effort towards population, which is found to act even in the most vicious societies, increases the number of people before the means of subsistence are increased.'

This produces a negative spiral. Food becomes scarcer, the poor 'consequently must live much worse, and many of them be reduced to severe distress'. Then wages fall, with a superabundance of labour. This leads to a fall in population, through 'the discouragements to marriage and the difficulty of rearing a family'.[1] What was needed was a situation where, instead of population growing rapidly and being held in check by 'misery' or 'vice', a set of tastes and institutions could be created which would induce people to pursue other than biological goals. A game needed to be devised in which there would be prizes of different sizes, assured by the firm system of government - prizes that people really wanted. This game is known to us as capitalism. Whatever its costs, Malthus believed that its benefits recommend it to us.

What, in effect, Malthus and his followers have done is to isolate a problem. In the 'natural' situation, fertility is uncontrolled and is held back by two major mechanisms. Either there is high perennial mortality, particularly of infants, which contains population. Or, more usually, there is a wave-like movement with population climbing moderately rapidly and then being savagely cut back by a 'crisis', usually the pestilence and famine associated with war. This latter 'crisis' pattern has been observed from India, China and much of Europe until the middle of the eighteenth century.[2] In such situations it is the control of perennial and crisis mortality, often by such indirect measures as the institution of peaceful government or good communications, which causes population to explode. Any improvement, in food, technology or other factors, would quickly, as Malthus argues, be absorbed. These are what Wrigley would call 'high-pressure' regimes. They make it extremely difficult to accumulate in the long term and they tend to force down the living conditions of the masses. By an accident whose nature and causes we do not yet understand, England seems to have escaped from this 'natural' situation by at least the sixteenth century. It had escaped into a 'low-pressure' regime, much more like that of present-day 'post demographic transition' societies. That is to say, both fertility and mortality were well below their theoretical maximum and were more or less balanced. Such a homeostatic situation has been observed in some simple hunting- gathering societies and among certain species of animals, and became widespread in Europe in the nineteenth century. There are now signs that it is developing in parts of the Third World, particularly in South-East Asia. Yet it is so generally unusual that it is very tempting to link it to other well known unusual features of the society - a precocious growth of industry, urbanization and democracy.

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[1] Malthus, *Population*, I, 15.
[2] Macfarlane, *Resources*, 204ff.

THE MALTHUSIAN MARRIAGE SYSTEM AND ITS ORIGINS[1]

A number of the central features of the marital and family structure which Malthus believed to be present can be abstracted from his analysis. Most important are certain characteristics which he takes for granted, hardly bothering to mention them with any emphasis, or simply ignoring them. One of these was a set of assumptions about the nature and purposes of marriage, which were self-evident and 'natural' to an English clergyman living at the turn of the eighteenth century but are unusual in comparative perspective.

Malthus assumed monogamy, though most societies at his time practised polygamy; a fairly egalitarian relationship between husband and wife, while most societies assumed male dominance; unbreakable marriage, though many permitted easy divorce; permissive remarriage, though the majority either forbade remarriage or made it mandatory; independent residence after marriage, though the majority of societies have been virilocal or uxorilocal;[2] a fairly equal contribution to the conjugal fund, though the usual situation was for wealth to flow preponderantly from either bride's or groom's group. These structural features, which would have seemed so extraordinary to those living in China, India, Africa, Eastern Europe and South America at the same time as Malthus, are the assumed foundations of his scheme. They were the basis for beliefs about the nature of marriage choice which were equally unusual at that time.

Malthus' 'preventive check' was based on the assumption that it was the individual man and woman who would decide whom to marry. But the vast majority of people believed that, on the contrary, marriage was not a matter to be left to the couple themselves, but was to be arranged by the parents and wider kin. Malthus' analysis was also founded on the presumption that there were few positive rules restricting the choice of spouse, and in particular, that the individual could marry whomever he or she could 'catch'. The very elaborate rules which in the greater part of the world dictated that an individual should marry within a certain group or category defined by kinship, geography, caste, class, religion or occupation, are not apparent in his analysis. All this betrays an even deeper assumption - that there was choice in the matter of marriage. Malthus believed that to marry or not to marry at all was a matter for decision by the individual concerned. The almost universal view at his time was that marriage is an automatic, 'natural' event, like birth or death, but such a way of looking at things was not contemplated in his scheme. Both as to when one married and whether one married at all, it was confidently assumed that the matter was open to choice. Marriage was like choosing a career; but there was also an element of 'calling' or vocation, and not all were called.

A further cultural assumption which would have startled other parts of the world was the view that marriage, and particularly the rearing of children,

[1] The last three pages of this chapter have been left out, since they referred to the ensuing book on *Marriage and Love* and are not relevant here.

[2] 'Virilocal', residence at husband's place; 'uxorilocal', at the wife's.

would be economically and socially 'costly'. The whole Malthusian analysis was based on the weighing up of the advantages and disadvantages of marriage, regarded from the individual standpoint. Malthus argued that the state should not tamper with the balance by increasing the Poor Law provisions, thereby favouring those who took the risk and married young. Such people should be forced to bear the full cost themselves. Behind this argument is the assumption that the participants were faced with real costs. Most human societies contemporary with Malthus would not have seen any opposition between individual desire (biological and psychological forces) and individual wealth (economic and social pressures). Usually, the two have run alongside each other rather than conflicted. Unusually, it is precisely marriage, and above all the children and their labour which marriage produces, that bring wealth of all kinds. To talk of the cost of marriage, to see children as an expense and marriage as likely to threaten individual prosperity, has been until recently an almost incomprehensible view. Wives and children are wealth and happiness.

Although the assumptions revealed in Malthus' scheme and Darwin's personal reflections were unusual at the time in a world context, they are now so familiar to us that we tend to take them for granted. They show a set of cultural and social features which have frequently been dissected in the contemporary world when theorists discuss the differences between the 'traditional', 'familist' system and the 'modern', 'individualistic' one - Malthus and Darwin fitting well into the latter. To elaborate more fully the nature of the marriage system of which Malthus wrote, we may examine a few more examples from the vast literature in this field.

Just after the Second World War an American social demographer, Kingsley Davis, wrote a textbook in which he outlined the major features of what he called the 'Great Transition' to the 'modern family system', the movement from 'familistic' to 'individualistic' societies. In the 'familistic' society - for instance, Hindu India, where the immediate family is controlled by the extended family - there is likely to be plural mating (either polygyny or concubinage), an authoritarian power of husband over wife, young age at marriage, marital choice determined by parents, and an absence of romantic love. Economic exchanges at marriage are complex, 'embracing not only a wide range of goods and services but also a wide circle of relatives', and the newly married couple will tend to live with the parents. There will probably be a high fertility rate to compensate for high mortality. Inheritance will either be automatic or strictly along kinship lines. The familistic system has historically 'prevailed to a much greater extent than the other' (individualistic) system. Yet it is now being destroyed by the 'small family system' which is 'now being diffused, along with other features of industrialism, to the rest of the world'. The individualistic system is the mirror image of the structure described above. For instance, 'mass romanticism - the deification of romantic courtship - has reached its pinnacle'; couples wish to set up a separate home; the 'sole effective kinship group is now the immediate family, and even this unit has lost its size and function.'[1]

[1] Davis, *Human Society*, 417-18; 424; 422.

This contrast has been elaborated in the work of W. J. Goode, who outlines the major features of the 'modern' conjugal family system.[1] The most important characteristic is the 'relative exclusion of a wide range of marital and blood relatives' from the affairs of the young couple. From this flow a number of other features. The young will establish 'neolocal' or separate residence after marriage and will be relatively independent. The courtship system will be based on the mutual attraction between the future husband and wife, rather than the interests of the wider kin. The age at marriage will rise, for 'the youngsters must now be old enough to take care of themselves; i.e. they must be as old as the economic system forces them to be in order to be independent at marriage.' The couple decide the number of children they want, rather than their choice being dictated by the needs of a wider group. The husband-wife relationship becomes the most important of all ties, and 'the emotions within this unit are likely to be intense, and the relationship between husband and wife may be intrinsically unstable.' Remarriage is likely to be widespread 'because there is no larger kin unit to absorb the children and no unit to prevent the spouses from re-entering the free marriage market.' Goode then proceeds to analyse how far this system has already penetrated in the Middle East, Africa, India, China and Japan. He argues that there is a rapid spread, based as much on a cultural or ideological pressure as on any link with Western economic or technological systems. 'The ideology of the conjugal family is a radical one, destructive of the older traditions in almost every society.[2]

A complementary depiction of this marital and family system, specifically linking it to the Malthusian and demographic arguments, is provided by John Caldwell. Caldwell's major thesis is that there is a great difference between the two main types of social-demographic regime. In many traditional societies there is no economic or social advantage from restricting fertility or avoiding marriage because, on balance, children are an economic and social advantage. The net flow of assets is upwards, from children to parents. Children contribute more to their parents than they consume. This results not from the nature of the means of production - for instance, the type of agriculture or industry - but from the set of cultural expectations about relations within and outside the nuclear family. Thus one finds that even in an urban-industrial setting such as the city of Ibadan in West Africa, children are a net advantage to their parents.[3] Caldwell argues that 'as long as children ungrudgingly share their earnings with their parents it will pay to have a large family and to educate them.'[4] Here we have a society where there appears to be little 'cost' in marrying and having children; both activities expand a person and add to his material and social wealth.

What transforms the situation, according to Caldwell, is the importation of the 'Western' family system, or what we have termed the 'Malthusian' marriage system. This alters the situation, so that wealth flows preponderantly down rather than up. Hence children begin to become a cost

[1] Goode, *World Revolution*, 8-9.
[2] Goode, *World Revolution*, 19.
[3] Caldwell, 'Fertility', 243.
[4] Caldwell, 'Rationality', 16.

to their parents. 'What causes this emotional nucleation of the family whereby parents spend increasingly on their children, while demanding - and receiving - very little in return?' asks Caldwell. His answer is that it is 'undoubtedly the import of a different culture; it is westernization.' This process of 'westernization' is 'the central feature of our times'.[1] It is the culmination of a long history, mounting in the nineteenth century through the pressure of missionaries, traders and Western imperial governments, and today pushed by the mass media and mass education. Yet we may wonder what the specific content of this 'westernization' is, that leads to 'family nucleation and the reversal of intergenerational wealth flow', which Caldwell believes will 'almost inevitably ... guarantee slower global population growth'.

The central features are precisely those which were illustrated by Malthus and Darwin. They are the 'predominance of the nuclear family, with its central conjugal tie and its ideology of concentrating concern and expenditure on one's own children'.[2] The theme is an application of Davis and Goode's ideas to demography; it is the rise of the dominant husband-wife relationship, the decrease of obligations to wider kin, and the concentration on children. The whole package is succinctly presented in Caldwell's explanation of our own assumptions and how they hinder a Western observer from understanding Third World societies. In the West there is a 'strong nuclear family' with few obligations outside immediate relatives; a deep bond between spouses; an increased expenditure on children 'accompanied by a decline in moralizing about what is good for them'; 'property bought on an open market largely regulated by the State', with little community or family ownership. Caldwell does not discuss at this point the other parts of the system that we have noted, particularly individual 'love marriage', but his scheme fits well with the earlier analyses. And Darwin's self-examination and Malthus' general scheme fit excellently with his analysis. Caldwell helps to show why it is that marriage and childbearing become, instead of automatic and self-fulfilling, a matter of choice and of the weighing of advantages. He is correct in seeing this as a vast transformation without which contraception and a deferred marriage system are unlikely to occur. He is also right in arguing that the origins of the change lie in the 'perhaps unique familial and social structure' that had somehow emerged in the West at least by the time of Darwin and Malthus.[3]

Caldwell's major field research has been undertaken in West Africa. It is supported by the analysis of anthropologists who have worked in the same area - for example, Meyer Fortes. Fortes notes the peculiarity of the Western family system assumed by Malthus and Darwin, that is, 'the monogamous, independently co-resident, conjugal or nuclear family'.[4] In contrast to this family structure, with its emphasis on marriage and husband-wife relations, is the system in West Africa where 'the critical factor is parenthood.' There, marriage is 'valued primarily as the indispensable condition for the achievement of *parenthood*', rather than as an end in itself. This is because

[1] Caldwell, 'Restatement', 352, 356.
[2] Caldwell, 'Restatement', 356.
[3] Caldwell, 'Fertility', 246-7.
[4] Fortes in Hawthorn, *Population*, 124.

the 'achievement of parenthood is regarded as a *sine qua non* for the attainment of the full development as a complete person to which all aspire.' While, in the West, people 'have children incidentally to conjugal or other sexual relationships', and with the Welfare State 'there is no need for parents to have children with a view to augmenting family income or insuring against penury or loneliness or in old age', in West Africa 'the supreme purpose of marriage', Fortes tells us, is procreation. To attain any kind of political status, as well as personal wealth, one must have children.[1] Because of the 'enormous investment individually and collectively, emotionally and morally' in offspring in West Africa, it is, Fortes argues, 'inevitable that members of a filial generation will strive to achieve marriage and parenthood as early as they are permitted to.' In such a situation, 'no one is a complete person until he or she marries and achieves personhood', and 'there is a deeply ingrained ideal that normal men and women should continue to beget and bear children throughout their fecund years.' Thus a 'woman becomes a woman when she becomes able to bear children and continued childbearing is irrefutable evidence of continued femininity', just as masculinity is equated with virility and the fathering of children.[2]

This description of West Africa is indeed a long way from the world of Malthus and Darwin, for here a fulfilled life, marriage and childbearing are all deeply associated. The kind of oppositions and choices which were taken as axiomatic in the Western discussions in the early nineteenth century and by family planners today, would and do strike people in these cultures as most extraordinary. We could summarize the contrast between the two polar extremes of these ideal types in a different way, as follows.'[3]

In familistic societies, those that analysts often term 'tribal' and 'peasant' or having a 'domestic mode of production', the central feature is that production and consumption are inextricably bound to the unit of reproduction, or family; units of social and economic reproduction are identical. The farm and family are bound together as the place where both wealth and children are produced. As T. Shanin puts it, 'the family farm is the basic unit of peasant ownership, production, consumption and social life. The individual, the family and the farm, appear as an indivisible whole.'[4] Or as A.V. Chayanov summarized the position, 'The first fundamental characteristic of the farm economy of the peasant is that it is a family economy. Its whole organization is determined by the size and composition of the peasant family and by the coordination of its consumptive demands with the number of its working hands'.[5]

In many societies, historically, the basic or smallest unit of production and consumption is not the individual, but the members of a family, which may merely consist of parents and children, or a larger group. All those born into this minimal group have an equal share and rights in the resources; labour is pooled in the group; the 'estate' is passed on undiminished from

[1] Fortes in Hawthorn, *Population*, 125, 127, 128, 132.
[2] Fortes in Hawthorn, *Population*, 124.
[3] What follows is based on Macfarlane, 'Reproduction'.
[4] Shanin, *Peasants*, 241.
[5] Wolf, *Peasants*, 14.

generation to generation. In this situation each new child is an asset, giving of his or her labour and drawing off the communal resource. Each member contributes to the welfare of parents and wider kin (especially as the parents pass their prime), increasing the prestige and political power as well as the economic well-being of the group. The unit of production and the unit of reproduction coincide. To increase production, one increases reproduction; likewise, as Malthus would have argued, if productivity increases, so will reproductivity. Where the basic unit of production and consumption is the domestic group, whether co-residential or operationally united in work and consumption, there fertility will be highly valued - as in much of traditional China, India, Africa and Eastern Europe. Each small group will try to maximize its size.

Economics, social structure, politics, ideology and demography have become intertwined; to control fertility is to alter part of a delicate structure which also threatens many other good things in life. Deeper than this, it is not even a matter of choice; one is not weighing advantages, for there is no contradiction between the different interests of parents and of kin, between psychological and economic needs.

The opposite situation is the one described by Davis, Goode and Caldwell as the 'Western', capitalist, nuclear family and individualist systems. Here the central feature is that the lowest unit of production and consumption is not the family but the individual. And the individual only expands his or her self in one way - through marriage, to one person. In such societies the husband-wife bond is stressed, there is no communal, family ownership of property or permanent joint consumption unit. Production is not based on the family but on non-familial links. The permanent basic unit is either the lone individual or the married pair. By focusing on the individual rather than the family, many demographic features are changed. Instead of a population expanding in quantity as Malthus has predicted, an increase of productivity is used in the first place to increase the quality of life for the individual, rather than the wider kin group. Hence a rise in productivity will not immediately be channelled into reproductivity: there may well be that delay, that deferral of gratification, which Malthus pleaded for.

In this individualistic variant, parents do not see production and reproduction as inextricably connected; sex and childbearing are separable activities. Women's main role is no longer as a productive and reproductive machine; extra children do not necessarily increase the prestige and well-being of a wider group, or even of their own parents. In fact, children, and certainly a large number of them, become a threat to the happiness of their parents, to their mother's health and to their father's peace and pocket. Many children are seen as a drain on the individual, who is not recompensed by labour invested in a common resource which will provide a store for the future. In such a situation, marriage and child bearing incur a cost, celibacy has its attractions and family limitation is likely to be encouraged. Marriage age is likely to be high, and people will pause and reflect both before marrying and later, on procreation.

Thus in a familial mode of production, fertility increases the well-being of the smallest units of society, even though it may be disadvantageous to the society as a whole. While there is no tension between social, economic and productive ends for the individual, there may be a new tension between the needs of the family and of the nation. Such a congruence between a family system and reproduction is nicely illustrated by two examples. A Spanish farmer told the poet Laurie Lee, 'Buy land and breed sons and you can't go wrong. Come war and thieves and ruined harvests - they don't signify at all ... If a man' s got strong blood like me, and scatters his seed wide enough, that man must flourish.'[1] Or as a Punjabi water carrier explained to the anthropologist M. Mamdani, mistaking him for the family planner who visited him years before,

> You were trying to convince me in 1960 that I shouldn't have any more sons. Now, you see, I have six sons and two daughters and I sit at home in leisure. They are grown up and they bring me money. One even works outside the village as a labourer. You told me I was a poor man and couldn't support a large family. Now you see, because of my large family, I am a rich man.[2]

Here, to invest in reproduction is to increase production and consumption, but it would not have been so if the children had refused to hand over a substantial part of their wages to a family fund. If they had kept their own money, set up separate homes, paid their taxes to the government who might have provided some security for the old, the situation would have been quite different. In that case, an individual would have had to choose between children and leisure goods, between a child and a mortgage, between a child and geographical and social mobility, perhaps between a child and a career. Acquisitive or possessive individualism alters all the equations. It leads to a world where the assumptions of Malthus and Darwin make some kind of sense.

That world of expectation and family obligations predominated in the first half of the nineteenth century in England, and is now spreading by way of Europe and America over much of the world. This leads us to ask where it came from, how it originated. Ultimately we wish to know how it worked and what caused it. In order to understand this we first of all need to know how long it has operated as a system. If it had started in the eighteenth century, then certain explanations can be advanced; if earlier, then others. Since the pattern of marriage is both at the heart of the problem and also clearly of so much contemporary importance, it is not surprising that there has been growing speculation as to its origins. As we shall see, there is a good deal of confusion about the historical facts, even in relation to England.

The current state of uncertainty in the matter, with almost radically opposed views on most of the central issues concerning timing, is well surveyed by Michael Anderson in his summary of the historiography of the

[1] Lee, *Rose*, 24.
[2] Mamdani, *Myth*, 109.

present situation.[1] It is therefore unnecessary to go into detail here. A number of writers have argued that the curious family system which underlies our modern world and that of Malthus and Darwin is a recent phenomenon. Thus the anthropologist A. R. Radcliffe Brown wrote that 'we must remember that the modern English idea of marriage is a recent and decidedly unusual, the product of a particular social development.'[2] It was the product of the industrial and urban revolutions, and hence basically a phenomenon created in the eighteenth and nineteenth centuries.[3] Others see the changes starting in the sixteenth century, after the Protestant Reformation, but only reaching their modern, nuclear family form with 'love marriage', in the later seventeenth or eighteenth centuries.[4] Some discern a deeper continuity, stretching back into the later Middle Ages, for they can discover no major revolution in structure or sentiment in the sixteenth to eighteenth centuries.[5]

Interestingly, it is the demographic sociologists and historians who have seen the deepest roots and greatest continuity. Thus Kingsley Davis wrote that 'Western European society tended to set the nuclear family apart a long time ago - a fact which is borne out by Western legal history, kinship terminology and courtship customs ... a product of cultural peculiarities extending back at least into mediaeval times.'[6] Richard Smith, speaking of the Malthusian demographic system, writes that 'the regime was most likely in existence when More wrote his Utopia as well as when Marx wrote *Das Kapital*.[7] Caldwell argues that 'For reasons that lie deep in its history, the family was increasingly nucleated in Western Europe centuries ago; indeed some social groups may have crossed the divide reversing the intergenerational wealth flow as early as the seventeenth century', and elsewhere he takes it back even further. The individualistic family system, he argues, could occur even 'before the creation of the modern economy. This seems to be what happened in Western Europe. The feudal system, built on the inherited ruins of the urbanized civilizations of the ancient world, went far towards making a nuclear family economically viable.'[8] A few have even argued that the basic premises of the system go back to the thirteenth century or before. These include Goody, Fortes and myself.[9] The causes are disputed, but the roots are thought to be very early. As Fortes argues, the preoccupation with marriage and other features of the modern pattern is claimed by some to be 'based on the religious ideology and the sexual morality and procreative ideal of Christianity, but I myself believe that it goes back even further in the history of Europe, probably to the Germanic tribes described by Tacitus.'[10]

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[1] Anderson, Western Family; for a further recent survey of approaches to the English family see Houlbrooke, *English Family*, ch.1. A particularly strong difference exists between my views and those of Stone, *Family*. My detailed criticisms of Stone's position are given in Macfarlane, 'Review'.
[2] Radcliffe-Brown, *African Kinship*, 43.
[3] Notestein, 'Population Change', 16; Lowie, *Social Organization*, 220.
[4] Stone, *Family*; Goode, *World Revolution*; Shorter, *Modern Family*.
[5] Mount, *Subversive Family*'; Pollock, *Forgotten Children*; Houlbrooke, *English Family*.
[6] Davis, 'High Fertility', 35.
[7] Smith, 'Fertility', 615.
[8] Caldwell, 'Restatement', 356, 346.
[9] Macfarlane, *Individualism*; Goody, *Family and Marriage*; Fortes in Hawthorn, *Population*.
[10] Hawthorn, *Population*, 124.

THE MALTHUSIAN MARRIAGE SYSTEM IN PERSPECTIVE

We are now in a position to stand back from the details and to consider the answers to the questions posed in the opening chapters.[1] First, we can see how the Malthusian marriage system worked in England to provide a boost to economic growth. The marriage structure was composed of a number of interlinked features, the most important of which was the fluctuating age at marriage. This allowed marriage age to rise to a late level in periods when population growth would have been a hindrance to capital accumulation, and to drop when labour was needed. Combined with this was a selective marriage pattern, producing at times a large proportion who never married, for whom there was an established role. Marriage was not automatic; it was a choice, the outcome of cost-benefit calculations for both men and women. This optional marriage was based on the absence of the normal strong positive or negative rules about whom one should or should not marry. The kinship, caste, class and geographical rules that circumscribe marriage in the majority of societies were weak. The one hard and fast rule was that the young couple should be able to form an independent unit at marriage. The funding of marriage meant that resources for this independence came both from the wider society, through job prospects, and from the savings of the couple and their parents. Marriage was viewed as something one 'saved up for', which one could only 'afford' at a certain point.

As we have seen, the major purpose of marriage was to satisfy the psychological, sexual and social needs of the individuals concerned. Children were a consequence rather than a cause of marriage, a by-product of the sexual union. To be 'married friends' was, for many, the ideal. Ultimately, therefore, marriage was based on a blending of, or compromise between, economic necessities on the one hand and psychological and biological pressures on the other. The union was held to be based on a personal attraction - physical, social and mental - to beauty of shape and beauty of temperament. Marriage was a game, with strategies, tactics, prizes and penalties. The courtship was elaborate - testing and drawing the couple together. Ideally 'love' would convincingly resolve the complex equations whereby individuals tried to balance a whole set of criteria - wealth, beauty, temperament and status - against which they would measure the prospective partner. The wedding and subsequent married life reflected the premises upon which the system was based, showing that the heart of the matter was the deep attachment of one man to one woman.

The influence of this pattern on the relation between economics and demography was considerable. Above all, the fact that marriage was not embedded in kinship or status, that it was a choice, and that it was ultimately about individual satisfaction, meant that marital age was flexible. There was an invisible threshold of expectations below which people were unwilling to risk marriage - a threshold which it was sometimes easier, sometimes more difficult, to reach. After a period of economic growth the controls relaxed, and

[1] This refers to the fact that the middle sections of *Marriage and Love in England* had surveyed the materials in detail.

some people might decide to turn the new affluence into marriage. Others decided to hold out and move up socially. There was, at the least, that lag between economic expansion and population growth that Malthus advocated and that demographic historians have now established did occur. Marriage had become divorced from biology and was an option, a weighing of costs. This is the 'Malthusian revolution', which formed one of the necessary background features for England's industrial progress in the past, and which is sweeping the world today. Industrialization and urbanization are often linked to the system, but there is no necessary connection between them. Hence, the Malthusian system can spread in areas, which are neither urban nor industrial; similarly, as we saw in Ibadan, the presence of industry and urbanization does not necessarily bring about the Malthusian regime.

We can see how a particular demographic regime was produced by a peculiar marriage pattern, but we are then left with the elusive and equally complex question of what 'caused' the marriage pattern. A few hints and suggestions have been given in the preceding chapters. We may draw these together and advance others at a more speculative level. Probably the most convincing general theory is that the Malthusian marriage system 'fitted' perfectly with the particular socio-economic formation known as capitalism. About this Malthus himself was in no doubt. He wrote his work as a rebuttal of the Utopian Godwin, who had argued that the abolition of private property and the equalization of wealth would lead to a balanced and harmonious world in which trouble and strife would fade away. Put in later terms, he advocated the substitution of socialism for capitalism. Abolish the ethics and institutions of capitalism, and all would be well. Malthus' reply was that the central features of capitalism guaranteed stability and happiness. In the strange kind of metamorphosis that Bernard Mandeville has illustrated,[1] private 'vice' was transformed into public benefit; the private passions and the instituted inequalities of life were the only guarantee that war, famine and disease would not re-emerge. If Godwin gained the day, if wealth was redistributed, private property abolished, and the revolution ushered in, as Rousseau and others had urged, disaster would ensue. The 'natural passion between the sexes' would go unchecked, the productive tension between affluence and children would be destroyed, all would marry young, and soon mankind would be cast into misery as population outstripped resources.

Thus Malthus saw that the four essential underpinnings of this regime were an accumulative ethic which justified and glorified the endless pursuit of gain; the ranked, but mobile, society which meant that people were constantly scrambling up and down a ladder of fortune; private property, which was protected by government and law; and a generally elevated standard of living which would give people that taste for bodily comforts which would tempt them to forego immediate sexual gratification and delay marriage until they could afford it. The most important of these was that constant drive which has received - many names from its critics: the 'acquisitive ethic' (Tawney), the 'spirit of capitalism' (Weber), 'possessive individualism' (Macpherson).[2] Malthus argued that if the four elements were present, his regime would

[1] Mandeville, *Fable*.
[2] Tawney, *Religion*; Weber, *Protestant Ethic*; Macpherson, *Possessive Individualism*.

automatically follow. If they were abolished, then, as in present-day China, the only way in which population could be held in check was through draconian and discriminatory laws and public control.

Put in another way, Malthus was saying that the marital and family system that he advocated was the natural corollary of what today would be called market capitalism. Where capitalism flourishes, he argued, so will the particular set of traits he analysed. Thus the system of marital choice, the weighing of costs and benefits, the battle between biology and economics, the constant striving and manoeuvring which dragged mankind painfully up the spiral of wealth - all these were the familistic dimensions of a particular economic and political system. In making this connection, of course, Malthus was not alone. While he justified capitalism as one of the only bulwarks against 'misery', just as Hobbes had justified Leviathan, so other writers saw the close 'elective affinity' between the particular kinship and marriage system and capitalism.

Marx highlighted the capitalistic assumptions in Malthus' work in a number of ways. He pointed out that in absorbing Malthus' ideas, Darwin extended to the whole of life the 'free' world of competitive capitalism. In a letter to Engels, Marx wrote: 'it is remarkable that Darwin recognizes among brutes and plants his English society with its division of labour, competition, opening up of new markets, "inventions" and Malthusian "struggle for existence".'[1] It is Hobbes' *bellum omnium contra omnes*. Or, as Bertrand Russell wrote more recently,

> from the historical point of view, what is interesting is Darwin's extension to the whole of life of the economics that characterized the philosophical radicals. The motive force of evolution, according to him, is a kind of biological economics in a world of free competition. It was Malthus' doctrine of population, extended to the world of animals and plants, that suggested to Darwin the struggle for existence and the survival of the fittest as the source of evolution.[2]

Given Darwin's private speculations and the way they exemplified Malthus, it is tempting to argue further that Darwin projected on to the animal kingdom the same kind of analysis he used in his own reproductive choice.

The connection between capitalism and the 'modern' marital system was made more explicitly by Engels. He pointed out that monogamy was a necessary if not sufficient cause of modern 'sexlove', as he called it, but that it took time to develop into modern individual-choice marriage. 'Before the middle ages we cannot speak of individual sex-love ... All through antiquity marriages were arranged for the participants by the parents, and the former quietly submitted.' The 'mutual love', presupposing equality and consent between the partners, and 'intensity and duration' were still a long way off. In medieval bourgeois society 'the question of fitness was unconditionally decided, not by individual inclination, but by family interests. In the overwhelming majority of cases the marriage contract thus remained to the

[1] Meek, *Marx and Engels*, 95, 198.
[2] Russell, *History of Philosophy*, 753.

end of the middle ages what it had been from the outset: a matter that was not decided by the parties most interested.'[1]

Then, in the late fifteenth century, the 'time of geographical discoveries', came 'capitalism'. This created a new world: 'by changing all things into commodities, it dissolved all inherited and traditional relations and replaced time hallowed custom and historical right by purchase and sale, by 'free contract'.' But to make 'contracts', people must be 'free' and 'equal', and hence 'the creation of these "free" and "equal" people was precisely one of the main functions of capitalist production.' Engels argued that while marriages became 'contracts', legal affairs, the principle of freedom to contract inevitably placed the decision in the hands of those who would have to taken out the contract - the couple themselves. 'Did not the two young people who were to be coupled together have the right freely to dispose of themselves, of their bodies, and the organs of these?' So the 'rising bourgeoisie', especially those in Protestant countries, recognized the 'freedom of contracting a marriage'. 'In short, the love match was proclaimed as a human right.[2] Another irony was that the richer people were - that is, the higher their social class - and the more property at stake, the less room for manoeuvre there really was. Yet the majority of the population began to base their marriage on 'love'. Thus romantic marriage is a by-product of the rise of capitalistic, contractual and individualistic societies. Since this occurred, according to the Marx-Engels chronology, in north-western Europe from the later fifteenth century, this is where we shall find the phenomenon. The Malthusian marriage system emerged triumphant between the sixteenth and eighteenth centuries in one part of Europe, and then spread outwards. This is the view that is now implicitly accepted by many investigators. For instance, we are told that romantic love 'entered middle-class life by the seventeenth century ... when industrialization caused the middle class to grow rapidly in size and power, its ideals of love and marriage began first to colour and then to dominate western thinking.'[3]

The connection between the marriage system and capitalism has been developed in other ways. One argument is that by a curious paradox the central emotional feature, 'love', is a necessity where capitalist economic structures have developed most fully. At first sight, sexual passion and 'love' seem to be totally at variance with what is needed by capitalism. Max Weber observed long ago that 'being one of the strongest non-rational factors in human life', sexual drives are 'one of the strongest potential menaces to the individual's rational pursuit of economic ends'.[4] Yet, by a subtle shift, love and sex were domesticated, the force was channelled, and it became one of the central dynamic elements in the capitalist system. Weber saw that as societies became more bureaucratic and 'rational', so at the heart of such systems grew an impulsive, irrational and non capitalistic emotion at the level of the individual. Just as he had caught the paradox of otherworldly mysticism

[1] Engels, *Origins of the Family*, 84, 92, 95.
[2] Engels, *Origins of the Family*, 96, 97, 98.
[3] Hunt, *Love*, 266-7.
[4] Watt, *Rise of the Novel*, 74, paraphrases Weber.

leading to capitalistic accumulation, Weber hints at the way in which love marriage lies at the heart of rational capitalism:

> the erotic relation seems to offer the unsurpassable peak of the fulfilment of the request for love in the direct fusion of the souls of one to the other. This boundless giving of oneself is as radical as possible in its opposition to all functionality, rationality, and generality. It is displayed here as the unique meaning which one creature in his irrationality has for another, and only for this specific other ... The lover ... knows himself to be freed from the cold skeleton hands of rational orders, just as completely as from the banality of everyday routine.[1]

Freed from the constraints of the wider world, from the power of family, class and custom, and moved to make a leap of faith where calculation is either impossible or discouraging, the lover selects his life-long mate. In a modern way, it could be argued that 'rational, profit-seeking individuals would never marry at all except for the "institutionalized irrationality" of romantic love.'[2]

It is not difficult to see that although the passion of romantic love is 'irrational', it has many parallels with the 'irrational' passion for endless accumulation, the driving desire to possess, which is also at the heart of capitalism. Not only is there a linguistic congruence between the idea of wishing to 'purchase' objects in a market and the desire to completely 'own' or 'possess' another human being, but the emotions can be harnessed and inflamed by those trying to 'sell' other goods. Thus the 'selling' of consumer goods through mass advertising, and the passions between people, are used to reinforce each other. As Jules Henry puts it, 'without the pecuniary exploitation of romantic love and female youth and beauty the women's wear, cosmetics and beauty-parlour industries would largely disappear and the movies, TV and phonograph-record business would on the whole cease to be economically functional."[3] Both romantic love and capitalistic activity are based on individual choice, possession, property and 'free enterprise', as Brain argues.'[4]

Another way of perceiving the connection between market capitalism and the Malthusian marriage pattern is to examine the contrast between pre-capitalist and capitalist organizations of the domestic economy and their effects on attitudes towards childbearing. It has been pointed out that where we have a non-capitalist 'domestic mode of production', with the family farm or business as the basic unit of both production and consumption, there reproduction will often expand production and consumption. The fact 'that the family is the basic unit of work' in the Punjab, for instance, encourages fertility.[5] The peasant family is 'distinguished by a higher birth rate'. The 'very fact of giving birth to a child is regarded as a fact of significance to the farm as far as its future continuity is concerned.'[6] We are told that 'the objectives of the enterprise are primarily genealogical and only secondarily economic.'

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[1] Gerth and Mills, *Max Weber*, 347.
[2] Greenfield's argument in Lasch, *Haven*, 144.
[3] Quoted in Haviland, *Cultural Anthropology*, 212.
[4] Brain, Friends and Lovers, 246.
[5] Mamdani, *Myth*, 132.
[6] Galeski, *Basic Concepts*, 58, 63.

But all this changes with the rise of capitalism. 'As the capitalist system of production has come to dominance a growing separation of the kinship from the economic order has prevailed.'[1] No longer were kinship and economics linked. No longer was it the larger families who were rich, as it had often been in peasant societies.[2] No more was it the case, as in the domestic mode, that wealth flowed automatically upwards, from children to their parents, through the concept of a joint fund. Now reproduction and production came into conflict: people had to make the kind of choice which Malthus and Darwin outlined. They had to balance their individual standard of living against their desire to have children. In this situation, many chose to restrain their fertility by marrying only when or if they could 'afford' to. The major change in many parts of the world 'has been that from family production to capitalist production within a labour market external to the family', for 'family-based production is inevitably characterized by high fertility; and a fully developed system of capitalist production ... is ultimately just as inevitably characterized by low fertility.[3] With the arrival of capitalism, the society is no longer held together by status, but by contract that is, by the market, by an impersonal law, a centralized state. This provides a framework which permits a certain disengagement from the family, enabling free-floating individuals to enter the labour market early, and parents to maintain their independence and security through savings.

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The association between the capitalist and Malthusian systems outlined by Malthus, Marx and Engels is attractive. Yet there is one major objection - namely, temporal incompatibility. Put bluntly, the marriage system emerged too early. This is not the place to detail the origins of the various features of the marriage system, but we can briefly sketch in some outside dates for the two phenomena. The capitalist revolution', by the standard chronology that we have inherited from Marx and Weber, is widely believed to have occurred sometime between the second half of the fifteenth century and the end of the seventeenth. Thus of the later fourteenth century, Marx writes, 'the mode of production itself had as yet no specific capitalistic character', and the 'capitalistic era dates from the sixteenth century.'[4] For Engels, as we have seen, it dates from the 'discoveries', that is, the end of the fifteenth century. Yet if we look at the various features of the marital system, none seem to have emerged in the period between 1450 and 1700.

If we look at the rules of marriage, most of them go back to before the fourteenth century. Age at marriage is difficult to estimate, but late marriage may be a very old characteristic indeed. Tacitus in describing the Germanic peoples in the first century AD wrote, 'the young men are slow to mate, and thus they reach manhood with vigour unimpaired. The girls, too, are not hurried into marriage. As old and full-grown as the men, they match their mates in age and strength.'[5] Certainly, there is no strong evidence to show that

[1] Franklin, *European Peasantry*, 1,2.
[2] Galeski, *Basic Concepts*, 63.
[3] Caldwell, 'Education', 247, 225.
[4] Marx, *Capital*, I, 689, 669.
[5] Tacitus, *Germania*, 118.

women, in particular, married at or near puberty in the thirteenth and fourteenth centuries. Nor is there evidence of a revolutionary change to the wider West European marriage pattern in the sixteenth and seventeenth centuries. The rule of monogamy was demonstrably ancient. Again, the Germanic peoples who invaded England had long been monogamous,[1] and the Christian Church merely reinforced this cultural premise. One substantial change introduced by the Church was the forbidding of easy divorce, but this occurred well before the fifteenth century. Such a block to divorce, combined with monogamy, may lie behind another change from the Germanic roots - the relatively tolerant attitude towards adultery. This, and the growing acceptance of the remarriage of widows and widowers, were features not present in Tacitus' description. But again they were clearly well established by the thirteenth century, at least.

Rules concerning whom one should not marry were probably also very early established. No substantial evidence has yet been produced to show that there were ever strong kinship rules, any form of 'elementary structure', concerning whom one *should* marry. Certainly by the thirteenth and fourteenth centuries such a structure, if it had ever existed, was gone. Likewise, evidence of rules forbidding marriage between different ranks in the social hierarchy is difficult to find from early on, and is certainly absent by the fourteenth century. The customs concerning marriage payments are particularly well documented. As Blackstone long ago noted, the custom of dower and jointure, of portion and gift, was derived from very early Teutonic customs.[2] The crucial system of balanced payments, the absence of 'bridewealth', and the curious intermediate system which lay between the extremes of full 'community' and full 'lineality', are very early established. They can be shown in Anglo-Saxon laws and customs and were certainly widespread in the thirteenth century.

The very ancient origins of these rules - at the earliest, with the Anglo-Saxon cultures that invaded England, at the latest by the fourteenth century - was related to the apparently early establishment of a particular view of marriage which was consistent with them. This view had four main elements. The first was that marriage ultimately of concern to the couple themselves, that it was founded on the mutual consent of the bride and groom and did not depend on others for its arrangement. We have seen that this doctrine was formally accepted into the Christian view of marriage by the twelfth century, and maintained thereafter. In fact, it was probably based on earlier laws and customs: for instance, the laws of Canute in the early eleventh century made the consent of the bride necessary, while consent of the father or guardian was not.[3] So we probably have a blend of Teutonic and Christian traditions establishing freedom of marriage very early on.

A second feature was the downgrading of marriage to a second best, with celibacy as the higher estate. Marriage was thus not a necessary, universal stage, but a particular kind of 'vocation' to which not all were called. This view

[1] Tacitus, *Germania*, 116.
[2] Blackstone, *Commentaries*, II, pt 1, 128, note 24; also page 138.
[3] Howard, *Matrimonial Institutions*, I, 278.

is well established in the writings of the early Christians, and was one of the major contributions of that religion to the later pattern. Unlike most world religions, Christianity did not stress marriage and childbearing very heavily.

A third theme is that marriage is above all to be entered into for companionship's sake, as a partnership of mind and body. It follows from this that the husband-wife bond is the strongest of all relationships; this new contract overrides all the relations of blood – with parents, with siblings, with children – which in many societies are more powerful than the marital relationship. Here again we see a mingling of two traditions. On the one hand, Christianity emphasizes the conjugal bond. Man and woman become one flesh and one blood; Eve was created to be Adam's companion and helpmate; believers were advised by Paul to sacrifice their ties with their parents for the new tie with their spouse. This fitted well with the old uxoriousnss of the Germanic peoples who colonized England and much of Europe. The practice of reciprocal marriage gifts 'typifies for them the most sacred bond of union'. Men and women will share their lives. Tacitus described them in the first century as follows.

> The woman must not think that she is excluded from aspirations to manly virtues or exempt from the hazards of warfare. That is why she is reminded ... that she enters her husband's home to be the partner of his toils and perils, that both in peace and in war she is to share his sufferings and adventures ... She takes one husband, just as she has one body and one life. Her thoughts must not stray beyond him or her desires survive him.[1]

This almost sounds like the present-day marriage service, which is not surprising, for this service is based on the sixteenth-century wording, which in turn is taken from old Teutonic custom. As Maitland pointed out, the marriage rituals of the church 'have borrowed many a phrase and symbol from ancient Germanic custom'.[2] Certainly the companionate view of marriage was the formally and informally accepted one by the fourteenth century, and possibly before.

Finally there is the question of 'love' as a basis for marriage: the origins and rise of romantic love. There is considerable disagreement about this topic, but since it is so important to our argument it is worth examining some of the theories that have been put forward. One of the earliest locations for its emergence is southern Europe in the eleventh and twelfth centuries. Marc Bloch summarized the argument that romantic love started in the 'courtly love' traditions of southern France. This 'courtly love' had at first 'nothing to do with marriage, or rather it was directly opposed to the legal state of marriage, since the beloved was as a rule a married woman and the lover was never her husband.' But this 'all-engrossing passion, constantly frustrated, easily jealous, and nourished by its own difficulties', was nevertheless a 'strikingly original conception', an 'idea of amorous relationships, in which today we recognize many elements with which we have now become familiar.' It had little to do with religious values, and the 'Arab influence', Bloch thinks, is as yet unproven. Yet it 'made the love of man and woman almost one of the cardinal virtues ... it sublimated - to the point of making it the be-all and end-

[1] Tacitus, *Germania*, 115-18.
[2] Pollock and Maitland, *English Law*, II, 370.

all of existence - an emotional impulse derived essentially from those carnal appetites whose legitimacy Christianity only admits only admits in order to curb them by marriage.' It flourished, Bloch tells us, in the lyric poetry which 'arose as early as the end of the eleventh century in the courtly circles of southern France'. [1] Love was somehow connected to the weakness of the Church and the strength of an heretical laity. This allowed the emergence of a new secular morality, of which 'courtly love' was a part. These themes have been expanded by subsequent investigators.

While agreeing on the place and time, De Rougemont links courtly love more explicitly to heresy: 'it was not Christianity that caused passion to be cultivated; it was a heresy of Eastern origin . . . Passionate love ... is rather a by-product of Manichaeism'; it is in Catharist heresy that love originated.[2] C. S. Lewis in *The Allegory of Love* is equally confident about the date and place, and equally unsure about the reasons. 'Every one has heard of courtly love', we are told, 'and every one knows that it appears quite suddenly at the end of the eleventh century in Languedoc.' There can be no doubt about its novelty: it was absent from classical antiquity and from the Dark Age literature. Thus 'French poets, in the eleventh century, discovered or invented, or were the first to express, that romantic species of passion which English poets were still writing about in the nineteenth century.' But as to the causes, Lewis admits himself baffled: 'the new thing itself, I do not pretend to explain', though it is one of the three or four 'real changes in human sentiment' in human history. None of the theories - Germanic, Celtic, Byzantine, Classical or Arabic - is satisfactorily proven. Lewis is not even sure whether the feeling came first and then the literature, or the other way round.[3]

Apart from the absence of any convincing explanation of the location of the phenomenon, there are a number of criticisms which have been made of a theory that links the modern love marriage to Provencal love poetry invented at the end of the eleventh century. One is that the dating is wrong. We are told that 'in recent years Peter Dronke and others have argued with much cogency that the sentiments reflected in the lyrics and romances of the twelfth century were not entirely novel.'[4] Secondly, the portrayal of 'courtly love' as being exclusively concerned with adulterous love and detached from marriage may be mistaken, as Sarsby argues, citing Chretien de Troyes' *Erec et Enide* which celebrates newly married love.[5] The various criticisms of the courtly love interpretation have been summarized recently by Ferdinand Mount. He points out that adultery is not at the heart of courtly love, that 'courtly love' is in fact a vacuous concept, and that many of its themes can be found much earlier. Again citing Dronke's work, he shows that sexual passion and marital love are widely found in Anglo-Saxon and Celtic poetry. Thus, the interpretation that courtly love was invented in the twelfth century is suspect.[6]

[1] Bloch, *Feudal*, II, 309, 310.
[2] De Rougemont, *Passion and Society*, 326, 292.
[3] Lewis, *Allegory*, 2, 9, 4, 11, 22.
[4] Brooke in Outhwaite, *Marriage*, 30.
[5] Sarsby, *Romantic Love*, 17ff.
[6] Mount, *Subversive Family*, 93-103.

There had also been another difficulty, which was recognized by G. M. Trevelyan. If courtly love was the origin of modern love marriage, how was it transformed from its basically anti-marriage stance, into the foundation of marriage? Basing his account on C. S. Lewis, Trevelyan accepted that 'the great gift of the medieval poets to the Western world was this new conception of the love of man and woman as a spiritual thing.' But, he asked, 'could this thrice-precious concept of the medieval poets be allied, by a further revolution, to the state of marriage? Could the lovers themselves become husband and wife? Could the bond of young love be prolonged till age and death?' He believed that this 'further revolution' did, in fact, occur in England, 'in the gradual evolution of the idea and practice of marriage'. But the fact that 'in France, for instance, the arranged marriage is still [1944] normal' suggests that it was not an inevitable change'.[1]

Thus Trevelyan documents a second revolution which he believes occurred in the fifteenth and sixteenth centuries: 'among the-poor, it is probable that marriage choice had always been less clogged by mercenary motives', and so for the common folk, among the peasantry in the 'Middle Ages, love matches were normal. It was among the higher groups that there had to be a softening, and here 'in the fifteenth century things were slowly moving.' Already in the popular ballad literature of the late fifteenth century, 'the motif of the love marriage was more and more making itself heard.' By the time we reach the 'age of Shakespeare', 'literature and the drama treat mutual love as the proper, though by no means the invariable, basis for marriage.' Yet parental compulsion continued, so that 'the slow and long contested evolution towards the English love match goes on throughout our social history, until in the age of Jane Austen and the Victorians free choice in love is accepted as the basis of marriage, even in the best society.'[2] In this chronology, love matches move upwards through the social ranks. What is lacking in Trevelyan's account is any explanation for the change. He points out that it is a revolution and a peculiar one, but then assumes in the best 'whig' fashion that it was bound to happen. Not only has Trevelyan posed yet not answered the problem of the transmission of courtly love, but he has also tacitly accepted something very important - namely, that for the 'common folk' love matches were normal for centuries before the Reformation. If this was so, it is something that needs explanation.

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Finally, we may look at some of the economic and social preconditions which have been suggested as a background to the calculative attitude toward having children. It has been advanced that in England children, like marriage, were not essential. For most they were a luxury, and this fits in with those purposes of marriage that we have outlined. In contrast to most societies, where maximum childbearing is of benefit to the parents, children were a mixed blessing. It has been argued that this was due to a number of structural features in English society. One of these was that parents could not automatically absorb their children's surplus value, their earnings. Put in

[1] Trevelyan, *Social History*, 67, 68.
[2] Trevelyan, *Social History*, 67, 68.

another way, children had protected property rights - in what they were given and in what they inherited or earned - even against their parents. Children were separate economic individuals. We have traced this feature back to the thirteenth century, but it is likely to go back even further, to Anglo-Saxon law. Since it is totally contrary to Roman law, it is difficult to see where else it could have come from. This was linked to another feature, namely, that property descends, but never ascends. Parents cannot automatically inherit their children's property. This is again an established principle by at least the thirteenth century. These aspects of the separate property of children become especially important when there is widespread wage labour outside the home. When children earn money outside the family, then they are faced with the real choice of whether to direct their income back to their parents and kin. Such a situation, based on the three institutions of servanthood, apprenticeship and wage labour, was established by the thirteenth century at the latest.

The separation of children and parents from an early age, which is embodied in these customs and institutions, led to a situation where the family no longer acted as an undivided unit of production and consumption. Before marriage, and particularly after marriage, children did not automatically invest their wealth back into a family fund from which they automatically inherited. Parents could disinherit children, while children could, in a sense, disinherit their parents, by refusing to maintain them. These separate, nuclear, neolocal patterns appear to have been established quite early, probably becoming widespread by the fourteenth century, if not long before. They were able to persist because the family was not the pivot of the political, economic or religious system.

A powerful, unified, political system had been built up by the later Anglo-Saxon kings and consolidated by the Normans and Angevins. This stable order meant that public peace and the control of violence were in the hands of chosen officials, rather than the family's. This was reinforced by the early adoption of the wide-scale use of money and the development of markets, which meant that many services usually provided by kin could be provided by others. This also is apparent by at least the thirteenth century, if not long before. In particular, one of the major functions of children - that of protection against risks of various kinds - had been largely eroded. Political risk was kept in check by the state and by a tough, early system of common law, aided by England's position as an island, which protected it from foreign invasions. Economic risk was minimized by early affluence and a relatively flexible monetized economy. The difficulties of old age were met not by stress on children's responsibility, but by a double response. First, through the medium of money, people, could save for their old age and buy the services they needed from the profits of their accumulated capital. Secondly, for those who through accident or miscalculation had not been able so to provide, the Church, the guilds and the manor took on the responsibility for poverty. This non-familistic provision we also know stretches back into the thirteenth century and earlier.

No doubt the exact timing of many features of the system could be disputed, some placing them later, others earlier. What is difficult to see is

that any of them could have changed radically in the period between 1450 and 1750. If the marriage system was a 'product' of capitalism, as is usually suggested, we would have expected a slight delay - with many of the transformations occurring in the later sixteenth and seventeenth centuries. There is little evidence of this.

Such a conclusion is not entirely negative. If capitalism is not a cause of the marriage system, as Malthus, Marx and Engels argued, then it may be tempting to suggest the reverse - that the individualistic family and marriage system, and its consequent 'rational' demographic pattern, was a necessary, if not sufficient, cause of capitalism. But if that was the case, what caused the marriage system? Can we accept that a particular religious ethic, combined with particular tribal customs, caused an explosive mixture which first led to a revolution in sentiment, and later provided the basis for a new socio-economic order? There may be something in this, but there is a modified alternative which fits better with the evidence and preserves what intuitively seems to be the extraordinary 'fit' between the marital system, capitalism and individualism. This emerges if we examine the hitherto assumed chronology of capitalism a little more closely.

We may take as three of the indices of the development of capitalism: the establishment of the concept of private, fully alienable, property; the widespread use of monetary values and the dominance of market forces; the wide-scale presence of wage labour. Elsewhere I have examined each of these at length and argued that all three can be traced back to the thirteenth century at least.[1] There is certainly little evidence for the supposed transformation from a basically communal -property, subsistence, agrarian 'peasant' society into a capitalist one in the sixteenth and seventeenth centuries, as suggested by the Marx-Weber chronology. If my argument is accepted, then we are in a better position to see that there is a much deeper and longer association between the Malthusian marriage system and other features of the society. They could both be seen as parts of that 'bourgeois arch, which stretches from the twelfth century to our own time'.[2] The absence of any signs of a real peasantry in the fourteenth and fifteenth centuries would thus be both cause and effect of the demographic and family system. Malthus and Marx would be right, but over a much longer period than perhaps the latter, at least, realized.

Once we re-date the capitalist revolution, or rather admit that there does not seem ever, in recorded history, to have been a sudden revolution at all in England, then the pieces fall into place. Taking Malthus' system's four central desiderata, we find that all of them were considerably developed in England by the end of the fourteenth century, and probably well before. A study of the activities and principles of traders, merchants and artisans as well as large and small landholders in the thirteenth and fourteenth centuries is enough to convince us that the central acquisitive ethic, the desire for profit, was widespread. The very extensive penetration of money and monetary values, and the desire to pursue economic gain largely as an end in itself, are very clear to all those who are not blinded by a desire to prove some vast contrast

[1] Macfarlane, *Individualism*.
[2] Thompson, 'Peculiarities', 357.

between post-Reformation England and its Catholic past. This acquisitiveness fits with a system of widespread individual property, guaranteed by a developed system of law and powerful government which supported such an ethic. It also fits with a social structure in which there were many grades of status and wealth and in which it was relatively easy to move up and down. Malthus' 'ladder' for social climbing was already in place.

Finally, all this was set against a background of considerable and widely distributed affluence. The English were early noted for their rich diet, their opulent clothing, their leisurely ways, their comfortable houses and magnificent churches and cathedrals. Thus those economic, social and political preconditions for the Malthusian family system, that set of interrelated features which we label 'individualism' or 'capitalism', were already strongly developed. They had probably generated, and continued to maintain, that peculiar marital and demographic structure that was then 'exported' to North America and is now spreading to much of the world. Money, profit, contract, mobility, individualism, competition, had all asserted themselves. Behind the antique modes of speech and the different technology, there existed a recognizably 'modern' world.

History is hydra-headed; each problem we solve generates others. The implication of this argument is that we have a very old association between particular marital, demographic, political and economic systems that go back at least to the thirteenth century in England. Furthermore, it has been tentatively suggested that many of the roots lie much further back, in a particular amalgam of Christianity and Germanic customs. But if this was so, how was it that England, which was merely a small part of north-western Europe infiltrated by Christianity and Teutonic invaders in the fifth and sixth centuries, should have ended up so different from the rest of Europe? This again is a vast topic to which we can only give a brief, tentative, and superficial answer here.

Two points need to be established straight away. First, even in the seventeenth and eighteenth centuries, when the differences were probably most marked, there was much more in common between England, Holland and Belgium, Germany, northern France and Scandinavia, than there was to divide them. From a demographic point of view, for example, they were all part of that 'unique west European marriage pattern' to which Hajnal has drawn our attention. Delayed and selective marriages were part of a much wider pattern. Likewise, as has been pointed out by Laslett, the whole of this north-western area had a similar household structure, small and nuclear, consisting of parents, some unmarried children and possibly servants.[1] At a broader level, many of the deepest assumptions implicit in Christianity, and in particular a Protestant variety of it, united this part of Europe. Similarly, the economic ethics and institutions of England and Holland, for instance, largely overlapped. Thus from a perspective outside Europe, we are dealing in England with a phenomenon which is still very recognizably north-west European. On the other hand, as we have seen at the start, there were peculiarities about the English demographic regime and something must have

[1] Laslett, *Family Life*, 15; see also the contrasts within France, as in Flandrin, *Families*, 72.

led to the fact that it was in England that the first massive industrial and urban growth occurred. We cannot completely wipe away all differences. When Montesquieu visited England in 1729 he wrote, 'I am here in a country which hardly resembles the rest of Europe.' It is not difficult, if we look at other contemporary observers, to see what he meant.[1]

A second point to stress is that the differences may have been much smaller, if non-existent, earlier. De Tocqueville believed that the political and legal systems of the Middle Ages over the whole of France, England and Germany had a 'prodigious similarity', that 'in the fourteenth century the social, political, administrative, judicial, economic, and literary institutions of Europe' bore a close resemblance to each other.[2] In the light of certain deep differences that Marc Bloch, for instance, noted between England and France from at least the second half of the thirteenth century, it seems that De Tocqueville was in error about the timing of the divergence.[3] But his point about the 'prodigious similarity' of much of north-western Europe in the Middle Ages is undoubtedly valid. Both the similarities and one reason for the later divergence are suggested by Maitland in relation to legal changes.

It would be possible to argue that in the eleventh century the legal systems of the whole of the northern half of Western Europe were almost identical, based almost exclusively on the Germanic law of the conquerors. But during the twelfth to sixteenth centuries much of northern Europe was reconquered by a renovated Roman law. As Maitland put it,

> Englishmen should abandon their traditional belief that from all time the continental nations have been ruled by the 'civil [i.e., Roman] law', they should learn how slowly the renovated Roman doctrine worked its way into the jurisprudence of the parliament of Paris, how long deferred was the 'practical reception' of Roman law in Germany, how exceedingly like our common law once was to a French coutume.[4]

By the thirteenth century, England was beginning to look distinctly different from the rest of Europe, not because England had changed, but because Roman law had made no conquest there: 'English law was by this time recognized as distinctly English.' This feeling of contrast was heightened because, although 'Roman jurisprudence was but slowly penetrating into northern France and had hardly touched Germany' by the thirteenth century, many Englishmen thought that the whole of Europe now had written Roman law, which served to make a great contrast more emphatic'.[5] Certainly, by the sixteenth century England was an island carrying an old Germanic legal system, and lying off a land mass dominated by Roman law. The contrast is obvious in relation to criminal law - the absence of judicial torture, the use of juries, process by indictment.

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[1] Montesquieu, quoted in De Tocqueville, *l'Ancien Regime*, 89; see Macfarlane, *Individualism*, ch. 7.
[2] De Tocqueville, *L'Ancien Regime*, 18.
[3] Summarized in Macfarlane, *Individualism*, 186.
[4] Pollock and Maitland, *English Law*, I, cvi.
[5] Pollock and Maitland, *English Law*, I, 188.

But the consequences for economics and kinship, and hence demography, are no less important. We may briefly mention one of these contrasts, the concept of property, which has been described by Peter Stein and John Shand:

The more flexible English system enabled several individuals to have property rights in different parts of an asset. This difference was the basis for the early development of full private property. As the comparative jurist Sir Henry Maine argued, this was of fundamental importance. He believed that the modern concept of 'private property', held by the individual, the basis of the capitalist system, arose out of the difference. 'Nothing can be more singularly unlike than the legal aspect of allodial land, or, as the Romans would call it, land held in dominium, and the legal aspects of feudal land. In passing from one to the other you find yourself among a new order of legal ideas.'[1] The basis of this new system was the idea of the impartible, individually owned, estate which could be bequeathed to specific individuals.

In England there persisted over many centuries a concept of individual ownership that was not drowned by a resurgent Roman law. This meant that any individual - man, woman or child - could have absolute rights in their 'own' property, and the concept was fully established by the middle of the thirteenth century, at the latest. People could also have complete rights in themselves; in other words, they were not in the hands of the powerful Roman law concept of patria potestas. We have already seen the consequences of this for the marriage and demographic regimes. The separate property rights of children and their ability to enter into marriage contracts without parental permission were central to the Malthusian marriage pattern.

It was not that England changed, but that the laws and customs of its early conquerors were retained. Increasingly, this made it feel different, and this difference was compounded by two further factors. In Europe, Christianity was not a static phenomenon. During the crusades and monastic movements of the twelfth and thirteenth centuries, and during the resurgence known as the Counter-Reformation of the sixteenth, the Catholic Church established a deep hold on the political and social systems of much of Europe. The Roman Church was the ethical and spiritual counterpart to Roman law. Here again, England remained stranded. The establishment of a separate, Protestant, Church by Henry VIII was but one step in the distancing from a resurgent Catholicism. Through the work of Weber, Tawney and others, we know how this Protestantism shielded and even encouraged those capitalistic tendencies already present. Ultimately, it protected private judgement and independence of belief. The Inquisition, which destroyed huge trading networks and corroded economic development throughout continental Europe, never took root in England.

A third and growing gulf was between the political systems. A dominating feature of English government, symbolized in Magna Carta and explained in Sir John Fortescue's *Learned Commendation of the Politique Laws of England,* written in 1461, was that England was a constitutional monarchy - the King was under the law. Ultimately the law was supreme: England was not

[1] Maine, *Early Law*, 342.

an absolutist state. Despite the activities of Henry VIII and the attempts of James I and Charles I, it remained so. Sir Edward Coke's defence of English liberties, in which he appealed to the long tradition of limited monarchy, helped to prevent the development of the absolutist monarchies that spread over much of the rest of Europe. Like England, Holland kept the resurgent Catholicism and absolutism at bay, which helps to account for the great similarities between the two countries. But in Spain with Philip II, in France with Louis XIV, we see at its most extreme that growth of the absolutist state that has been charted by Perry Anderson.[1] In England alone, there was no large standing army, no centralized bureaucracy, no huge court, no theory that placed the king above the law. In England, consequently, there continued a tradition that had been widespread in earlier centuries over much of Europe.

Max Weber approvingly quoted Montesquieu's observation that there were deep connections between economic, religious and political developments in England. England had 'progressed the farthest of all peoples of the world in three important things: in piety, in commerce, and in freedom'.[2] This was even more obvious when the potential of a 'New England' had been realized in North America, where these connections were taken to their extremes. What is important for us is to realize that while the Malthusian marriage system was behind the peculiar demographic structure, behind that marriage system itself lay layer upon layer of political, legal, cultural and economic decisions which had by chance preserved some ancient features. Most dramatically, the success of the Armada in 1588 would have brought Roman law, Roman religion and absolutist monarchy. The subsequent course of world development would have been very different, for the major alternative to the English - the Dutch - might then also have been swamped. But enough of speculation. Let us return to where we started, to Malthus.

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Whatever the outcome of arguments about the origins of the system, there are also arguments about the necessary connections between capitalism and the Malthusian demographic pattern. Malthus, Marx and Engels agreed that there was a connection. The difference between them was that while Malthus believed there was a necessary causal connection, Marx believed that it was to a certain extent accidental. Malthus argued that to abolish part of the structure was to abolish the whole. If one destroyed capitalism, inevitably the iron law of population would take over. Man would be faced with a return to maximum breeding, and hence to famine, war and disease as the only checks. This theory was as direct and deadly a threat to Marx's communism as it had been to earlier theories. The undermining effects of Malthus' theories for those who sought to abolish capitalism were recognized by the Scottish philosopher Dugald Stewart as soon as the *Essay on Population* appeared. 'The reasonings of Mr Malthus, therefore, in so far as they relate to the Utopian plans of Wallace, Condorcet and Godwin, are perfectly conclusive, and strike at the root of all such theories.' Marx recognized that his was one of 'all such theories'. He admitted that 'if this theory is correct, then again I can

[1] Anderson, *Lineages*.
[2] Weber, *Protestant Ethic*, 45.

not abolish the law [iron law of wages] even if I abolish wage labour a hundred times over, because the law then governs not only the system of wage labour but every social system.'[1]

Apart from abuse, the major answer to this threat by Marx and Engels was to argue that Malthus had merely established a specific, not a universal, connection. Writing to Marx in 1865, Engels argued, 'to us so-called "economic laws" are not eternal laws of nature but historic laws which arise and disappear.'[2] Thus the law of Malthus was 'a law of population peculiar to the capitalist mode of production; and in fact every specific mode of production has its own special law of population, historically valid within its limits alone. An abstract law of population exists for plants and animals only.[3] So when Malthus 'asserted the fact of overpopulation in all forms of society' his conception was 'altogether false and childish', because he turned a natural fact into a social fact, without appreciating all the intervening variables which meant that in each different 'mode of production', in Marx's sense, population would act in a different way.[4] Thus, the Marxist eliminates the historical and specific Malthusian predictions when he abolishes capitalism. It is capitalism and not deeper, 'natural' laws that cause overpopulation.

Despite the invective and a few debating points, Marx's counter dismissal is not convincing, and Malthus still stands. De facto this has been recognized in China where, having for years declared that there is no population problem under socialism, in the 1970s the rulers were suddenly faced with soaring population, and recognized that there was indeed a problem. The Chinese were then forced into measures of law and repression which Malthus had predicted would be necessary if the balances of capitalism were not present; there ensued that suppression of childbearing through mass sanctions, laws and inducements which Malthus would have considered grossly immoral, not to say dictatorial. As William Petersen observes, 'when Marx's criticisms of Malthus' principles of population are examined, it becomes evident that neither Marx himself nor any Marxist has developed a population theory to replace the Malthusian one they rejected.'[5] A sneaking admission of defeat is contained in a letter from Engels to Kautsky: 'There is, of course, the abstract possibility that the number of people will become so great that limits will have to be set to their increase.'[6] This the Chinese have discovered.

Finally, it is important to stress that the Malthusian marriage system does not generate any particular population outcome. In England and North America in the nineteenth century it produced very rapid population growth as the equation between economy and personal emotions held at a certain level. Nor does the marriage pattern necessarily find itself linked to a particular technological system (industrialism), social system (urbanism), political system (democracy) or religion (Christianity). These tended to be associated by the nineteenth century in the mother country and to spread over

[1] Stewart, *Works*, VIII, 207.
[2] Marx, quoted in Meek, *Marx and Engels*, 118.
[3] Quoted in Meek, *Marx and Engels*, 20.
[4] Marx, *Grundrisse*, 605.
[5] Petersen, *Population*, 93.
[6] Quoted in Cassen, *India*, 300.

Europe and North America. But the central ideology - a family pattern and individualistic philosophy - can float free. It can find echoes wherever people wish to pursue those ends which Malthus held up before them: equality of the sexes, physical comfort rather than misery, and responsibility for one's own decisions. In its wake come all the associated costs: the destruction of wider groups and communities, the corrosion of loyalties, the calculative, rational view of life, that 'alienation' which Marx documented, the 'anomie' that Durkheim analysed. If Malthus is right, there is only a choice between war, famine and disease on the one hand, and individualistic capitalism on the other. If Marx is right, we can both have our cake and eat it. The two prophets stand locked in battle today as they did in the nineteenth century. This history of the Malthusian family system and its components is intended to explain to us how we came to be as we are, and to help those who still have to choose to know what the choice implies.

PART THREE: MALTHUS AND DEATH

(1993-2007)

THE MALTHUSIAN TRAP

'For nation shall rise against nation, and kingdom against kingdom: and there shall be famines, and pestilences, and earthquakes, in diverse places. All these are the beginning of sorrow.'[1] In the words of the gospel such was the state of humankind.

It was a world from which it seemed impossible to escape. In 1788 Edward Gibbon completed his great work on **The Decline and Fall of the Roman Empire**. The following year he surveyed the world around him. There seemed little improvement over the last two thousand years. 'The far greater part of the globe is overspread with barbarism or slavery: in the civilized world, the most numerous class is condemned to ignorance and poverty...The general probability is about three to one that a new-born infant will not live to complete his fiftieth year.'[2]

Gibbon's world was one with a population of less than one thousand million inhabitants. As we stand at the end of the twentieth century, only a little over two hundred years later, there are more than seven times as many humans on earth. Yet we see a world in which many millions have escaped from a daily fear of war, famine and disease. For the privileged living in parts of Europe, America and Asia, there is wealth and stability undreamt of by peoples in most past civilizations.

It is easy to assume that this change was inevitable; because this happened, it had to happen. Yet when we regard the many millions who are still trapped in poverty, disease and the fear of war, and when we remember that the escape into relative security has only occurred within a brief space of time, we are reminded that it was not inevitable.

In order to gain a full sense of how unlikely were the events which have unfolded over the last two hundred years it is helpful to go back to the writings of a man who stood at the transition point between the old world and the new. In 1798, nine years after Gibbon's **Memoir**, Thomas Malthus published his **Essay on the Principles of Population**. In this short essay he laid out the reasons why agrarian civilizations seemed to be trapped forever in misery. Alongside Adam Smith's **Wealth of Nations**, it is the clearest analysis of the structural tendencies of **ancien regime** societies and their intrinsic limits to growth.

In the second edition of his **Principles** Malthus himself came to revise his views and to write of strong **tendencies** rather than iron **laws**. Furthermore, we now know that some of his predictions were wrong and others seem to have been suspended, at least temporarily. Indeed that is one of the major themes of this book. Yet without subscribing either to his views of 'progress' or to his representation of the iron laws, it is nevertheless essential to outline in stark detail his early vision. Only then can we fully understand the unlikeliness of the transition which has taken place.

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[1] Matthew, 24:7-8.
[2] Gibbon, *Memoirs*, 217.

Malthus drew attention to three facts. The first is that human beings are very strongly motivated by a desire for sexual intercourse. 'The passion between the sexes has appeared in every age to be so nearly the same, that it may always be considered, in algebraic language, as a given quantity.'[1] All else being equal, men and women will mate as soon as possible after puberty. If such mating is only permitted within marriage, 'Such is the disposition to marry, particularly in very young people, that, if the difficulties of providing for a family were entirely removed, very few would remain single at twenty-two.'[2]

The second fact is the high fertility of humans. If this high fertility is combined with a reasonable rate of mortality, such early and frequent mating will lead to rapid population growth. He cited examples of populations which had doubled in twenty years or less. In fact, he deliberately erred on the conservative side. As Alfred Sauvy points out, 'a population not practicing contraception and benefiting from present-day medical science could in an extreme case double in thirteen years...'[3] This is because of the natural fecundity of human beings: 'If a couple comes together at puberty, stays together until the woman's menopause, and has no recourse to contraception, its average number of children will be about ten. In a population living in the best possible conditions this would probably increase to twelve.'[4] Numbers can thus easily double in each generation and this means that a vast population will build up very quickly.

The third fact is that economic resources, and in particular food production, cannot keep pace with this population growth within a basically agrarian economy largely dependent on human labour. This is due to the law of diminishing marginal returns. While there may be periods when rates of growth in agriculture rise to three or four percent **per annum**, which is equivalent to a doubling of food in a generation, such periods cannot be sustained for more than a few decades.

The result of these facts was a powerful tendency for population to outstrip resources. 'Population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio. A slight acquaintance with numbers will shew the immensity of the first power in comparison of the second.' 'Assuming then my postulata as granted, I say, that the power of population is indefinitely greater than the power in the earth to produce subsistence for man.' Malthus did not find this particularly cheering. 'It is, undoubtedly, a most disheartening reflection that the great obstacle in the way to any extraordinary improvement in society is of a nature that we can never hope to overcome. The perpetual tendency in the race of man to increase beyond the means of subsistence is one of the general laws of animated nature which we can have no reason to expect will change.'[5]

[1] Malthus, *Population,* I, 312.
[2] Malthus, *Population*, II, 52.
[3] Sauvy, *General*, 410.
[4] Sauvy, *General*, 349.
[5] Malthus, *Principle*, 71,79,198-99.

Malthus identified two types of check to population which might operate. There were the 'preventive' checks: 'moral restraint', referring to delayed or non-marriage, and 'vice', by which he meant all kinds of artificial birth control. Secondly there were the checks which raised the death rate, what Malthus termed the 'positive' checks. These were again divided into what he termed 'vice', that is man-made destruction, and 'natural' disasters. He distinguished them thus: 'Of these positive checks, those which appear to arise from the laws of nature may be called exclusively misery; and those which we bring upon ourselves, such as wars, excesses of all kinds, and many others, which it would be in our power to avoid, are of a mixed nature. They are brought upon us by vice, and their consequences are misery.' He included in the positive checks a very wide range of causes of death. 'The positive checks to population include all the causes, which tend in any way prematurely to shorten the duration of human life, such as unwholesome occupations; severe labour and exposure to the seasons; bad and insufficient food and clothing arising from poverty; bad nursing of children; excesses of all kinds; great towns and manufactories; the whole train of common diseases and epidemics; wars, infanticide, plague, and famine.'[1] These 'positive' checks tended to act in concert. 'The vices of mankind are active and able ministers of depopulation. They are the precursors in the great army of destruction; and often finish the dreadful work themselves. But should they fail in this war of extermination, sickly seasons, epidemics, pestilence, and plague, advance in terrific array, and sweep off their thousands and ten thousands. Should success be still incomplete, gigantic inevitable famine stalks in the rear, and with one mighty blow levels the population with the food of the world.'[2]

Malthus believed that unless people espoused the path of 'moral restraint', delaying their marriages or not marrying, all other measures would be in vain. For instance, all attempts to eradicate poverty would be hopeless. 'It is not in the nature of things that any permanent and general improvement in the condition of the poor can be effected without an increase in the preventive check; and unless this take place...everything that is done for the poor must be temporary and partial: a diminution of mortality at present will be balanced by an increased mortality in future.'[3] Likewise, attempts to eradicate particular forms of misery, whether war, famine or disease, would merely deflect mortality into another 'channel'.

The idea of the 'channel' is an important one in Malthus' thought. He seems to have taken the concept from Heberden. 'Dr. William Heberden published, not long since, some valuable observations on this subject deduced from the London bills of mortality. In his preface, speaking of these bills, he says, "the gradual changes they exhibit in particular diseases correspond to the alterations which in time are known to take place in the channels through which the great stream of mortality is constantly flowing".' To tamper with particular channels is therefore a waste of time. 'Now if we stop up any of these channels it is perfectly clear that the stream of mortality must run with greater force through some of the other channels; that is, if we eradicate some diseases, others

[1] Malthus, *Summary*, 250.
[2] Malthus, *Principle,* 118-19.
[3] Malthus, *Population,* II, 252.

will become proportionally more fatal. In this case the only distinguishable cause is the damming up a necessary outlet of mortality.' This means that 'we should reprobate specific remedies for ravaging diseases; and those benevolent, but much mistaken men, who have thought they were doing a service to mankind by projecting schemes for the total extinction of particular disorders.'[1]

This leads Malthus from what Boulding calls the 'Dismal Theorem' to the 'Utterly Dismal Theorem'. 'Since equilibrium between resources and population can be maintained only by misery and/or vice, and since population tends to rise to the limit of available subsistence, any improvements leading to an increase in the production of food must increase the equilibrium population, and hence, presumably, increase the sum of human misery and vice.'[2] Malthus half seriously contemplates the corollary of this. If people are not prepared to use the preventive checks, they should try to diminish misery by encouraging the 'positive' checks to operate as soon as possible. 'To act consistently, therefore we should facilitate, instead of foolishly and vainly endeavouring to impede, the operations of nature in producing this mortality; and if we dread the too frequent visitation of the horrid form of famine, we should sedulously encourage the other forms of destruction which we compel nature to use.' 'Instead of recommending cleanliness to the poor we should encourage contrary habits. In our towns we should make the streets narrower, crowd more people into the houses, and court the return of the plague.'[3]

This is indeed Utterly Dismal, yet it flows directly from his argument that, without the preventive check, 'distress and poverty multiply in proportion to the funds created to relieve them.'[4] This may be a bitter pill to swallow, as he admits. Yet there is no point in trying to avoid the facts: 'discouraging as the contemplation of this difficulty must be to those whose exertions are laudably directed to the improvement of the human species, it is evident that no possible good can arise from any endeavours to slur it over or keep it in the background.'[5]

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Malthus was not alone in outlining the world of misery within which agrarian societies appeared to be trapped. His ideas were fully consistent with those of many with many of the other great classical economists and social scientists. Those who first began to analyse with precision what was happening were the brilliant set of political economists who worked in Scotland mainly during the period between 1740 and 1790 - Ferguson, Millar, Kames, Robertson, Hume and Smith. It was obvious to such thinkers that humankind was caught in a trap, whereby population would always outstrip resources. David Hume pointed out that 'Almost every man, who thinks he can maintain a family, will have one; and the human species, at this rate of propagation, would more than double every generation. How fast do mankind multiply in every colony or new settlement.'[6] The harder people worked, and the more technologically ingenious

[1] Malthus, *Population*, II, 180,181,179.
[2] Kenneth Boulding, quoted in Malthus, *Principle,* 47.
[3] Malthus, *Population*, II, 179.
[4] Malthus, *Population*, II 274.
[5] Malthus, *Principle,* 199.
[6] Hume, *Essays*, 224.

they were, the more their numbers would grow. Ferguson wrote, 'If a people, while they retain their frugality, increase their industry, and improve their arts, their numbers must grow in proportion.'[1]

The most forceful expression of the argument was by Adam Smith. His **Wealth of Nations** was the blueprint for a new age and suggested the 'Natural Progress of Opulence'. Yet his message is inconsistent, for in relation to the laws of population he seems to have realized that it was impossible for sustained economic growth to occur. There was a built-in contradiction which would forever trap agrarian societies and prevent their escape from eternal misery. It was clear that 'Every species of animal naturally multiples in proportion to the means of their subsistence, and no species can ever multiply beyond it.' Mankind was just another species in this respect, for 'men, like all other animals, naturally multiply in proportion to the means of their subsistence.' He pointed out that an improvement in wealth would lead to a decline in mortality among the common people, hence more children would survive and the population would increase. Likewise, increased wealth through increased wages would lead to increased fertility. 'The liberal reward of labour, therefore, as it is the effect of increasing wealth, so it is the cause of increasing population', or, as he put it in a marginal note, 'high wages increase population.'[2]

E.A. Wrigley has summarized the position of the classical economists. As far as Smith was concerned 'his view of the prospects for growth in general induced him to discount the possibility of a prolonged or substantial improvement in real wages, and to fear that the last state of the labourer would prove to be worse than the first...' His successors 'developed arguments that served to reinforce the pessimism that Smith displayed about the secular prospects for real wages.' Thus 'looking to the future, they saw no likelihood of significant further advance and some danger of regression.' The capitalism they described 'was not expected by them to produce the changes now termed the industrial revolution.' For while they predicted increases in output 'they expected them to be broadly matched by increases in population, leaving the ratio between the two little changed.'[3] In other words, there was no escape from the circle of misery. The only question was whether a country would be 'trapped' at a low or high equilibrium, in other words with sparse or dense populations. As Wrigley notes, 'pre-industrial societies were by definition in a position of negative feedback. Each period of economic growth was eventually cut short before reaching the point at which it was self-sustained and progressive.' [4]

Malthus' first edition of the **Essay** provided little in the way of proof for the theory, though this was to be supplied in the much expanded second edition. Yet the Malthusian analysis has largely been borne out as a description of most civilizations before the nineteenth century. Almost all agrarian societies have conformed to his predictions. If there were gains in resources, these were soon swallowed up by rapidly rising population through a high fertility rate and lowered death rates. This would lead to denser populations which in turn led to

[1] Ferguson, *Essay*, 142.
[2] Smith, *Wealth*, I, 89, 163, 90.
[3] Wrigley, *Two Kinds*, 99, 101, 103, 103.
[4] Wrigley, *Population and History*, 111.

the negative feed-back of a rise in mortality. This cycle prevented long-term and sustained economic growth. As David Landes summarized the evidence 'An amelioration of the conditions of existence, hence of survival, and an increase in economic opportunity had **always** been followed by a rise in population that eventually consumed the gains achieved.'[1]

Wrigley has described the Malthusian world as one 'where fertility and mortality are high, population is large relative to available resources and growth is curbed principally by the positive check.'[2] In fact, within the long period when it was mortality which tended to be most important in checking the growth of population there were two distinct patterns. Conventional population theory assumed that in the thousands of years up to the 'demographic transition', since mortality and fertility were clearly balanced, this was achieved by 'perennial malnutrition and everyday disease.' Thus it was suggested that year in and year out mortality ran at about the same level as fertility both at a high level.[3] Wrigley describes this situation as one where 'mortality was always high because the disease environment was so unfavourable...in this sense high mortality could be said to have "caused" high fertility.'[4]

There are, however, very few cases of this pattern in recorded history. Much more common is the situation of dramatic crises of mortality, as described by the anthropologist Peter Kunstadter. 'A more nearly accurate model of demographic conditions...within which most non-modern men have lived may have been high fertility (beyond the level needed for replacement in normal years) with low-to-medium death rate, with occasional or periodic variations in death rates due to natural disasters (floods, earthquakes, climatic fluctuations... insect plagues, crop failures...etc.) and probably more recently, epidemic diseases.'[5] In this situation 'the disease environment was less deadly but social conventions made early and universal marriage mandatory. As a result, fertility was high and because rapid growth had to be short-lived, mortality was high too.'[6] What Wrigley implies is that the mortality now took a different form. Instead of perennial high mortality, in most years mortality was considerably below fertility, but every few years or generations the growing population would be hit by a 'crisis', one or more of the Malthusian positive checks, namely war, famine and disease.

Agrarian civilizations have almost all been characterized by a situation where the normally high fertility is periodically balanced by the mortality crisis. The model and the evidence for it were described by Carlo Cipolla. He wrote that '...the material available suggests that any agricultural society - whether sixteenth-century Italy, seventeenth century France, or nineteenth-century India - tends to adhere to a definite set of patterns in the structure and movements of birth- and death-rates. Crude birth-rates are very high throughout, ranging

[1] Quoted in Chambers, *Economy*, 10 (Chambers' italics).
[2] Wrigley and Schofield, *Population*, xxiv. The 'positive check' is, of course, mortality. This has been termed a 'high-pressure regime' by Wrigley.
[3] Macfarlane, *Population and Resources*, 305; this 'classic' model has more recently been termed the 'west African' model by Wrigley because it has been observed in that part of Africa.
[4] Wrigley and Schofield, *Population*, xxiv-xxv.
[5] In Harrison and Boyce, *Structure,* 315. Wrigley has termed this the 'Chinese' model.
[6] Wrigley and Schofield, *Population*, xxiv.

between 35 and 50 per thousand.... Death rates are also very high, but **normally** lower than the birth-rates - ranging generally between 30 and 40 per thousand.' As a result of these usual figures, the 'population of an agricultural society is characterized by a normal rate of growth of 0.5 to 1.0 per cent per year.' Such a growth rate would mean, over long periods, a staggering growth of population. If it had occurred, for instance, since 10,000 B.C., population 'would form today a sphere of living flesh many thousand light years in diameter, and expanding with a radial velocity that...would be many times faster than light.'[1]

This continued growth has clearly not happened, not because of perennially high mortality, but rather as a result of periodic 'crises'. It has been avoided 'because throughout the demographic history of agricultural societies, death-rates show a remarkable tendency to recurrent, sudden dramatic peaks that reach levels as high as 150 or 300 or even 500 per thousand.' These peaks were the result of wars, epidemics and famines, which Cipolla notes, 'wiped out a good part of the existing population.' It was the 'intensity and frequency of the peaks' that 'controlled the size of agricultural societies.'[2]

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In 1960 Cipolla noted that the detailed demographic records for agrarian societies were still 'poor'. In the following years information improved greatly and a good deal of it was summarized by T.H. Hollingsworth in 1969 in his work on **Historical Demography**. The evidence he assembled on India, China, Egypt and other great agrarian civilizations fully supported the picture which Cipolla had outlined.

The history of China is a classic example of these difficulties. China in 1700 was well abreast of Europe in terms of technology, as Joseph Needham and his collaborators have shown.[3] Its population at this date was about 160 million. The peace and stability of the Chi'ing dynasty, combined with an apparent absence of widespread epidemic and endemic disease, allowed the Malthusian tendency towards rapid growth to occur. The population doubled to about 310-330 million in the hundred years to 1800 and increased to 420-440 million by about 1850.[4] The result, according to many, was the growing misery of the bulk of the population. People had to work harder and harder, for 'Despite enormous growth in population and food supply, the Late Imperial era saw a decline of productivity per labourer in agriculture.'[5]

Malthus noted that 'The Jesuit Premare, writing to a friend of the same society says, "I will tell you a fact, which may appear to be a paradox, but is nevertheless strictly true. It is, that the richest and most flourishing empire of the world is notwithstanding, in one sense, the poorest and the most miserable of all. The country, however extensive and fertile it may be, is not sufficient to support its inhabitants. Four times as much territory would be necessary to

[1] Cipolla, *World Population*, 76.
[2] Cipolla, *World Population*, 77; see also Cipolla in Glass & Eversley (eds.), *Population*, 573.
[3] Needham et al., *Science and Civilization*.
[4] Nakamura and Miyamato, *Population*, 247; Fairbank, 'Paradox', 168.
[5] Fairbank, 'Paradox', 170.

place them at their ease."[1] In the words of James Nakamura and Matao Miyamoto, the tendency was 'to push the level of per capita income down toward the subsistence level - that is, there was no escape from the Malthusian trap.'[2] The 'crisis' came in the form of famines and the devastation of the Taiping rebellion of the mid nineteenth century in the aftermath of which many millions died.[3]

Turning to the west, it would appear that most of Europe hit a Malthusian ceiling in the late sixteenth century. Research on European populations supported the universal and devastating nature of the crises that affected the population. Fernand Braudel noted the effects of the 'biological **ancien regime**...the balance between births and deaths, very high infant mortality, famine, chronic undernourishment and virulent epidemics...' He noted that towards the end of the sixteenth century 'Man's very progress became a burden and again brought about his poverty', for in 'probably the whole Western world, population again became too dense. The monotonous story begins afresh and the process goes into reverse.'[4] Jan De Vries asks 'Could Europe have reached an economic ceiling in the early seventeenth century in which a precarious balance between population and food supply was constantly threatened by inadequate harvests?' He answered in the affirmative, pointing to the fact that 'In Ireland, Germany, Poland, Denmark and the Mediterranean countries varying combinations of plagues and chronic warfare and insecurity caused a substantial decline in population.'[5] In a recent survey of the evidence, Massimo Livi-Bacci has given a similar description. 'The situation for the various European countries is not much different from that of Siena. The sixteenth, seventeenth, and early eighteenth centuries are characterized by subsistence crises, with the attendant adverse demographic consequences, at a rate of two, three, or more per century.'[6]

Italy was a particularly dramatic example. 'Italy in the decade 1620-30 embarked on a long period of economic decline which lasted beyond the middle of the eighteenth century and during which levels of living progressively deteriorated.'[7] Principally as a result of disease, 'During the first half of the seventeenth century, Italy as a whole declined from 13 to 11 million inhabitants, while northern Italy, the industrial heartland of Europe, lost a quarter of its population.'[8] France was in the same predicament. 'The population of the French kingdom within its frontiers of 1700, whether we look at it as a whole, or in its age groups ... oscillates vigorously from minimum to maximum around a sort of equilibrium position representing possibly 19 million Frenchmen. In 1700 it probably stood nearer the minimum than the maximum point.' In the early eighteenth century, France may have been trapped in the usual positive feed-backs of war, famine and epidemic: 'decisive changes did not occur in France before the second half, and maybe not before the end, of the eighteenth

[1] Malthus, *Population*, I, 130.
[2] Nakamura and Miyamoto, *Population*, 264.
[3] Spence, *Search for China*, 170-184.
[4] Braudel, *Capitalism*, 53,3.
[5] De Vries, *Economy*, 6-7,184.
[6] Livi-Bacci, *Population*, 81.
[7] Cipolla in Glass & Eversley (eds.), *Population*, 574.
[8] De Vries, *Economy*, 4-5.

century.'[1] Even prosperous Holland seems to have some kind of Malthusian ceiling in the middle of the seventeenth century.[2] In Mediterranean Europe, for instance in parts of Spain, parish register evidence suggests that 'crisis mortality continued to be important well into the nineteenth century.'[3]

It is not difficult to see how powerful the 'positive' checks were. The first and most destructive was war, not only because of deaths in battle, but much more significantly through the disruptions it caused leading to famine and epidemics. The shadow of famine hung over the world until very late. The demographic position at the end of the seventeenth century is made clear by K.F. Helleiner. 'Certainly, as far as the demographic situation of this period is concerned, there was little if anything to herald the impending changes. Man was still very much at the mercy of the elements. As late as the 1690s a succession of poor and indifferent harvests created severe subsistence crisis in almost all countries of Europe. So far from growing, the population declined here and there, as dearth and starvation stalked through the lands from Castille to Finland, and from the Scottish Highlands to the foothills of the Alps.'[4] Such famine would bring disease in its wake.

Thomas McKeown pointed out that many diseases are density dependent: 'in the early phase of human existence, from the beginning of the Pleistocene up to about 10,000 years ago, infectious disease due to micro-organisms specifically adapted to the human species was almost nonexistent'.[5] As Alfred Crosby put it, 'Hunters and gatherers had their personal vermin - lice, fleas, and internal parasites - but few of the nomad humans remained long enough in one spot in sufficient numbers to accumulate filth enough to enable mice, rats, roaches, houseflies and worms to multiply in armies. The farmers, however, did just that...' [6] Or as Kenneth Kiple writes, 'so long as humans lived in small isolated bands their disease difficulties would have been largely limited to chronic infections with low infectivity.'[7]

With the establishment of permanent cultivation in about ten thousand B.C., and particularly with the growth of urban civilizations from about four thousand B.C., new diseases emerged. 'Almost all studies that attempt to reconstruct the history of infectious diseases indicate that the burden of infection has tended to increase rather than decrease as human beings adopted civilized lifestyles.'[8] This was partly the result of increasing dirt and increasing poverty. 'The aggregation of large, malnourished populations created the conditions required for the propagation and transmission of micro-organisms and so led to the predominance of infectious diseases as causes of sickness and death. This established a high level of mortality which limited the rate of

[1] Goubert in Glass & Eversley (eds.), *Population*, 473.
[2] Van Bath in *Daedalus,* Fertility, 610ff.
[3] Richard Smith in Bynum and Porter (eds.), Companion *Encyclopaedia*, 1675.
[4] Glass & Eversley, (eds.), *Population,* 79.
[5] McKeown, *Modern*, 79. Certain diseases, such as malaria, were of course to be found every early in human evolution.
[6] Crosby, *Ecological*, 29; see also 31.
[7] Kiple in ed. Bynum and Porter, *Companion Encyclopedia*, 358-9.
[8] Cohen, *Health*, 32. See chapter 4 of Cohen, and especially 48,53-4 for an excellent account of the way in which increasing human density leads to the growth of disease.

population growth.'[1] But above all, increased density of population allowed a whole new disease ecology to emerge. 'With the domestication of plants and animals beginning in the Near East some 8,000 to 10,000 years ago, humans summoned forth a host of new diseases and in so doing set in motion changes in their disease ecologies that are ongoing today.' These new diseases were supplemented by others as the rise of the first literate and urban civilizations created enough density for viral and other diseases to establish themselves. We are told that 'smallpox and measles, together with influenza, chicken-pox, whooping cough, mumps, diphtheria, and a host of other diseases, arose with growing human populations. These were the illnesses that pass quickly and directly from human host to human host and need no intermediary carrier; in other words, they became the diseases of civilization.'[2] Thus a basic contradiction between economy and health begins to build up.

As a country's wealth and commerce grows, it is often most economically rational to concentrate this in densely populated areas, towns and cities. In economic terms this is efficient, overcoming the 'friction of space' and bringing various advantages in terms of division of labour, economies of scale and so on.[3] De Vries summarizes the growth of large cities in Western Europe from the sixteenth century: 'Paris, London and the **Randstad** in the 1570s collectively embraced some 370,000 inhabitants. In the next century each grew to surpass the 400,000 mark. By 1700 one and a half million people lived in them.' By 1650 Paris and London were both approaching the half million mark, 'unprecedented in western Europe.'[4]

At the same time, 'Urban populations died at higher rates because the city was crowded and filthy, its streams and rivers polluted with industrial and human waste, its air thick with particles from wood and coal fires, and its streets strewn with waste.'[5] With reference to London, Malthus quoted Graunt's mid-seventeenth century estimate that it required an annual influx of six thousand people a year just to make up for its population deficit.[6] Wrigley and Schofield estimate that London always killed more people than it produced but that its relative size meant that it was mainly during the period between 1625 and 1775 that it had its decisive effect on national population. In the last three quarters of the seventeenth century it acted as a depressant on population growth and in the 'eighteenth century London continued to act as a severe drain on the surpluses being produced elsewhere; even as late as the second quarter of the century it offset about a half of the national baptism surplus...' It looks as if England had hit a buffer. 'The conditions for a relatively high-level equilibrium trap were beginning to become apparent in late-seventeenth century England.'[7]

Other civilizations where urban populations were growing faced a similar Malthusian feed-back. By the seventeenth century Japan was extremely densely populated. When Engelbert Kaempfer visited it he found that 'The Country is

[1] McKeown, *Modern Rise*, 162.
[2] Kiple in Bynum and Porter (eds.), *Companion Encyclopedia*, 360, 362.
[3] See Davis and Golden in Heer (ed.), *Population*, 55.
[4] De Vries, *Economy*, 155,151; the Randstad is the central Netherlands area around Amsterdam.
[5] Riley, *Sickness,* 122.
[6] Malthus, *Population*, I, 243.
[7] Wrigley and Schofield, *Population*, 169,472.

populous beyond expression, and one would scarce think it possible, that being no greater than it is, it should nevertheless maintain, and support such a vast number of inhabitants.' He found many large towns and cities 'the chief whereof may vie with the most considerable in the world for largeness, magnificence, and the number of inhabitants.' The capital, 'Jedo', later Tokyo, 'is so large, that I may venture to say, it is the biggest town known.'[1] He was right, for with a population of about a million it was the largest city on earth. It is not surprising that Japanese demographic historians have detected a similar negative influence in Japan. Akira Hayami argues that 'Owing to the high death rate in cities, which teemed with workers who had migrated from the depressed countryside, the Kanto and Kinki regions (which included Edo, Kyoto, and Osaka) were subject to the negative-feedback function and their populations stagnated.'[2] The thesis seems to have been accepted by Susan Hanley and Kozo Yamamura: 'while the evidence is only starting to come in', what we do have 'confirms Hayami's hypothesis - and E.A. Wrigley's with regard to premodern Europe - that the cities drained the surrounding countryside of population, thus creating negative growth rates in the areas immediately surrounding cities...'[3]

We are left with a puzzle. It is difficult to see how the 'great transformation' from the world of high mortality and fertility occurred and how the 'Wealth of Nations' was achieved. In order to escape from the trap, societies had to increase their productive power, that is their agricultural and manufacturing wealth. As they did so, they had to avoid too-rapid population growth and the rise of the positive checks of war, famine and disease that seemed inevitably to emerge as populations became more dense. This growing burden of disease and malnutrition as humans moved from hunter-gathering through the phase of early civilizations to the early modern period has been outlined by Mark Cohen.[4] The growing levels of epidemic disease associated with the higher density of agrarian civilizations are surveyed by Kenneth Kiple.[5] As Braudel noted, 'until the eighteenth century, the population was enclosed within an almost intangible circle'. Only then 'were the frontiers of the impossible crossed and the hitherto unsurpassable population ceiling exceeded.'[6]

The difficulty of achieving this change is made clear by Ronald Lee. On the one hand, 'Entrance to a higher ellipse can be gained only from the population densities and levels of technological attainment characteristic of the highest development of the previous technology.' On the other hand, 'Populations such as the Chinese, entrapped in a medium-technology agricultural regime, through prematurely dense population, would not be well situated to make the transition to an industrial economy.' Some variant of the Chinese fate was a common one, and '...many populations would get stuck at relatively low-level equilibria, and thus make no further progress. The more

[1] Kaempfer, *History*, 3, 306, 307.
[2] In Jansen & Rozman, *Japan*, 293.
[3] Hanley & Yamamura, *Economic*, 304.
[4] Cohen, *Health*, passim, esp. pp. 53-4, 130-2, 140-2.
[5] In Bynum and Porter (eds.), *Companion Encyclopaedia*, 358-362; see also Polgar, 'Evolution' and Crosby, *Ecological*, 29, 31.
[6] Braudel, *Afterthoughts*, 9.

obvious and cheaper technological developments would occur, but those requiring larger collective investments and higher living standards might not.'[1]

Only in very exceptional circumstances could the various negative feed-back mechanisms be avoided. 'Only populations blessed with the most advantageous institutions governing reproduction, surplus extraction, and use of surplus, would be able to pass through the neck of the hyperbola and continue to progress into the next higher technological regime.' For instance, 'Premature population growth, or premature restraint, might render the passage from one stable equilibrium to a higher one much less likely.'[2] It is all a matter of balance, and the factors that allow that balance are many and delicate. What is significant is the narrowness of the room for manoeuvre.[3]

In order to establish what factors were important and the ways in which the balance was achieved, we need to examine cases where the escape from the Malthusian trap apparently occurred. One case might give some possible clues. But if two cases, widely separated in culture and geography, and largely independent historically, could be found, we should be able to penetrate more deeply into the necessary and sufficient causes of the unlikely emergence of a different demographic pattern.

[1] Coleman and Schofield (ed.), *Population*, 122.
[2] In Coleman and Schofield (ed.), *Population*, 122, 122, 123, 128.
[3] Well illustrated in the diagram in Coleman & Schofield (eds.), *Population*, 123.

DESIGN AND CHANCE

We can now see more clearly how the normal 'Malthusian' population tendencies failed to work in England and Japan.[1] What happened does not fit with the picture of a single demographic transition from high mortality and fertility up to the nineteenth century and then low mortality and fertility after that. It would appear instead that by the fifteenth century, at least, the birth and death rates had stabilized at a lower level than is normally found in agrarian societies. There followed a second phase in England in the eighteenth century when mortality dropped further and fertility rose. What we normally think of as the 'demographic transition', the very rapid reduction in mortality and fertility in the late nineteenth and early twentieth century, is but the last of several waves.

While it is now easier to see what happened, it is still difficult to understand at a deeper level why it happened. We know the effects, the pattern of the past, but to study the causes which led to those effects, to reason backwards analytically from effect to cause, is much harder. Some of the difficulties can be illustrated by considering speculations concerning the fall in mortality.

Thomas McKeown has addressed the question of why mortality fell in England in the eighteenth century.[2] He suggested that there were four areas where the solution might lie: changes in the nature of infective organisms and/or their hosts, changes in medical knowledge and provision, wider changes in the environment (hygiene, sanitation, housing, clothing), and nutritional improvements caused by changes in food supply. McKeown then proceeded to show that the first three of these could not account for the change. By the method of exclusion he was left with only one possible cause, nutritional levels, which, 'however improbable', must be the truth. The difficulty is that there is no evidence of a sustained improvement in nutrition for the majority of the population in eighteenth-century England, but rather the reverse. Although McKeown's own theory has been undermined, no historian has been able to provide a credible alternative.

We may look again at McKeown's four suspects but lengthen the time frame. The argument that changes in the infective organism and its host may help explain the sudden and inexplicable disappearances of a number of diseases, for instance leprosy and plague was once widely canvassed. The unexplained decline of a number of diseases was alluded to by Creighton and more recently by Greenwood who wrote of the mysterious decline of tuberculosis and scarlet fever in the later nineteenth century.[3] In relation to bubonic plague it has been suggested that its sudden disappearance may have been due to changes in the behaviour of the rat or flea, which had nothing to do with human intervention. 'If this is true, it is perhaps the most gigantic example of good luck in the recorded history of mankind: the dietetic peculiarities of the

[1] This refers to the details in the chapters of The Savage Wars of Peace, to which this is the conclusion.
[2] His major survey is Mckeown, *Modern Rise*.
[3] Creighton, *Epidemics*, I, 280; Greenwood, *Crowd Diseases*, 65.

free-ranging flea, apparently enabled the industrial Revolution to proceed on its way.'[1]

It now appears that 'although there have undoubtedly been changes in the character of individual infections, it is unreasonable to attribute to this alone the progressive decline in mortality from infection as a whole, after many centuries in which mortality remained high.'[2] Kunitz argues 'Certainly there were adjustments between parasites and hosts, but it is unlikely that either the waning of virulence of the former, or the rapid selection for resistance of the latter, are adequate explanations of the decline in European mortality.' In relation to inherited resistance, there is 'very little evidence from recent epidemiological studies that inherited resistance is significant in any infectious disease, with the exception of the association between the haemoglobinophies and malaria.'[3] Kunitz is likely to be right about the short term (a hundred years or so). There is no good evidence (yet) that changes in immune systems of humans are sufficiently rapid to account for the decline of diseases such as plague. However, it must be must be the case that long-term changes have occurred in the human immune system.

Conversely, it would be wrong to go to the other extreme and leave out entirely changes in the degree to which the micro-organisms responsible for diseases have altered. The consideration of various diseases in this book suggests that there may have been very substantial changes in bacterial and viral virulence over time. Not only do diseases influence each other but if we take the interplay between diseases and other environmental conditions, such as population density and nutrition, we may well be witnessing inter-actions involving bacterial and viral virulence levels which partly account for the rise and fall of many epidemic diseases. Creighton pointed out on several occasions that there are inter-actions between different diseases so that it is possible that as one increases it may lead to a decrease or increase in others. He showed that as typhus declined, typhoid rose, or as measles increased, smallpox declined.[4] This synergy of diseases has recently been noted by Cohen, who shows how the spread of malaria and hookworm is associated with the incidence of measles.[5]

The implication is that we have to study all the major diseases alongside each other. Furthermore a long time perspective is needed in order to notice the patterns. Creighton wrote in conclusion to his work, 'In the long period covered by this history we have seen much coming and going among the epidemic infections, in some cases a dramatic and abrupt entrance, or exit, in other cases a gradual and unperceived substitution.' This leads him to his principal theory when trying to explain the mysterious disappearance of diseases like sweating sickness or plague, namely 'the only law of extinct disease-species which our scanty knowledge points to - the law of succession, or superseding, or supplanting of one epidemic type by another.'[6]

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[1] Chambers, *Economy*, 151.
[2] McKeown and Brown, *Medical Evidence*, 306.
[3] Kunitz, *Speculations*, 364, 350.
[4] Creighton, *Epidemics*, II, 202, 629, 659.
[5] Cohen, *Health*, 54.
[6] Creighton, E*pidemics*, II, 631; I, 280.

The changing virulence of diseases can be re-instated as one part of a set of inter-acting causes and effects, rather than being largely discounted as having little to do with the explanation of the mortality decline. It is not the sole explanation, but it is a significant link in the chain that leads us to the explanation. For instance a decline in virulence might lead to denser populations, which would in turn affect the disease organisms.

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Turning to the second area considered by McKeown, we may agree with his conclusion that formal medical knowledge and practice is not an important part of the explanation for declining mortality in the period before the later nineteenth century. Almost all historians are agreed that medical advances played little part.[1] Only changes in the treatment of smallpox could have been significant and even Razzell, who most strongly argued for the importance of inoculation, has changed his mind.[2] Neither in England nor in Japan is it possible to explain the fluctuations in general mortality rates before the later nineteenth century in terms of medical practices. 'It is hard for modern man to assimilate the fact that until the twentieth century the contribution of medicine and medical institutions to the reduction of mortality was so slight as to be almost insignificant.'[3] Yet it happens to be the case. Here the causation flows the other way. Improvements in life expectancy led to a demographic situation which in turn stimulated an industrial revolution which provided the wealth and technology (particularly the microscope) which made medical science at last of some value in the fight against infective disease.

That the growth in understanding happened very recently is shown if we look at the situation in England as late as the middle of the 1890s, long after the dramatic changes in mortality with which we have been concerned had already occurred. Creighton's **History of Epidemic Diseases** showed that a leading medical historian had little idea of what caused most major epidemics. Influenza, he believed, was caused by earthquakes; plague, cholera and typhoid by the miasma from decomposing bodies; typhus by cold and poverty, dysentery by miasma of faecal origin and leprosy by eating too much salty meat and by rough clothing.[4]

The authors writing on various diseases in **Chambers Encyclopedia** of 1895 were likewise unsure of the causes of most of them. Smallpox 'is universally acknowledged to be a specific contagion of whose nature we are in the most profound ignorance.' Measles was one of 'the group of blood diseases', but no cause was given. Influenza 'is connected with some particular condition of the atmosphere, but what that condition is is not known.' The cause of plague was unknown, though it seemed to be carried in clothes, bedding and through direct contact. For typhus 'no characteristic organism has been discovered.' Malaria was the result of miasma, 'an earth-born poison which is generated in soils...it is

[1] See for example, Nikiforuk, *Fourth*, 138; Dubos, *Adapting*, 236; Szreter, *Mortality*, 3; Flinn, *European Demography*, 99-100,336, 368-9; Porter, *Disease*, 62-3.
[2] Razzell, *Essays*, 3,222 and ch.6.
[3] Petersen, *Malthus,* 160.
[4] Creighton, *Epidemics*, II, 415; I, 176,337; I, 162; II, 214; II, 217-8; I, 111.

impossible to state definitely what the morbific agent really is.' The causes of cholera were still disputed, but it was probably, like typhoid, the result of a germ found in water and milk, as Koch had argued. Dysentery was a disease of the blood found in low and swampy regions. 'Some authorities...regard dysentery as itself a malarial disease; but this is not certain.'[1] Given this state of almost total ignorance of causes, it is not surprising that the medical profession was largely unable to provide a cure.

On the other hand it is important to realize that in dealing with formal treatment we may overlook another kind of change in medical thought which is of fundamental significance. While it may be true that without any knowledge of the cause of specific diseases and without particular remedies, doctors and hospitals played little or no direct and short-term part, one needs to distinguish this from a much more generalized change that began to take place at least two and a half thousand years ago and which was made explicit in Greek medicine. This was the growing separation of the spiritual and material causes of suffering.

It would appear that over time in certain civilizations a decreasing emphasis was placed on supernatural causes, leaving material causes more exposed and important. Though people continued to be ignorant of the exact cause, they increasingly came to believe that the origins of disease might lie in the material environment. Thus they began to take preventive action such as keeping their houses clean, preferring pure water or avoiding drinking water altogether, encouraging bodily hygiene and sanitation, and instituting quarantine measures when diseases broke out. We have seen many of these preventive actions throughout this book, both in England and Japan.

In trying to explain this change one is aware that it is not exactly formal medical knowledge, but more a generalized growth of an interest in this-worldly and non-spiritual causes of suffering so that 'taking arms against a sea of troubles' people began to vanquish them. It was really a change in perception or cosmology. People began to be aware that different life styles gave you a less pain-filled life. Magical explanations were not disproved, but were 'outflanked', in other words became increasingly irrelevant. There was a growth of useful knowledge and observation of patterns of sickness, so people increasingly avoided, if possible, dangerous situations. There was a growing feeling that dirt was dangerous as well as unpleasant - that somewhere in it lay disease.

A way of looking at this is to reiterate the famous distinction proposed by Edward Evans-Pritchard between 'why' and 'how' causation.[2] In the period from about 1200-1880 in western Europe there was not much progress in understanding the precise nature of how infectious diseases occurred, primarily because the minute size of the micro-organisms made them invisible to the naked eye. Yet there was a shift in the answer to the 'why' questions, from remote 'first causes' (God/chance) which leave one with no room for action (except ritual and magic) and little hope of success, towards explanations of the 'why' which were located in secondary causes firmly situated in the material environment. Even if these were still very generalized, that is to say such things

[1] See *Chamber's Encyclopedia* under these disease names.
[2] Evans-Pritchard, *Witchcraft and Magic.*

as ‘other people’, ‘dirt’, ‘miasma’ and so on, the shift was important. No-one knew precisely how most diseases were spread, but by locating the ‘why’ at this level several things followed.

People started to try to control their environment in order to improve their protection against what they guessed was the area from which trouble was likely to come. They instituted quarantine for plague, tried to improve the quality of water and food, tried to reduce ‘miasma’ and smells by drainage and sanitation, tried to keep houses and air ‘clean’. Thus many of the actions are the results not merely of ‘blind chance’ or the bi-products of improved living standards, but also reflect a cosmological change which encouraged people to distance themselves from what they dimly perceived were the causes of disease - other people or the environment. They tried to control their social and natural world because they came to believe that it was in this material and physical world, rather than in the spiritual one, that the origins of diseases lay. This was in many ways a re-learning of the Greek medical views that most illness lay in earth, air and water. It is a change which is partly incorporated into scientific texts, but is best seen in those everyday practices with which we have been concerned.

Through a process of ‘selective retention’ of successful, accidental, discoveries, people came to appreciate what the ancient Greeks had known and the Chinese independently discovered, namely the largely material basis of infective disease. We have seen that the rise of Western medicine was almost entirely based on an increasing perception of the importance of the material, non-supernatural, causes of disease. This has culminated today in a world where infective disease is studied as the interaction, at the atomic and electronic level, of particular patterns of atoms on the pathogen and particular patterns of atoms on the host. This is the ultimate in materialistic explanations.

The long route to this current form of explanation is paved with instances of the gradual assimilation and recognition of behaviour which distances the individual from the presumed, material, cause of disease or, as in the case of boiled water and tea, renders the presumed but unidentified cause of disease ineffective. It is not unreasonable to look upon this as an example of ‘Selective Retention’ at work, steadily operating over a very long period and through millions of individual decisions and cultural changes.[1]

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This explanation connects with the third area examined by McKeown, namely general environmental changes. He looked at the way diseases were transmitted through water, food and insect vectors and was unable to find any significant improvements which would have led to a lowered mortality rate before the later nineteenth century. The only exception he found was a possible improvement in standards of hygiene which might have affected typhus, but this came late in the eighteenth century amongst the well-to-do and its effects only

[1] For a further discussion of the Darwinian concept of blind variation and selective retention, see Campbell, ‘Selective Retention’. I am very grateful to Gerry Martin for his suggestions on this matter.

reached the majority of the population in the nineteenth century, after the events he was trying to understand occurred.

Subsequent studies tended to support McKeown's negative assessment. Although sanitary reforms and public health have been suggested as the explanation of the health changes of the later nineteenth century by Simon Szreter,[1] it was widely believed that this was a less convincing explanation in relation to the earlier health transitions for the period up to 1840. Demographic historians, taking account of the awful conditions created by the urban growth in England, ruled this out. Petersen writes, 'during Malthus's lifetime hygienic conditions probably worsened or, at best, improved far too slowly to account for the decline in mortality from roughly 1760 to 1840.'[2] Schofield and Rehr concluded, 'there is little evidence that in most areas sanitation and public-health measures improved during the period', thus 'it is very difficult to argue in favour of the importance of public-health measures in Europe before the second half of the nineteenth century.'[3]

One of the many paradoxes was noted by Helleiner. Speaking of the growth of cities from the sixteenth century, he wrote that 'It needs little imagination to realize that the emergence of these large human anthills created a host of problems - food, water, and fuel supply, sewage and garbage disposal, housing, paving etc...' Despite this, the 'same period which witnessed an unprecedented concentration of human beings in large cities, creating conditions favourable to epidemic outbreaks, paradoxically enough saw the beginnings of a development that was to end with the extinction of plague...'[4]

Much of this book has been concerned with showing the ways in which this picture is altered if we examine the complex links between health and environment in more detail. It has become obvious that a combination of the numerous features of the environment, including the absence of war, the nature of the material environment, and changes in patterns of behaviour, did affect health. As the decline in mortality occurred in eighteenth century England, a number of contemporaries agreed that they were caused by changes in the environment.[5] They drew particular attention to clothing, ventilation and cleanliness of people, houses and streets. It turns out that they were right, though they could only show the associations, not the exact ways in which the disease chains worked.

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The final area, which McKeown thought provided the most likely solution, was nutrition. At a simple level of cause and effect it is not difficult for McKeown's critics to show that changing food resources, by themselves, cannot be the main reason for the decline in mortality in eighteenth century England.

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[1] Szreter, *Importance*, 17, 26; for an attack on this view and a refutation, see Guha, *Importance* and Szreter, *Importance.*

[2] Petersen, *Malthus*, 159.

[3] Schofield et al., *Decline,* 5, 9.

[4] Helleiner, *Vital Revolution*, 83, 84.

[5] Black, *Arithmetical*, 234; Place, Population, 253, 257-8; *Malthus*, II, 182; Heberden, *Observations*, 95-6; Blane, *Dissertations*, 122, 173, 181.

Historians have not found evidence of nutritional improvements and the results from studies of height and weight suggests, if anything, a deterioration in levels of nutrition.[1] There is no evidence of improvement in the first half of the eighteenth century when mortality began to fall. There was probably a decline in height between about 1750 and 1790, in the very period of most rapid mortality decline, and certainly there was no marked improvement until the second half of the nineteenth century.[2] If we take the more cautious view stated by Fogel and others, that 'England appears to have been at least half a century into its Industrial Revolution before witnessing a marked improvement in the heights or nutrition of its labouring classes' we are left with the puzzle indicated by Kunitz, that '...mortality began to decline at least half a century before the height data indicate a significant improvement in nutrition.'[3] Or as Drummond pointed out some time ago, 'It is a remarkable fact that the second half of the eighteenth century saw a striking improvement in the general health of the people in spite of the declining standard of living among a large section.'[4]

This paradox can partly be solved by way of the set of inter-acting features I have elaborated. For instance, we need to consider drink as much as food. If we do so we can see how people could be much healthier as a result of drinking tea, although their height and weight might not be improved. More widely, we should not go too far in discounting food. While changes in nutrition may not have caused corresponding changes in mortality, the background level and nature of food is vital to understanding everything else. We know that almost all diseases both influence and are influenced by nutrition. The fact that both the Japanese and the English were relatively well fed and, on the whole, managed to avoid periodic famine from early on is a central part of the explanation. Food is important as one part of the causation, though on its own it explains little. The mistake is to concentrate on each causal element in isolation. It is only when we consider all the aspects in the complex inter-actions that we can begin to understand any single part. That the English ate a lot of meat or the Japanese a large amount of sea produce is, in itself, a neutral and meaningless fact. It is only when it is seen in context with all the other elements that we can begin to judge its significance. The situation which we face, as Mathias put it some years ago, is that the 'influences which combine to affect health, morbidity and mortality...are manifold and their interactions and still largely unravelled...'[5]

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In order to proceed towards this 'unravelling' it is helpful to think of the causal problems in terms of chains, as a series of linked causes and effects. The causal flows are not continuous like string, but made up of discrete elements, each joined to the next. If we conceive of the problem in this way, we will at least be able to understand why it has been so difficult to solve the mystery of the escape from the Malthusian trap.

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[1] See Mercer, *Transition*, 35,152,169; Razzell, *Essays*, 152,157; Schofield and Rehr in Schofield, *Decline,* 9, 21.
[2] See Steckel, *Heights,* 185-6; Fogel et al., *Stature*, 466; Razzell, *Essays*, 220; Shammas, *Consumer*, 122.
[3] Fogel et al., *Stature*, 480; Kunitz, *Height*, 278.
[4] Drummond, *Food*, 250.
[5] Mathias, *Transformation,* 283.

Before discussing these chains it is sensible to remind ourselves of the distinction between two types of cause. **Necessary** causes are those without which something could not have happened. For example, it might be argued that the absence of internal warfare for at least a century was a necessary cause for the first industrial revolution. But peace will not, in itself, cause industrial development. It will merely provide one element of the 'fertile ground' without which industrialism could not have occurred. **Necessary and sufficient** causes, on the other hand, are those without which something could not have happened and which, in themselves, were sufficient to explain why the consequence was bound to follow. An example would be the fact that after the pasteurization of milk, bovine TB was bound to decrease.

In pursuing such 'causal chain' analysis we should note that chains may be short or long, with few or many links in them. Often a single-link chain appears at first sight to provide an adequate 'explanation'. Thus in 'explaining' moderate fertility in seventeenth-century England we might posit late age at first marriage as causing restrained fertility. In relation to mortality we might suggest links between cotton clothing and the absence of typhus; island status and the absence of war; volcanic hot springs and hygienic hot baths. Yet usually, on closer inspection, these causal links turn out to be only parts of lengthier and more complex chains, which are better understood as a set of necessary but never sufficient causes.

Many of the arguments put forward in this book have been based on two link chains: tea caused boiled water to be used, which caused dysentery to be minimized; an absence of large domestic animals caused there to be few flies which caused an absence of certain diseases; strong paper permitted handkerchiefs which caused less disease spread by nasal infection. Often in such two link chains the first link is explicit and intentional. People have to boil water to make tea, they like to use paper handkerchiefs to conceal unseemly body matter. The second link can be often incidental and unnoticed. Even the first link is often unintended. People in Japan did not keep domestic animals for a number of reasons, none of which is principally related to the fly problem. People in England did not turn to the use of china utensils because they were more hygienic, but principally because they were seized by a zeal for hot drinks and particularly tea.[1] The fact that people do not themselves see the links makes it more difficult for the analyst who has to undertake a thought experiment to discover them.

Even more difficult to perceive are three, four, five or longer chains.[2] An example of a four-link chain in the field of mortality might be: an earth-quake prone geology caused the building of flexible, light houses which caused the

[1] See Buer, *Health*, 60 on the effects of the use of china utensils.

[2] Chains can, of course, be much longer. A delightful example of a nine link chain is given in a tale told to a traveller in eighteenth-century Japan. A man claimed he had decided to invest in the making of boxes, using the following links: a high wind in Tokyo > dust clouds > sore eyes > blindness > need to learn musical instrument (samisen) to make money > samisen makers need gut for strings > kill cats > increase in rats > rats gnaw goods > high demand for boxes. (Jippensha, *Shank's Mare*, 73) Marc Bloch's famous, half-facetious, set of links from heavy ploughs >long fields > housing patterns > social structure used to explain the difference between southern and northern France is a classic example of this kind of analysis. (See Bloch, *French Rural History*, 52-6).

absence of load-bearing walls which permitted movable sides for houses and allowed maximum ventilation which diminished certain diseases. An example of a five-link chain would be: a Buddhist belief about the sin of eating animals caused the absence of large domestic animals which caused the absence of animal manure which forced the use of night soil which permitted clean cities which caused less enteric disease.

In these cases, the chain is so long that it is unlikely that there is any intentional link between the start and end of the causal sequence. People observe the earthquakes, they have to build light houses and so on. But at each stage there are usually choices as well as constraints. Although the walls were not load-bearing, a whole set of other factors then enter. The presence of very good paper and bamboo in Japan permitted the building of houses with movable walls. The hot climate made it desirable to do so.

This added complication arises from the fact that at each link of the chain there are usually multiple causes and multiple effects. It is thus not a simple matter of tracing a series whereby A permits or causes B, which permits or causes C. We can consider this in its two aspects.

Each link may have a variable number of effects. Starting with at least two effects of one link in the chain, we could note that the drinking of tea had the double effect of making people boil water and of filling their stomach with a powerful disinfectant. Cotton clothes both allowed and necessitated frequent washing with boiling water and also, in contrast to wool, consisted of a vegetable fibre which gave lice a less attractive home. Glass both lets sunlight in, which kills certain bacteria and makes it easier for people to see and remove the 'dirt' in their houses.

The multiple effects of what might be considered merely a single link in certain chains, is well shown by the question of the presence or absence of large numbers of domesticated animals. In England, the very widespread use of cows, sheep, horses and pigs had numerous effects, both positive and negative. It permitted the wearing of good shoes, good clothing, and an ample supply of animal protein, manure, and non-human labour. It also caused the public health problems of rotting carcasses and a huge amount of animal excrement. In reverse, the relative absence of domesticated animals in Japan caused protein shortages, long hours of work and a shortage of manure. But it also reduced such problems as tape-worm infestation, animal waste and fly infestation, and other diseases such as influenza which are associated with animals. A single link in a chain can thus have numerous consequences which usually have both positive and negative results.

Furthermore, a link in a chain is usually the result of multiple causation. It is seldom that we find a single cause, single effect, chain. Even two-cause explanations often seem unduly over-simple. Thus while we can see that personal cleanliness in Japan might be the result of only two causes, plenty of hot water and Shinto beliefs about purity and dirt, we sense that these are only permissive and not fully causal. Or again, when we wonder whether the introduction of hops into England caused an improvement in health, we need to add in other 'causes'. We are forced to ask why beer drinking was so widespread

in England and not, say, in Scotland or France. Part of the explanation is ecological: beer requires barley, which grows best in an English type of moist climate, the grape belt had its own drinks. Yet more than this is required. For beer drinking to have a dramatic effect the country had to be wealthy enough to be able to devote almost half of its grain crop to the making of drink. Few pre-industrial countries are that rich. We need at least three permitting causes to produce this effect.

Very often the causes are partly material, partly cultural. The chain which leads from the geological phenomenon of plentiful hot springs, through communal baths, to body hygiene is strongly affected by concepts of decency and modesty and by Shinto beliefs about the need for physical purity and the washing away of bodily dirt. At a deeper level, the very material 'facts' themselves are shaped by concepts. Many societies have straw but seldom do people use it to make shoes. This is not just a matter of comfort but is linked to the ideas of the danger and dirt inherent in the soil and the 'outside' world which then contributes to constituting the house as a pure and clean haven where 'outside' shoes are not used.

Examples of at least three causes acting together in the English case would be needed for the explanation of the English house: geography and geology (stone, wood, no earthquakes), widespread affluence and security, a legal system allowing private property in building and land, were all necessary for the final solution to be reached. Or again, English clothing was the result of abundant wool and leather, widespread wealth and craft skills. The absence of bubonic plague through Japanese history up to the late nineteenth century required a wide sea, quarantine at the ports and the absence of the necessity for grain imports.

Examples of four causes being necessary are equally numerous. In relation to abortion in Japan we have to consider simultaneously the absence of widespread mechanical contraception, a perceived shortage of resources, the attitude to the fetus in the womb, the attitude to women's bodies. These four-cause links can frequently be found in relation to mortality as well. To explain the development of the mosquito net in Japan we need to take into account the shape of rooms, the furnishing of the rooms, the availability of suitable materials out of which to make the netting, the necessary craft skills.

Often one finds there are many causes working together. Two examples of at least six causes may be given. Thus in order to understand breast-feeding rates and practices one needs to consider the attitude to women's bodies, the status of women, the nature of women's work, the attitude towards the relations of men and animals, the views on what is proper food, the availability of alternative foodstuffs (such as animal milk). An example of a multi-causal link can be found in the study of famine. The degree to which famine will be a serious problem in a country depends on at least the following: the availability of food from the sea, the variability of climate over small areas, the absence or presence of epidemic diseases and particularly malaria, the availability of cheap bulk transport, the productivity of the agriculture, the degree to which wealth is left with the populace or siphoned off by the powerful, the degree of market integration and monetary economy, the level of warfare.

If we consider the complexity of possible causal chain analysis, we are faced with a daunting prospect. Suppose we had a seven link chain, each link producing four consequences. It has been calculated that this would create 21,844 possible 'paths' from the first to last link.[1] Even this does not capture the complexity because there are two further features to consider.

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The first is that there are various kinds of loops and symbioses between cause and effect. Thus war causes famine and disease, disease leads to more famine and so on. The complex relations between nutrition, disease, work and animals have been central to this book. Even within each of these features there are multiple interactions. Diseases mutually influence each other, for example malaria weakens people so that they become susceptible to other infections. Effects feed back and then become causes in a longer chain, for example the relative absence of widespread malaria in Japan added to the strength and efficiency and possibly the optimism of the population, leading to improvements in agriculture, which meant better-fed populations and improved health and more efficient agricultural techniques, all of which would make malaria less of a threat. The processes are often cumulative which helps to explain the increasing divergence of Japan and, to a lesser extent, England from their continental neighbours.

The loops can often lead to a vicious circle: high fertility frequently leads to high infant and maternal mortality, which leads to a desire for more children, which leads to a shortening of breast-feeding and younger age at marriage, which leads to even higher fertility and so on. It was these vicious loops, in particular the sequence of increased wealth leading to increased population leading to increased mortality which in turn caused a decrease in wealth, with which we started in relation to the Malthusian formulation. But there are virtuous loops as well. We have seen a number of these in action, for instance increased wealth, leading to improved living conditions and more cleanliness, leading to less of a disease load on humans making them more hopeful, energetic and capable of increasing wealth further - that virtuous loop which somehow began to emerge in England and Japan.[2]

It is this kind of symbiosis between economic growth and population patterns which has attracted much of the attention of theorists. A brief summary of some of the arguments will illustrate the complexity of the feed-back loops. As early as 1959 Krause had suggested that the European demographic pattern was an important cause of the industrial revolution, the slow growth of population at certain periods allowing capital accumulation.[3] Similar suggestions were put forward by John Hajnal in 1965, and more recently by Wrigley and Schofield.[4] Three causal links have been suggested in relation to the English case. The relatively slow population growth in the three generations before

[1] Campbell, *Blind Variation*, 394, note 4.
[2] For a good early description of the wealth-health-wealth loop, see Buer, *Health,* in particular 59-62.
[3] Krause, 'Neglected Factors', especially 536-7.
[4] Hajnal in Glass and Eversley, *Population*, 132; Wrigley and Schofield, *Population*, 439.

industrialization allowed capital saving and infra-structural improvement.[1] The economy grew faster than the population, and wealth accumulated. Then, when the economy began to accelerate rapidly from the middle of the mid-eighteenth century, the delicate feed-back mechanisms worked in another way and the expanding economy encouraged a rapid growth of population. At this point the rapid population growth, bringing economies of scale, a larger market and the required labour force, was as important as the restrained growth of the earlier period.

Other ways in which the population pattern inter-acted with economic growth have also been suggested. The middling mortality and fertility meant that the age structure was not dominated by very young and non-productive dependents.[2] Relatively low mortality, including the absence of war and famine, may have raised confidence and the ability to plan and invest which in turn encouraged economic activity.[3]

The theory that unusual economic development in England was somehow linked to its peculiar demographic pattern has been given support by similar arguments for Japan. It would appear that a particular and unusual relation between demography and economy was important, a similar mixture of slow growth of population when capital was being built up, with spurts of population in periods and areas where labour was needed.[4] A particularly detailed analysis of the symbiotic relationship has been made by Hanley and Yamamura who suggest similar causal links to those in the English case. Improvements in technology and a stationary population for over a hundred years before Japanese industrialization led to capital accumulation and an improved infrastructure. Likewise a propitious age structure and a low dependency ratio was a considerable advantage.[5]

Considering the two cases together makes it possible to see how complex the causal chains were. For industrialization it was not enough to have a suitable population pattern; there is little sign that Japan was developing towards an indigenous industrial revolution. Many other ingredients were needed. It was not sufficient just to have a stationary population - at times it needed to grow very fast. It is not enough to see population patterns as cause and economic growth as effect. As we have noted above, the causal chains were often circular. A propitious demography encouraged economic growth, which improved living conditions, which lowered mortality. It was at this point that Malthus feared the virtuous circle would break down. What was essential was that there be mechanisms to delay the rapid increase in fertility. These, as we have seen, were present in both countries. To understand such loops of causation we obviously have to consider all parts of the chain simultaneously. In doing so we have to add a further complexity.

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[1] See Spengler, 'Population', 92.
[2] Wrigley and Schofield, *Population*, 444-9.
[3] Livi-Bacci, *Concise History*, 107, quoting Helleiner; Mokyr, *Lever*, 155 quoting Boulding; Slack, *Plague,* 19.
[4] See Hayami, 'Population'; Smith, *Native,* 16, 96.
[5] Hanley and Yamamura, *Economic and Demographic Change*, especially, 310ff.

The final complication arises from the importance of the order, timing and 'weight' of each link. To take a very simple example of timing, if tea had been introduced to England in the thirteenth rather than the seventeenth century its effects would have been different. Or again, in respect to 'weight' or volume, if the transportation system from Asia in the eighteenth century had only been able to deliver small quantities of tea, then its effect would have been minimal. Or, to take an example from the inter-actions of population and economic growth, it is not just the nature of each that is important, but the timing and order of events. Wrigley shows that it was not the homeostatic relations between population and resources that was important in England, but 'the remarkable slowness of response between economic (real wage) and demographic (fertility) changes.'[1] It was the fifty-year gap in the feed-back mechanism, that was essential.

If we multiply these relatively simple examples a hundred times to take into account the introduction of the many technologies and philosophies into England and Japan over the thousand years preceding the nineteenth century, it is possible to glimpse how the causal chains became even more random and complex. There is no necessary and inevitable progress from A to B to C. Instead the process is much closer to the 'Blind Variation and Selective Retention' model beloved of evolutionary biology.[2] Many of the chains were 'successful' for a time, having considerable effects, and then died out. The Japanese use of night soil, or of paper for windows were extremely 'successful' for a time. In the end, however, they were replaced respectively by the English water closet and by plate glass. A diagram of what happened, with causes bouncing off other causes, and effects leading to other effects or back in loops, would look like the tracks of vast flocks of wading birds across the sands of time.

There are some methodological implications of this kind of causal chain analysis. The first is the need for a holistic or total approach to apparently narrow problems. In order to understand the absence of malaria or widespread enteric illness in Japan, or the general prevalence of breast-feeding in England, we have to examine the whole of the culture. The causal chains will zigzag back and forth between different domains. They will certainly not remain within medicine or biology. They often lead in unexpected ways into religion, law, economics and elsewhere.

A second point is that since the chains are often long and extremely complex, the effects are unintended and usually unknown to the people who are affected by them. To discover what they are likely to be requires a combination of systematic intuition and techniques of testing links which bears a close resemblance to the 'backward' analytic method used by detective story writers. One cannot proceed by the method of conscious, logical, steps. 'Logic is an unreliable instrument for the discovery of the truth, for its use implies knowledge of all the components of an argument - in most cases an unjustified assumption.'[3] One part of this backward analytic technique lies in the use of the comparative method. If one only considers one case, England for example, or

[1] Wrigley and Schofield, *Population History*, 451.
[2] For a good over-view, see Campbell, 'Blind Variation'.
[3] Dubos quoted in Bynum and Porter, *Companion Encyclopedia*, 473.

Japan, many of the links lie invisible both to the actors themselves and to later analysts. Only when we look at two or, preferably, three cases, do the links and chains become visible.

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If we now return explicitly to the central puzzle behind this book, namely how England and Japan managed, at least partially, to escape from the Malthusian trap, we will find that the idea of unintended and apparently random chains of cause and effect helps to make us aware of the ways in which something so unpredictable might have occurred.

The problem of explanation is particularly difficult in the case of mortality where there appeared to be an impasse. One cannot have a society sophisticated enough to make the powerful microscopes which made it possible to see bacteria until many developments have occurred, in mathematics, in glass manufacture, in precision engineering and so on. It requires a large set of interrelated developments which only flourished after the first industrial revolution. Medicine could only be really effective after an industrial revolution, yet such an industrial revolution depended on mortality being controlled. If the machine for giving the knowledge to conquer many diseases could only come after a reasonable plateau of disease had been reached, how could that be reached without the appropriate knowledge?

The answer seems to lie in the theory of unintended consequences or accidents. People often do the right thing for the wrong reason, or rather, do a thing for one reason and then find that it has other effects. The case of tea-drinking is an excellent example. In China and Japan tea drinking was introduced to improve health. In the west, apart from a few enthusiasts, it was mainly drunk for its reviving effects, though the health benefits were enormous. The same was true of cotton. Or again, maternal breast-feeding was encouraged in England and Japan for numerous reasons but few of them had anything to do with the conscious effort to lower mortality and fertility.

Often the changes only had to be slight. This was noticed by Creighton in relation to leprosy, which he thought was largely caused by poverty, so that 'it was easily shaken off by the national life when the conditions changed ever so little'.[1] The same slight tipping of the balance may apply to many diseases. 'An adequate level of nutrition, a tolerably pure water supply, a fairly low level of contact with serious infectious disease and an absence of opportunities for the rapid multiplication of disease vectors...may permit an average life span of half a century even though medical knowledge is slight and medical practitioners may be few and ignorant.'[2] Szreter also emphasizes that one of the main lessons of the British case is that life saving through improved public health can occur without advanced medical technology.[3] This is even more forcefully shown by the Japanese example. Their social and bodily habits eliminated most of the major epidemic diseases well before the advent of modern medicine.

[1] Creighton, *Epidemics*, II, 112.
[2] Wrigley, *Death*, 144.
[3] Szreter, 'Importance', 37.

The reasons for the changes were thus only incidentally to do with medicine. 'Europe made the transition to a demographic regime in which people lived longer and died from chronic rather than acute disease', partly 'because people washed their hands, their bodies, and their houses; learned not to spit in public, killed flies, kept food from going bad...'[1] They did many of these things largely for reasons which had little do with health in itself, a number were socially conditioned. There are numerous ways in which human pride, conceit, love of status has unintended consequences, leading to changes in clothing, body decoration, food and housing which cumulatively had considerable effects. Whatever the reasons, Riley and others are surely right in arguing that 'if there was a revolution in medicine at the end of the eighteenth century...it involved the medicine of the individual; the revolution in the medicine of groups came earlier.'[2]

That revolution in the medicine of groups is most clearly seen in the case of Japan and it is the Japanese example which has made it possible to disentangle some of the ways it worked in England. In the English case the causal chains are particularly complicated because the patterns of mortality and fertility are so intertwined with the first industrial revolution as both cause and effect. In Japan we can hold technology fairly constant and watch the way in which the organization of the society and cultural values led to an impressive control of mortality and fertility.

Observing the two cases also emphasizes the different paths which may lead to roughly the same end. In almost every respect the Japanese and English differed in their strategies, starting from entirely different cultural and geological foundations in many ways the end results were not that dissimilar. Chains which start in different places and move through contrasted links may end with the same results.

Another implication of this book is that almost every change has negative as well as positive effects. There is almost always a contradiction or tension in 'progress'. The control of fertility helped the English and Japanese to avoid the worst excesses of famine, but it was at the cost of much frustration and unhappiness at delayed or absent marriages in England and an heavy cost to women's bodies and minds through abortion and infanticide in Japan. The presence or absence of large numbers of domestic animals, as we have seen, both had their costs. Zealous washing and bodily care in Japan helped avoid certain diseases but encouraged others, notably of the skin and eye, in their stead. Drinking tea led to better health, but, when compared to beer, worse nutrition. The use of night-soil in agriculture in Japan helped lower enteric disease, but increased schistosomiasis. The wearing of cotton in England lowered the incidence of typhus, but was less warm and pleasant than woolen clothing. The rapidly increasing use of coal in England 'made possible better warmed houses, better cooked food and greater cleanliness' through the supply of pumped water,[3] but it also aggravated air-pollution and hence pulmonary diseases. The contradictory consequences are numerous and remind us that for

[1] Wear, 'Hygiene', 1305.
[2] Ramsey, *Environment*, 613, summarizing Riley.
[3] Buer, *Health,* 60.

almost every two steps forward on one front, there is a step back on another, a lesson we are constantly reminded of as we watch the 'progress' of industrial capitalism today.

A further methodological implication was discussed by Sorokin. He pointed out that multiple causation theory and the analysis of long chains can easily degenerate into vagueness. It soon becomes impossible to separate the important from the trivial. Almost everything is relevant, to a limited degree, as Chaos Theory has recently re-emphasized.[1] In order to overcome some of these difficulties, Sorokin suggests that 'more fruitful seems to be the way of discovery of the main, the necessary cause of these phenomena with an indication of the supplementary factors that facilitate and inhibit the effects of the main cause'.[2]

In the case of this book, the single central necessary cause was islandhood. I have considered some of the numerous supplementary causes which were also needed to lead to the exceptional development of these islands, even when compared to others. Yet it does seem to be the case that islandhood was the necessary if not sufficient condition for what happened. If England and Japan had not been large islands, it seems inconceivable that they would have developed in such an unusual way. This can be shown briefly in relation to the link between islandhood and war.

In terms of international warfare, England for many centuries was in an ideal position. It could benefit from any technological advances made during the conflict of European powers, particularly in metal-working. It could raid its neighbours' wealth. Yet it was not pillaged or even very seriously threatened for many hundreds of years. It was as if a wind-break had been accidentally formed around this small plot of fertile ground. This shelter was undoubtedly a key factor in the later economic miracle. As Nef puts it, the advantages of its position 'allowed Great Britain a long respite from exhausting military effort ', an advantage 'not shared by most European states'.[3] Holland had some of the advantages through its man-made water defences in the century after 1580. But these became stretched as the power of France increased and the thinness of the flood dike defences became apparent.

The English in contrast developed a virtuous spiral. The protected position enabled taxes to be relatively low, encouraged its merchants and trade, which built up the fleet and hence increased security. They never suffered from the total shattering which occurred when, in every other large country in Europe or Asia with the exception of Japan, a foreign nation conquered its soil and took control. Marc Bloch, E.L.Jones and Joel Mokyr have all pointed to the seemingly curious fact that 'Only those parts of Eurasia that were spared the conquests of Mongols - Japan and western Europe - were able to generate sustained technological progress.'[4] We can take the argument one step further and note that even within the favoured area of Western Europe, England was enormously lucky to be spared invasions and land wars on its territory.

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[1] Sorokin, *Sociological Theories*, 103; Sorokin, *Society, Culture*, 505.
[2] Sorokin, *Society, Culture*, 507.
[3] Nef, *War*, 116.
[4] Mokyr, *Lever of Riches*, 186.

Yet of course, even if it avoids invasion by others an island can easily be wracked by civil war, as we see so clearly in the contemporary case of Sri Lanka. Thus the relative absence of civil war in England cannot be explained by geography alone, though not having powerful states on one's land borders was an enormous advantage. The avoidance of prolonged and civil strife was the result of constant political effort and of a judicial system that was developed from the twelfth century to iron out disputes without recourse to physical violence. The system was extremely effective in preventing damaging civil wars. Even when disputes did break out, as in the Wars of the Roses, the Pilgrimage of Grace or Monmouth's Rebellion, there was usually little destruction.

This double absence of war explains why to travel round England now is to see an ancient, prosperous, landscape, where many medieval churches and buildings remain. Unlike almost every other country in the world, it has not been periodically destroyed by foreign armies or civil wars. The ancient buildings are the outward manifestation of a gradual and peaceful accumulation of wealth, a slow build-up which provided the necessary fertile ground for the unprecedented increase in productivity of the eighteenth century.

While the connections between islandhood and absence of war might look accidental if we considered England alone, we have also seen that Japan reaped the same advantages from its island position. Peace, prosperity, a balance of political power and islandhood seem to be linked in these two cases.

There is always a strong tendency to impose a pattern on the past and to assume an inevitability in events. There appears to be design, necessity, even calculation. Yet, as Chambers noted long ago, 'changes in the long-term trend of population appear to have sprung from forces that were, from an economic point of view fortuitous'.[1] It was not only from an economic point of view, however. What happened was not only a gigantic accident, but also an enormous exception. It was a strange occurrence that ought not to have happened, nearly did not happen, yet by a set of coincidences and chances, did happen - twice. The point is well made by Mokyr: 'The study of technological progress is therefore a study of exceptionalism, of cases in which as a result of rare circumstances, the normal tendency of societies to slide towards stasis and equilibrium was broken. The unprecedented prosperity enjoyed today by a substantial proportion of humanity stems from accidental factors to a degree greater than is commonly supposed'.[2]

Given this set of curious chances, it is not surprising that many of the most intelligent observers living some two hundred years ago on a small island had little inkling of the vast transformation that was already underway. Adam Smith, Edward Gibbon, Thomas Malthus could not share our hindsight. Only now can we understand some of the incredibly complex, usually chance, links and chains which would make it possible for the first time to reverse the conditions of production and reproduction so that hundreds of millions could be reasonably fed, clothed, housed and at least temporarily freed from the daily fear of war, famine and epidemic disease.

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[1] Chambers, *Economy*, 59; see also 151.
[2] Mokyr, *Lever of Riches,* 16.

EPILOGUE: MALTHUS TODAY

Like Adam Smith, Thomas Malthus did not anticipate the industrial revolution. The first two great classical economists experienced a world with apparently finite resources of energy. When they looked back over the last few thousand years of human history, and contemplated the accounts of India, China and other great civilizations, they discovered recurrent patterns which suggested that the world had reached its limits of energy.

They saw that human populations multiplied rapidly, then hit some ceiling, a feed-back from increased density which led through war, famine and disease to a temporary lowering of total population. There seemed no escape. They believed that the world could not carry many more than the population then present on earth, which we now know was under one billion persons. That was the total number who could be fed, sheltered and warmed using recurrent energy from the sun converted through animals and plants. Over three quarters lived with constant shortages and on the edge of famine.

Smith and Malthus would have been amazed to learn that two centuries later the population of the world is now nearly ten times greater than it was then, and still growing very rapidly. Yet it is more or less feeding, clothing and heating the majority of humans, even if two thirds still live in considerable hardship. These great thinkers had not foreseen the unlocking of energy in the form of fossil fuels and nitrogen. They could not foresee the effects of science and industry.

For a couple of centuries, unforeseen developments have suspended the laws, or as he later called them, tendencies, which Malthus elaborated. The large question now is whether these have merely been suspended or replaced by other laws of a different kind which make the Malthusian framework only of relevance to a pre-industrial age.

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We cannot be at all certain. The unforeseen revolution, which no great economist or social thinker predicted, makes it obvious that even as we live in the midst of massive changes, we cannot guess, or even be aware of, their effects. What is happening in the laboratories and science parks may lead to technologies which will provide as large a boost to energy production as the industrial revolution. A non-polluting, limitless, effectively free form of energy would change our futures on this planet.

We know from the work of philosophers such as Karl Popper that we cannot predict more than a year or two ahead with any confidence, because we cannot now know what we will know in a few years. Furthermore, small events, as chaos theory shows, can reverberate rapidly into huge consequences.

Yet we may still wonder how much this affects the framework provided by Malthus. I have depended throughout my life on Malthus to help me ask questions and to provide models of likely outcomes. So I ask myself how far

the Malthusian model has been disproved by what has happened since his death.

*

Malthus' first proposition was that human beings have the reproductive potential to double (at least) their population in each generation. This remains true. And indeed, it is not just a potential. Since Malthus wrote, there has been a massive growth in world population and through the twentieth century world population was doubling in each generation, and even now it will double in the next generation and a half. In many parts of the world, particularly sub-Saharan Africa and the Islamic belt from the Middle East to Central Asia, population is more than doubling every generation.

In the revised framework of the second edition of his *Principle*s, Malthus suggested that this was not a law, but a tendency. He put forward the argument that it was only when the pressures to live more comfortably, to gain social esteem through upward social mobility, in other words through living in a stratified, moderately prosperous, competitive capitalist world, developed, would people control their fertility. People might then choose to use their increasing wealth for goods other than large numbers of children. Here again he seems to be right.

The rapid drop in fertility in many parts of the world has largely been the result of a rise in the age at marriage and in the use of various forms of contraception (of which he disapproved). These phenomena are linked to rising educational expectations and a desire to enjoy other benefits – consumer durables, leisure, social esteem – which seem to be better attained with small families or no children, rather than by what comes to be regarded as 'costly' children.

This is not the only reason for the very widespread fall in fertility in many parts of the world. Almost equally important, since it covers a quarter of world population, was the 'one-child' policy in China, which has now become largely internalized within many individuals and merged with the pressures of growing aspirations for esteem and higher living standards.

Malthus might not have been surprised that the restricted fertility pattern which he had observed and documented in England, Switzerland and Norway is now to be found over much of Europe, east and west, America, north and south, and Eastern Asia, including China, Japan and many of the new tiger economies. He would have been delighted at the outcome, which is what he advocated, even if he would have been shocked at the use of contraception as one of the main methods to achieve the lowered fertility.

That part of Malthus' theory which deals with fertility and marriage is still applicable and valid. Nothing has really changed. We are potentially reasonably fast-breeding animals and unless there is a very powerful counter-force, our tendency is to double our numbers each generation and within a few generations this leads to huge growth. What Malthus could not accept, but has changed the equations enormously, is that we can now have our cake and eat

it – or rather have our sex, but not produce large numbers of children. This is indeed a massive shift and makes the difficulty which he faced through absolute prohibition of all sex for everyone until their late twenties less daunting.

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The area where Malthus' theory is thought to be most vulnerable is in his notion of how fast and to what limits resources can grow. He believed correctly, as did all those who deeply considered agricultural or 'organic' economies, that such a way of producing wealth had inherent limits. They could only increase their production slowly and there were very finite limits.

Harvesting energy from the sun through animals and plants soon hits limits. If we add to this Malthus' famous law of diminishing marginal returns to further input of labour, humans within an agrarian world before modern fertilizers and machinery driven by fossil fuels are trapped. So he rightly (for his time) argued that while population can double each generation, agricultural production, not just of food, but also of firewood, clothing, housing, can only go up arithmetically. Perhaps it can double in the first generation, but then it increases in the ratio 1,2,3,4, rather than the population which can go up 1, 2, 4, 8.

The application of science to industry and the unlocking of fossil fuels and fertilizers changed this. For less than two centuries the world has lived on the unprecedented bonanza or surprise treasure trove of stored wealth accumulated over millions of years through the energy from the sun laid down in carbon atoms in coal, oil and gas.

The question now is whether this is just a short-lived exception to Malthus' laws. We know that most of the accessible fossil fuels will be used up within the next century. We know that the burning of these fuels is creating a devastating external effect through carbon emissions and global warming. We know that we are destroying the forests, over fishing and polluting the oceans, over-using the fresh- water supplies.

If Malthus were with us now, he would readily agree that his laws had turned out to be tendencies, and for a while the tendency had been suspended. He would probably argue that his deeper point still held. He pointed to many examples of societies which enjoyed an unexpected 'windfall'. The herring shoals had altered their direction to benefit the Dutch or Highlanders, the introduction of the potato had given the Irish or Tibetans an amazing new crop. The population often soared after such a windfall. Yet soon the resource was used up, and the greatly enlarged population faced disaster from the usual combination of horrors – war, famine and disease.

Malthus would now ask whether what had so often happened in history, with windfalls leading to even more massive misery and tragedy, as classically in the Irish potato famine or often in China as population grew with better rice or other crops, was not now likely to be the outcome at a global level. The bonanza of coal, oil, gas and nitrogenous fertilizers is limited both

by the available resources and by global warming. What will a population of over fourteen billion (as currently projected as a middling guess for the middle of the twenty-first century) do then?

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As for his work on the positive checks, here again subsequent events have modified, but not disproved his picture. Malthus argued that throughout human history, most populations have been restrained not by the preventive checks which control fertility, but by what he termed the positive checks which lead to increased death rates. The three great 'rivers' or channels along which death flows, as he outlined them, are war, famine and disease.

If Malthus were alive today, he would note that due to the huge rise in population since his times, wars are not now the major control on population that they had once been. The absolute numbers killed in wars, whether the huge slaughters in the Taiping or Boxer rebellions in China, or two World Wars, might be greater than anything in history. But because the world population is so much larger, they do not have the same effect internationally. For example, the Mongol invasions of China reputedly led to the deaths of nearly ten per cent of the world's population. The total deaths in the Second World War killed less than one per cent of the world's population.

Of course a nuclear, biological or chemical war could alter all this and cause the most massive destruction of human life. But conventional warfare, even in the age of a million slaughtered here and there, is not the immense threat to total human numbers it used to be.

Likewise, Malthus would note that since his time, famine has declined as a stabilizer of population. The shadow of famine was lifting in Western Europe during his lifetime, and since then much of the world no longer lives in famine regimes. The last great famines, those induced by the policy of Stalin and Mao, those in India, Bangladesh and parts of Africa, again happened within a world population that was far greater.

Malthus might indeed be surprised at the reversals of famine prone areas. India looked as if it would become the famine centre of the world in the 1960s, yet rapid population growth has not led to famine. Meanwhile Africa, which was not seriously affected by famine up to the 1970s is now the famine centre of the world. Malthus would not, however, have been surprised that there is no absolute and direct correlation between population density and famine. He knew perfectly well that the sparsely populated areas of northern Scotland were still subject to famine, while densely populated England and Holland no longer experienced mass starvations.

Malthus would, however, warn us that while the move towards famine can be avoided – it is another tendency - it may well return. If certain current trends continue, the oceans are increasingly fished out, the deserts spread, the water supplies run out in China and India, then historians in the future may well recount how the earth entered the second great age of famines in the

middle of the twenty-first century, having had a relatively short lull for only a century or so.

As for disease, again Malthus would have had to adapt, but not abandon, his models. He had noticed that, for reasons he could not understand and which are still mysterious, the normal tendency which he had established had been reversed. He had observed that growing population tends to lead to higher disease rates due to crowding, density-dependent diseases spread through infection, contagion and the fouling of water supplies. But for the first time in history, exactly at the time in which he lived, this was not happening. He noted that in England the death rates were dropping. In particular, water born diseases, malaria and bubonic plague had decreased rapidly. None of this was due to medical advances of any kind. Yet it was happening.

So Malthus would have been delighted, but not totally surprised, to see our world where many of the great epidemic and endemic diseases have been controlled or eradicated. The increased knowledge of bacteria and viruses and the development of vaccines and treatments would have impressed him greatly. But his basic argument that humans are in a losing battle against what he would now know were micro-organisms would not be challenged.

He would probably still argue that there is a basic tendency or likelihood that humans will continue to suffer from large epidemics, and continue to suffer from endemic diseases. He would note the spread of AIDS, the resurgence of malaria and tuberculosis, the outbreaks of deadly and incurable diseases such as Ebola or Marburg, the new forms of influenza (e.g. bird flu) or SARS. He would now understand why the constant pattern of rising infections in the past had occurred, for he would be able to see the bacteria and viruses which evolve faster than humans. He would be aware of the way in which the greater interconnectedness of the world through international migration and air travel means that deadly diseases can spread over the whole world very quickly indeed.

It seems likely that he might re-order his list of the deadly checks. At his time, it was war that was the worst – because it led very directly to famine and disease. In the future it may well be that human population will be held in check by disease, precipitated by climate change and the rapid evolution of new variants of old disease.

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Malthus tried to present his readers with a choice. He explained how we can leave the outcome, the future of the planet, to fate and chance. We can just live for the present, have as many children as we like, and hope for the best. If a person does this, they may be alright. But he suggested that if we all do this and have many children, then our children, or children's children, will face the consequences, namely rising death rates from war, famine, disease or a combination of these.

Alternatively we can think about the patterns of the past and learn something from them. If we consciously plan our family strategies, in the way we plan other things like our holidays, our careers, our pensions, our children's education, then we can build a better world not only for ourselves but for our children, and other people's children.

The choice he posed still applies today. We can do nothing and hope for the best – we can be like Mr Micawber and hope that 'something will turn up', fusion energy, super-conductivity, genetically modified crops or super-drugs. Yet even if something does turn up, if population continues to grow as seems likely (there will be fourteen billions of us in forty years time and twice that number in a couple of centuries) what about the rest of the inhabitants of this planet whom we are currently extinguishing at an unprecedented rate?

And what if something doesn't turn up? What if we are coming to the end of a particular bonanza which is a one-time opportunity? Malthus would suggest that it is sensible to plan for a worse-case future. He would urge us, as he did his contemporaries, to make a concerted and world effort to plan the number of people which would be optimum for this small planet, assuming we wish it also to be inhabited by other plants and creatures. He would ask us to think of quality rather than quantity.

He would also point out that even with this amazing release of carbon energy and new fertilizers, we still live in a world where two thirds of those on earth, something like eight times the number of people living in his time, face constant shortages and anxieties. They do not have enough food, water, power, clothing, leisure, education. They are sick, often hungry, struggling with worn bodies to make a living. He would urge us to aim for a world where there was sufficient for everyone, even if there were less of us on the planet. He might urge us to think radically. What would a world of half its current population size, which would still be many times larger than the one he lived in, be like? How well could that be sustained?

Finally, he might point out that his work is not mainly concerned with social, economic or cultural tendencies. He would argue that there are deep biological laws which constrain life on earth. We may ignore these temporarily, but in the end we are just another animal species. If we do not use our gifts of reason to avoid the blind Darwinian imperatives which constrain all species and lead them to competition and final extinction, we also will hurtle towards our final end, bringing ruin and death to most other living things on this planet as well. We will have caused a mass extinction not seen on this planet for millions of years.

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What is interesting about Malthus is that he sets up frameworks or models for us to think with. Like other great thinkers, his ideas do not fade with time. For a while they may seem less relevant, or even to have been 'disproved'. Yet we come back to them and see that the questions that are asked, if not all the solutions, relate to the deepest problems we face. Just as Plato, Leonardo, Shakespeare or Toqueville are never just dead and irrelevant,

so I have found that arguing with Malthus makes me consider some of the deepest issues concerning life and death on this planet.

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ed. edited or editor
edn edition
eds. editors
Jnl. Journal
n.d. no date
tr. translated by
Univ. University

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