Second Edition

The Developing World
An Introduction

E. S. Simpson

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E. S. SIMPSON

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For Julia, Alison and Ruth Claire
who growing up in the Developing World came to know mankind is one

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Preface to the first edition

This book attempts to introduce its readers to the issues of development in the Developing World. It is designed as a beginning rather than an end and it inevitably leaves much unsaid. It is hoped that its bibliography will enable the reader to explore still further the issues raised. In it I have eschewed the use of the first person yet it is a book born of a long acquaintance with countries in the Developing World and my perception of it is inevitably a product of my experience. My first contact came as a result of my serving in the British navy during the Second World War. As a very young man I arrived in Ceylon, now Sri Lanka, and experienced the beauty, and the poverty, of a developing country. I had been at a school accustomed to see some of its pupils enter the Colonial Service and work in one of the patches of pink spread across the atlases of the day. A colonial empire had seemed a natural disposition of power and influence. I was shaken out of this unthinking acceptance when a young Sinhalese soldier told me that he had wished the Japanese had been victorious since this would have shown that the British were not all-powerful.

The intervening years have seen the collapse of that power as the British and other empires have been dismantled and scores of new independent nations have come into being. My eyes were opened further when, as a university don, I was seconded to Nigeria to help in the establishment of a new university. A minor incident gave me another glimpse into the development process. On the Jos plateau driving with half a dozen students on a field survey we passed a line of women from the local tribe. All were naked apart from a few leaves. Suddenly one of the students, a sophisticated young woman studying at this new university we had implanted in Nigeria, cried out 'There's my grandmother!' She was one of the line. It brought home to me the enormity of the shock which indigenous cultures experience as the material manifestations of development thrust their way into the heart of traditional values. But Nigeria taught me much more as it revealed to me the pain and trauma which many nations have experienced in the process of development. It put to the test many development theories in the searing heat of reality as I was witness to the tragedies of massacre and civil war.

In all this and in my present endeavour I am indebted to many individuals; indeed it is impossible to list them all but some I must mention. I owe a great debt of gratitude to Robert Steel who guided my scholarly interests into the Developing World and placed before me a challenge I could not resist. He has given me unfailing encouragement and support and I cannot thank him sufficiently. Second is the debt I owe to my friend Andrew Learmonth whose

profound intellect I have always admired and envied. Third I wish to acknowledge the influence of Sam Richardson, former District Commissioner turned scholar, who showed me that the practice of pragmatism does not involve the abandonment of principle. All have been colleagues at one time or other. Their influence and friendship is always with me.

It has been my good fortune and privilege to have worked in the Developing World with and for men who were of rare distinction. I have abiding memories of the qualities of leadership and the unfailing courtesy of the late Ratu Sir Edward Cakobau, whose ancestors had ceded Fiji to Britain, and of the Prime Minister of Fiji, Ratu Sir Kamisese Mara, whose qualities of statesmanship are an example to everyone. But many are the men who each in his own way has revealed to me the nuances of meaning which are an essential to any attempt to understand societies other than one's own. Among them I must mention Savenaca Siwatibau and Isireli Lasaqa, Chor Pang Lo, Chek Lam So, Chi-Keung Leung and Tze-Nang Chiu, Kingsley Ologe, Samson Odingo and Justice Mlia. And there are the memories which remain vivid and indelible of the kindness and hospitality I have found throughout the Developing World. In Malawi I have enjoyed it both at the hands of those in high authority and of the poorest of peasants. In China I have been invited into the homes of people poor but dignified who with ancient courtesy have bid me share their limited resources. In the South Pacific I have enjoyed that open hospitality which the Fijians and Tongans combine with a gracious ceremonial. All shared kindnesses which made us one.

In the preparation of this book my particular thanks must go to three people; to Mrs Olive Teasdale for her great skill in the preparation of the maps and diagrams which illustrate it and to Miss Yvonne Lambord and Mrs Eunice Tubman who saw the conversion of a tangled manuscript into a typescript.

Most of all my indebtedness is to my wife, Christine, whose intellectual curiosity has been a constant delight and stimulus to me and whose ability to relate to, and be accepted by, peoples and societies new to her has done much to make us and our children a part of those societies we have known throughout the Developing World.

Preface to the second edition

The Developing World is far from static. In the past decade changes have been taking place which are of great significance for developing countries. This second edition not only updates the data and diagrams presented but also discusses these changes. Attitudes to development problems and views as to how best they may be resolved have themselves been modified by the evidence of the changing scene. Each chapter has been recast, where appropriate, to encompass these events.

This book, as an introduction to the Developing World, sets the framework for a consideration of its problems and the hopes of its people. I am very conscious that it does little to put the flesh on the bones of Third World reality and says little of the 'view from within'. In the greatly extended bibliography of scholarly works I have included five books which each in its own way helps to correct this omission. They are but a sample but each gives valuable insights and much food for thought. They are: *Wild Swans* by Jung Chang, telling of life in the People's Republic of China; Sembene Ousmane's *God's Bits of Wood*, a novel set in colonial French West Africa; Dominique Lappiere's account of life in a Calcutta slum, *The City of Joy*; Mark Tulley's collection of essays on India, *No Full Stop in India*; Ben Okri's magical novel, *The Famished Road*, set amidst the mysteries of the Yoruba people of southern Nigeria.

In the preparation of this revised edition my thanks must go to Mrs Lynne Martindale for preparing the typescript and to Mrs Ann Rooke who has drawn the revised diagrams.

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Part 1 Dimensions and issues

'Now, here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that.'

Lewis Carroll
Through the Looking-Glass

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1 Worlds within worlds

Dos linages sólas hay en el mundo, como decia una abuela mia, que son el tenir y el no tenir

(There are only two families in the world, as a grandmother of mine used to say: the haves and the have nots)

Cervantes
Don Quixote: El Cabellero de la Trieste Figura

That the world is divided by levels of economic prosperity is well known. It is possible to postulate that this has always been so. It is equally reasonable to argue, however, that the contrasts have never been as great as those which now exist and which had begun to emerge in the eighteenth and nineteenth centuries. That great upsurge in productive capacity with its associated transformation of not only the means of production but also the whole organization of societies and their economies, that change we call the agrarian and industrial revolutions, profoundly distinguished its participant nations from those not directly involved. This distinction came to the eyes of merchants and missionaries who, both knowingly and unknowingly, spun a web of interconnections which tied the outer countries to the inner industrial nations. As empires grew, colonial territories enhanced both the resource base and the potential markets of the industrial economies of Europe. Whether it became colonial or not, the world that was not part of the economic transformation of the nineteenth century remained distinct. In terms of technological application and economic organization it was undeveloped and, in consequence, poorer in material terms. It was variously described as savage, primitive or backward by the newly-rich world. In so much as these descriptions implied less developed in culture, religion or political systems, they were the product of both ignorance and arrogance; ignorance of the richness of the cultures of pre-industrial civilizations and an arrogance in an under-estimation of them. Attitudes have changed; the nature of the imperial powers and the political status of the non-industrialized world have changed; the world of today is not that of 1885 or indeed 1945 and the terminology has likewise changed. What remains are the differences, differences of both a greater and lesser degree between the many independent sovereign nations which now constitute the world community. There are still two worlds and the difference turns upon comparative levels of wealth and poverty.

The terms used to describe the poorer world are several. The most common is Third World, an example of an adopted and misused label. Wolf-Phillips has

attributed the first use of this term to Alfred Sauvry who, in 1952, referred to the *tiers monde* (Wolf-Phillips 1979). Sauvry was, however, using the term to mean a third force, a political force, in a world where the North Atlantic community represented the first force and the communist bloc of the Soviet Union, eastern Europe and China a second force. It was a distinction based upon ideological commitment rather than conditions of economic attainment. In the latter sense the inclusion of China would have been singularly inappropriate. This origin appears to have been forgotten and later, in the early 1960s, Third World came to mean countries less economically developed than those of the industrialized nations of North America, Europe and the Soviet Union and so the Third World came to incorporate China. The threefold distinction has become even less relevant with the collapse of the former Soviet Union and the Eastern bloc alliance. Several east European countries have now revealed themselves on socio-economic measures as Third World nations. The situation has been further complicated by the current usage of the terms North and South. To anyone with any degree of geographical fastidiousness they are terms which can only be regretted when India and China are allocated to the South and Australia and New Zealand to the North. The terms appear as the title of the first report of the Independent Commission on International Development Issues chaired by Willy Brandt (Brandt 1980). Other terms such as undeveloped, under developed, least developed, less developed, have all appeared and been used by bodies such as the United Nations. Underlying all these labels is a perceived distinction of differences in poverty and wealth, and a belief that there is a process called development during which the condition of poverty is replaced by one of comparative affluence. This book is concerned with examining the nature of this transformation and the attempts made to promote it. It is appropriate, therefore, that it addresses the issues of the Developing World.

Where is this Developing World? The American political scientist Bruce Russett has likened the search for an all-purpose region to that of the alchemist trying to find a universal solvent (Russett 1967). Is there indeed an all-purpose region which encapsulates the Developing World? In 1961 an *Atlas of Economic Development* edited by Norton Ginsburg was published (Ginsburg 1961). Based on an extensive assemblage of the data available in the mid-1950s, it contains a large number of world maps which depict many of the dimensions of economic activities and the characteristics of populations. Each in turn, whether it be a depiction of population density, infant mortality, proportion of the labour force in manufacturing, the use of inanimate energy, per capita food intake, primary school enrolment, per capita income or the consumption of steel, sets out a world pattern. Conspicuous and not unexpected, is the continual emergence of a congruent area of poverty, ill-health, social deprivation and low productivity. It is the area intuitively recognized as the Third World or the Developing World of this book. But not all the maps are coincident. Countries rank higher on some evaluations than others. It becomes clear that there is no sharp, defining edge to the Developing World.

Brian Berry has attempted to bring together these various measures in an integrated analysis (Berry 1960, 1961). Using an early form of direct factor analysis, Berry examines forty-three indices of economic development for ninety-five countries for which comparable data were available. He was able to show that underlying the forty-three indices were four basic patterns which could as effectively describe the similarities and differences as the forty-three. Two basic patterns, the technological and the demographic as he termed them, proved to be particularly efficient in resolving the many indices and he produced a graph based upon the 'second values' of these two patterns. Berry's analysis spanned the whole range of economic levels from nations such as the USA and West Germany, commonly thought of as examples of advanced industrial economies, to nations such as Afghanistan and Ethiopia recognized as poor and disadvantaged. This analysis revealed that there is no natural division of the countries of the world into distinct socio-economic strata. Instead there is a continuum of levels of development from the very poorest and underdeveloped countries to the richest and technologically most sophisticated. There is a continuous transition between levels of development. The Developing World is thus as much a concept as a place. It has a core but no boundaries. It has a beginning but no end. Wherever one draws a boundary it must be arbitrary and it must enclose a range of internal differences.

Table 1 The least developed countries 1993

Afghanistan	Haiti
Bangladesh	Lao PR
Benin	Malawi
Bhutan	Maldives
Burkino Fasso	Mali
Cambodia	Mauritania
Cape Verde	Mozambique
Central African Republic	Nepal
Chad	Niger
Comoros	Rwanda
Equatorial Guinea	Samoa
Ethiopia	Sierra Leone
Gambia	Somalia
Guinea	Tanzania
Guinea-Bissau	Uganda
Guyana	Yemen

Source: United Nations Organisation and World Bank

It is possible to identify a group of nations which occupy the lowest points in this chain of development. In 1971 the General Assembly of the United Nations drew up a list of twenty-four countries which presented the most difficult conditions. They were identified on the basis of three criteria: GDP per capita, share of manufacturing in GDP and the literacy rate. To this list were added other poor countries bringing the total to thirty-two by 1991. They have been

described as LDCs, the least developed countries, and are listed alphabetically in Table 1. They represent the core of underdevelopment, the nations at the bottom of the ladder, standing in poverty.

While Berry's analysis demonstrated the international continuum of development it also revealed that the geographical distribution is, to a large extent, discretely aggregated. The nations lowest on his technological–demographic scale were largely, though not exclusively, tropical. The countries of sub-Saharan Africa congregated in the lowest levels of the scale, followed in turn at higher levels by those of North Africa, Asia, Central America, South America, the Soviet bloc and the nations of north-western Europe and North America. There was relatively little overlap between these continental groups of nations though in total they embraced the whole development spectrum without break. It is a distribution suggestive of a ladder of development up which nations can climb, though with some further to climb than others and some encountering particular difficulties. The Developing World is clearly not one single unit in terms of the difficulties it presents nor in the stages of development through which nations will have to pass. There are worlds within worlds.

Per capita GNP is a useful indicator of economic development though it is essential to have additional information to aid in the assessment of its significance. It is mapped for the nations of the world in Fig. 1. Three other indices have been selected and mapped to demonstrate the issues which many developing countries face. One is the proportion of the work-force engaged in agriculture (Fig. 2). The second is the adequacy of food supplies as measured by the daily calorific intake of food as a percentage of the basic physiological requirement (Fig. 3). The third map depicts infant mortality rates (Fig. 4). These maps reveal large sections of the world whose populations are very largely agricultural and yet receive an inadequate supply of food, areas in which a combination of conditions still bring unacceptable risks of death to the very young. They reveal a world in which the combination of natural resources and the efforts of its population still fail to provide the basic means of subsistence. Yet the Developing World extends beyond these poorest areas and that it does so gives reason for hope.

The transformation of nations from a state of poverty to one of improved well-being, from a condition of adequate but self-limiting subsistence to one of continuing and self-generating growth is the nature and purpose of development. It must first encompass the basic physiological needs but must also embrace those other dimensions which make life something to be savoured rather than endured. However, the precise nature of what constitutes development and how it might best be achieved has been, and is, much debated (Brown 1988). The views as to what accounts for underdevelopment determine the solutions offered to rectify it. Todaro lists three groups of development objectives: the provision of basic requirements to sustain life; self-esteem developed by the provision of education, the furthering of cultural development and the maintenance of human rights; freedom from servitude ensured by free

Figure 1 The world pattern of Gross National Product per capita 1991

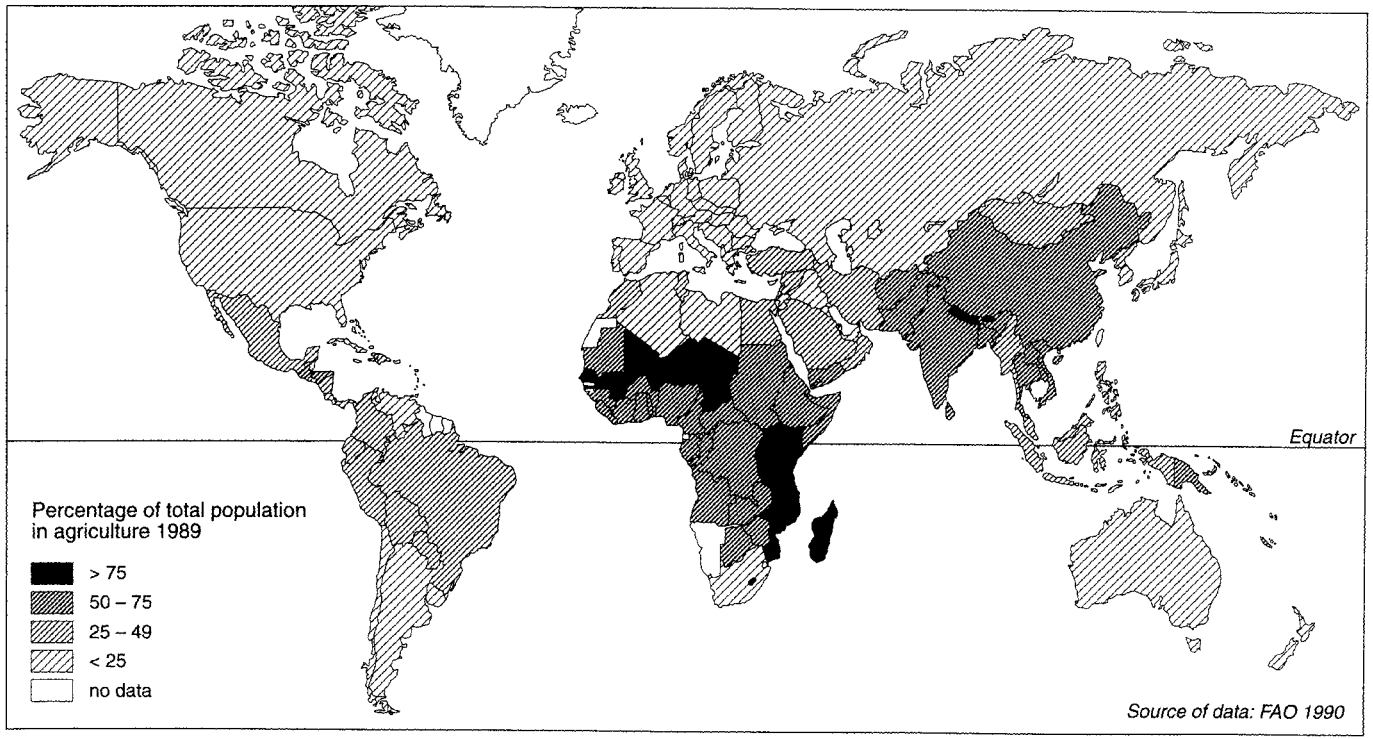

Figure 2 Employment in agriculture 1989

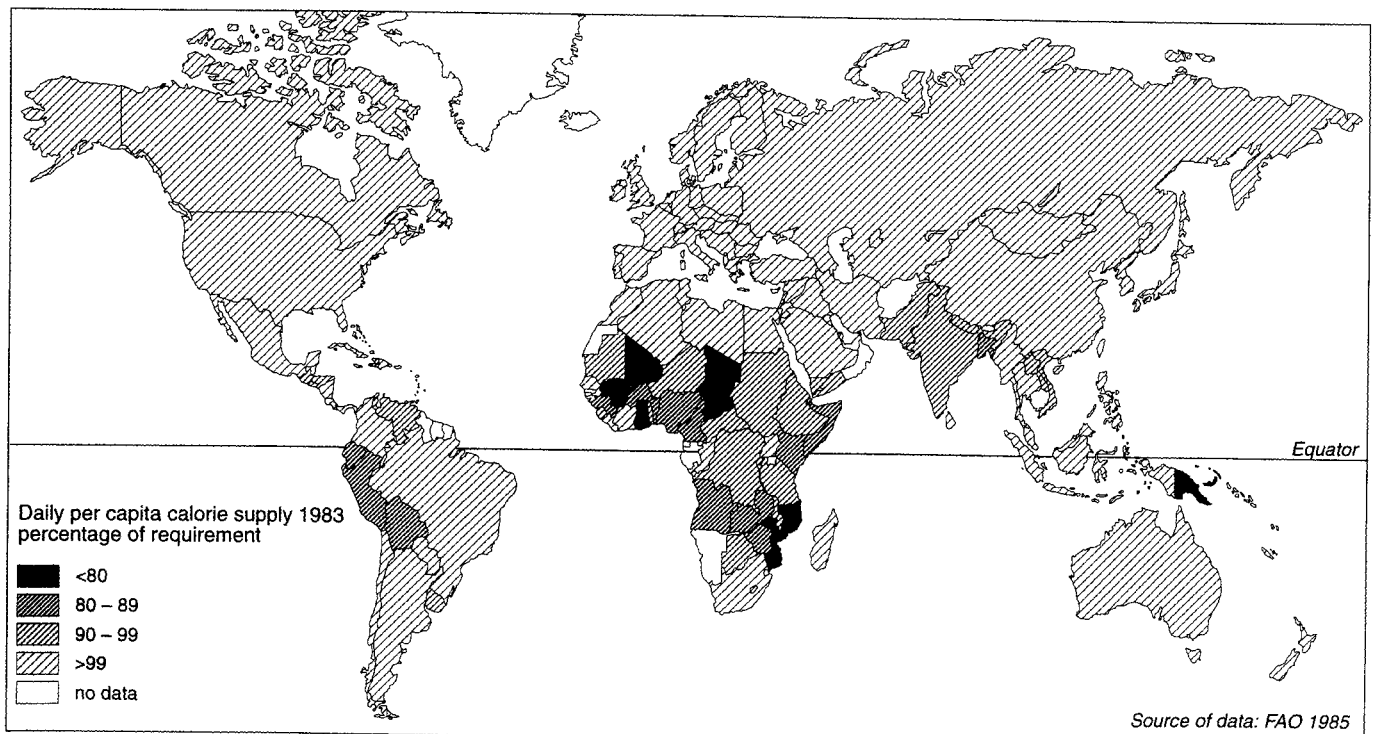

Figure 3 Daily per capita calorie supply 1983

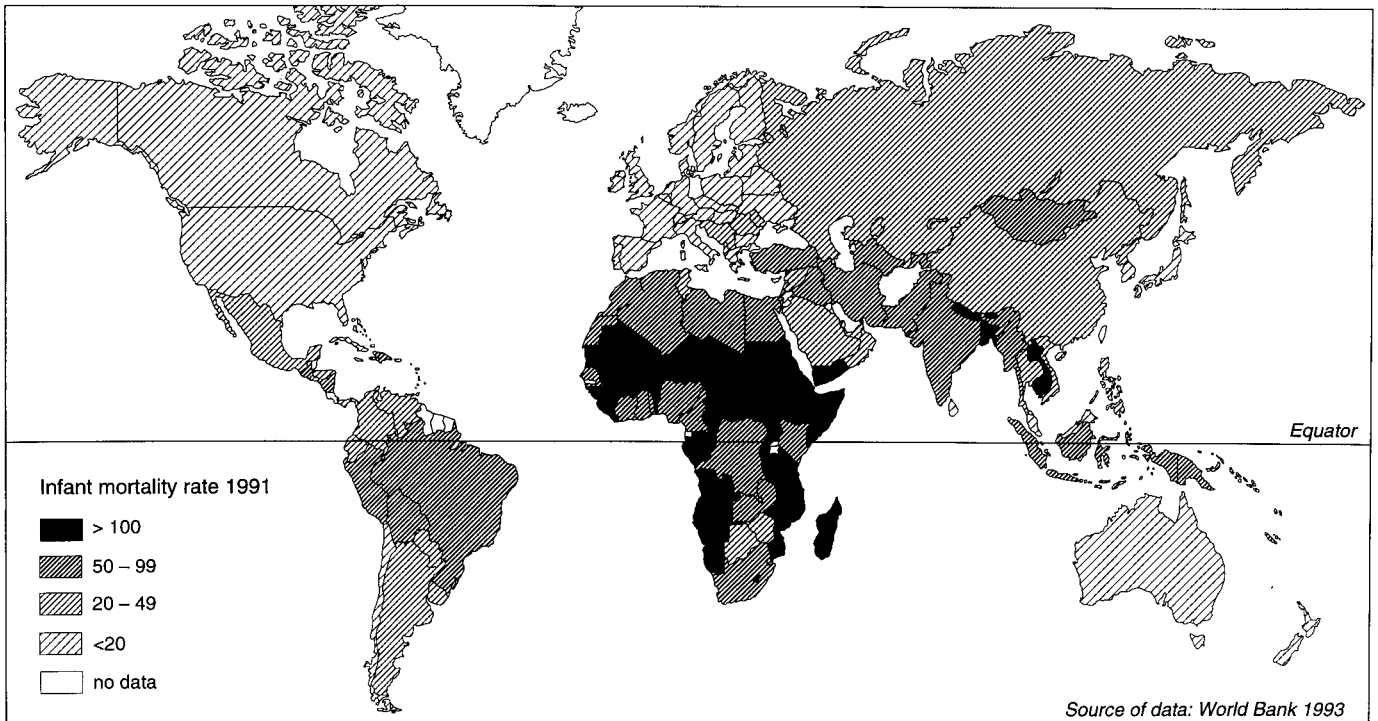

Figure 4 Infant mortality per thousand 1991

choice in economic and social issues. Todaro applies these measures to nations as well as individuals (Todaro 1985). There is a danger of equating the goals of development with Utopia and since Utopia does not exist, of raising development to an unobtainable abstraction. Development has been seen as the conquest of poverty and solutions to this end have been promoted only to find that poverty is a manifestation of a wider social and economic ill. Some analysts take the problem of development to the global level, a problem only to be solved by a reorganization of the world order (Harris and Harris 1979). What have been called the orthodox paradigms of development see a changing and more productive economy as the basis of the process of development in which one stage of development passes into another and higher level of development. Rostov's model discussed in Chapter 8 is a classic and influential example of this. Wilber and Jameson refer to such models as 'the parables of progress' (Wilber and Jameson 1988).

The concept of development when viewed from inside the Developing World has often been neglected. The poor peasant of Peru or the slum-dweller of Calcutta would no doubt, if asked, conceive of development as the amelioration of his dire poverty. Others in the Developing World often regard development as the intrusion into their societies of European and North American values imposed upon their own cultures; to them development is a mixed blessing. The Nigerian geographer Mabogunje has stressed the need for developing nations to be free of the dominance of the rich industrial nations (Mabogunje 1980b). However it is engendered, development must allow both peoples and nations the self-respect that comes from participation in the world economy as equals. Any 'web of interconnections' in a post-colonial world must develop not between exploiter and exploited but between partners with a reciprocal respect for the values of each other.

The awakened world of the second half of the twentieth century has become aware of these issues. The many new nations have tried to grapple with them. The practice has proved much more difficult than the preaching. It is these issues which this book attempts to address. In its first part it examines what might be called the dimensions of development and discusses the evolution of ideas and theories as to how development might best be managed. In the second part it examines the translation of ideas into practice in a series of case studies spanning the continents and ranging from the smallest to the largest of nations. Here the theories of development have come face to face with the difficulties and diversities of reality. It has been a salutary experience.

2 The dimension of people: disease and mortality

> 'We who live in temperate lands find it difficult to realize how baneful Nature can be to man or to understand that in unreclaimed regions water may swarm with dangerous germs, myriads of blood-sucking insects may inject deadly microbes into the human body, and the very soil may be harmful to the touch'
>
> Pierre Gourou
> *The Tropical World* 1953

Population is variously and contemporaneously regarded in a number of ways. It is viewed as a resource, a strength upon which political power can be based or as a factor of production. It is considered as a burden, something to be fed, clothed, educated, employed and to be characterized by particularly burdensome sections, the too young and the too old. It is also seen as that which creates, shapes, nurtures, and indeed is, the very civilization which our varied societies demonstrate. If social and economic development is about anything it is about people, and the issues of population underlie all thinking on social and economic development and come to the fore in the execution of any development plan. The relationships between the characteristics of population and the process of development are complex and subtle. It is this relationship and these characteristics which will be examined. Since they are not peculiar to the Developing World, it is possible to analyse the population dynamics of the present industrialized, highly productive, urbanized and wealthy nations from their pre-industrial period to the present in an attempt to identify causes and consequences which might illuminate the demographic status of the less developed countries of today.

The first eighty years of the eighteenth century were characterized in England and Wales by a very slow population growth at an average rate of 0.36 per cent per annum. In the last twenty years of the century expansion accelerated to over 1 per cent per annum. The increase in population was discernible to people of the time who offered explanations. Habakkuk argues that increases in the birth rate had an important part to play and that the contemporary opinion was that the population was increasing because couples were having more children largely because of greater economic opportunities or because of the increased economic security afforded by the poor relief scheme known as the Speenhamland system (Habakkuk 1971). The contemporary who applied an

analytical mind to the situation was, of course, Thomas Malthus whose *Essay on the Principle of Population* published in 1798 not only attempted to explain the English situation but put forward a model to illustrate the dynamics of populations which has attracted comment ever since. As his views have a bearing upon the relationship between population and economic activity and as they have been applied by some to the population situation in developing countries today, they merit consideration. He wrote thus:

> Impelled to the increase of his species by an equally powerful instinct, reason interrupts his career and asks him whether he may not bring beings into the world for whom he cannot provide the means of support. If he attend this natural suggestion, the restriction frequently produces vice. If he hears it not, the human race will be constantly endeavouring to increase beyond the subsistence. But as, by that law of our nature which makes food necessary to the life of man, population can never actually increase beyond the lowest nourishment capable of supporting it, a strong check on population, from the difficulty of acquiring food, must be constantly in operation. This difficulty must fall somewhere, and must necessarily be severely felt in one or other or the various forms of misery, or the fear of misery, by a large proportion of mankind.
>
> That population has this constant tendency to increase beyond the means of subsistence, and that it is kept to its necessary level by these causes, will sufficiently appear from a review of the different states of society in which man has existed
>
> (Malthus 1798).

Malthus then argues that in places where there are no food constraints on population increase, he examines eighteenth-century North America, a population could double itself in twenty-five years and possibly in fifteen and could continue to increase in a geometric progression pointing out that 'A thousand millions are just as easily doubled every twenty-five years by the population as a thousand'. He continues:

> But the food to support the increase from the greater number will by no means be obtained with the same facility. Man is necessarily confined in room. When acre has been added to acre until all the fertile land is occupied, the yearly increase of food must depend upon the melioration of the land already in possession. This is a fund, which, from the nature of all sorts, instead of increasing, must be gradually diminishing, . . . It may be fairly pronounced, therefore, that considering the present average state of the earth, the means of subsistence under circumstances the most favourable to human industry, could not be made to increase faster than in an arithmetic ratio.

Malthus brings his two ratios together and draws his alternative conclusions on the condition of man. He was thus arguing that since food subsistence levels could never be increased quickly enough to match an unchecked population

increase, the limits of subsistence production would keep down the population either in a direct way, by causing malnutrition and starvation leading to an increase in death rates and infant mortality rates, or in an indirect way by man, the thinking animal, restricting his fertility rates to levels which could be supported. Malthus considered later marriage and sexual abstinence as appropriate means by which this could be achieved. He argued that attempts to increase food production to raise standards of living and health were not an answer since the population would always continue to increase until it pressed against the levels of poverty which would check it by death. He saw the population of England increasing around him and postulated a contained system in which the population would be reduced and held in check at subsistence level.

Poverty is characteristic of many developing countries and is a major index of their condition. Malnutrition is common and starvation by no means unknown. Are they in the demographic strait-jacket of Malthusian containment? Are there other factors in the population equation? The population of England and Wales continued to expand unchecked for over a century after Malthus published his essay, never falling below an annual average growth rate of one per cent from 1781 to 1911 and reaching 1.8 per cent between 1811 and 1821. Significantly, that same century or so was characterized by an unprecedented increase in production and a major transformation of the British economy. This evidence is one refutation of the Malthus thesis. A second comes from an earlier, pre-industrial period of English history, the period from the twelfth to the sixteenth century. Here the evidence so elegantly presented by John Hatcher not so much rejects the Malthusian cycle as modifies it and does so in a way significant for the understanding of the demographic situation in the Developing World (Hatcher 1977).

Hatcher believes that levels of mortality in medieval England were not related simply to the success or failure of harvest even though crises in limited localities were frequent and malnutrition did influence death rates. On a national scale he believes that it was the occurrence of the epidemic and infectious diseases such as the bubonic plagues which swept the country and were unrelated to the state of the economy and levels of subsistence. He agrees that the Malthusian argument holds true in so much as better living standards in pre-industrial England did favour population growth while periods when they were low inhibited population growth, but claims that this is only part of a more complex picture. Infectious and epidemic diseases quite unrelated to economic circumstances superimposed their death rates on any Malthusian cycle. Mortality rates rather than fertility determined the population dynamics of pre-industrial England.

Three seemingly major considerations in the discussion of the sinuosities of demographic change thus appear: first the Malthusian element whereby population levels are contained by the finite and depletable resource base which sustains them, a relationship suggestive of concepts of over-population and under-population; second the question of the changing use, and hence

significance, of the resource base which the evidence of nineteenth-century Britain suggests and which allowed a continually increasing population to be supported without Malthusian checks; third the role of diseases, which Hatcher demonstrated. This role will be examined first, distinguishing between those diseases which appear related to living conditions, and hence to economic development, and those which are not. Learmonth's scholarly and wide-ranging work *Disease Ecology* with its rich bibliography is of particular value in this context (Learmonth 1988).

OF FLIES, FLEAS, LICE AND MEN: THE ROLE OF DISEASE

A wide range of zootic diseases are endemic in the Developing World; some are peculiar to it and many are associated with its tropical climates, while others it shares with the rest of mankind. Pierre Gourou writing in 1953 states 'In physical and mental activity and in the reproduction of his kind, man is restricted in the tropics by serious maladies whose existence is entirely due to hot, damp climate' (Gourou 1953).

It is not, of course, easy to assemble direct data on the incidence of diseases for many countries in the Developing World. Indirect evidence such as the rate of infant mortality give some indication though data of comprehensive coverage are of recent origin. In 1960 infant mortality rates averaged 165 per thousand in low-income countries and 145 in the lower middle-income group compared with 30 in the industrialized nations, while corresponding life expectancies at birth were 41, 46 and 70 years in the three groups (see Fig. 4 for 1991). Though the incidence of disease and illness is high in the Developing World it was undoubtedly much higher in the recent past.

European awareness and comment upon the unhealthiness of the tropical world was consequent upon mercantile and colonial contact with its peoples. Ellen Thorp in her account of the history of Nigeria writes of Lagos in the 1850s 'But nightly and daily from the interior of the island came an enemy far more deadly than the leopard, because it was unrecognised – the mosquito, which, breeding in the surrounding swamps, brought malaria and yellow fever' (Thorp 1956). Those who went down with malaria and survived their 'conditioning fever' were also inevitably stricken with dysentery due, though they did not know it, to polluted water.

The scene in Lagos was paralleled in the Niger delta which was the great focus in trade first in slaves and later in palm oil. The 'oil rivers', as they became known, took a great toll of the European seamen and traders. Of all the river ports, Bonny had the worst reputation with its endemic malaria, yellow fever and dysentery. Trading companies from the 1860s until almost the end of the century moored old hulks of sailing vessels, no longer safe for sea passages, in the delta for use as trading depots or 'factories'. In the foul water of their bilges mosquitoes found ideal breeding grounds. The young clerks who came out from Liverpool and London to handle the trade in palm oil from the interior in exchange for flint-lock guns, Lancashire cottons and other manufactures, were

soon stricken with malaria or yellow fever and many died before their 'tour' was up. Ellen Thorp quotes a job advertisement of the period: 'Wanted, young man, eighteen to twenty-five, as book-keeper in a West African factory. A few hours work a day, in pleasant surroundings, unlimited shooting and fishing, in a fine tropic scenery, with a boat at his disposal. Free quarters, salary to commence at £70, with chance of rapid promotion.' She comments that successful applicants were soon to discover that the final statement was true 'for his chances of promotion could be as rapid as those in the Navy in wartime. If he himself were not dead of malaria or drink at the end of a few months, a good many of his companions were sure to be, and the young assistant might easily see his Agent buried and find himself in charge of the factory . . .' (Thorp 1956). This notorious coast, which gave rise to the jingle 'The Bight of Benin, the Bight of Benin, where few come out though many go in', is but one example of the experience by Europeans of the disease-inflicted countries of the tropics. The area became known as the 'White man's grave'. What was not said was that it was also the grave of black men. The causes of these many diseases were unknown and in consequence neither prophylactic measures nor cures could be used to counteract them.

It is commonplace to refer to 'tropical diseases' yet while some thus classified are indigenous and specific to the climatic tropics, many are diseases which were once widespread and have been eliminated or strictly controlled in the temperate and, significantly, the affluent and technically sophisticated world. Many 'tropical diseases' are essentially diseases now restricted in their endemicity to the Developing World and are as much diseases of levels of development as of climate. It is for this reason that it is useful to group the 'tropical diseases' into those which are related to the physical environment, those to the social environment, and those which in their ubiquity appear unrelated to either, in order to explore the relationship between disease, population dynamics and development.

A range of widely occurring diseases is transmitted by insects. Since these insects are controlled in their range by their environmental requirements so too are the diseases they carry. Yellow fever, a viral disease with a high mortality rate, is transmitted by the mosquito *Aedes aegypti* whose range is confined to areas where temperatures do not drop below 15°C to 20°C. It is a disease endemic in tropical central and south America and Africa. The mosquito is found in other tropical areas but not the pathogen. Dengue fever, a less serious disease though it can cause death, is also carried by *Aedes aegypti* but the virus is only transmitted when the temperature exceeds 20°C (Wisseman and Sweet 1961). The vectors of filariasis, which obstruct the lymphatics and can produce elephantiasis, are another group of mosquitoes, one of the chief in Africa being *Anopheles gambias* (Kessel 1961). The disease can be crippling, cause blindness and, as in most parasitic diseases, reduces both energy and resistance to infections. Flies other than mosquitoes transmit filarial diseases in their bite. The particularly distressing River Blindness, onchocerciasis, is a fly-borne disease carried by various species of *Simuliidae.* The fly's habitat is along fast-flowing

well-aerated streams. The disease occurs in the near-equatorial areas of Central and South America but it is most widespread along the rivers of West and Central Africa and along the Nile. Some 20 million are estimated to be affected with this fly-borne blindness (Walsh 1985, WHO 1987). Outside the tropics, low temperatures prevent the evolution of the necessary life cycle of filaria and fly. Leishmaniasis, a protozoan infection transmitted in sand-fly bites and known variously as Kala-azar, Delhi boil or Oriental sore, is again widespread in the tropics and is debilitating rather than killing. In Africa, the several species of tsetse fly (*Glossina* spp.) carry the disease trypanosomiasis which debilitates and eventually kills humans. Importantly, species of the trypanosomes also infect cattle and have significantly determined the distribution of cattle in Africa. In thus influencing agricultural productivity and the availability of animal protein, Nagana, the trypanosomiasis of cattle, has made a major impact upon health and mortality in the continent. At high altitudes and desert conditions in tropical Africa the several species of tsetse fly cannot exist, but in the rain forests and Guinea savanna zone it is widespread, while in the drier savanna areas its distribution is riverine (Matzke 1983, Molyneux and Ashford 1983). A form of trypanosomiasis transmitted by the bite of bed bugs and known as Chagas' disease is found in scattered localities throughout Central and South America where the domestic rather than physical environment is its habitat control.

By far the most important insect-borne disease of the Developing World and the tropics is malaria transmitted in the bite of one of the many species of Anopheles mosquito. Their habitats are not confined to the tropics and some Anopheles species can and do exist in temperate areas. They are, however, sensitive to low temperatures, and cold winter seasons both restrict their occurrence and facilitate their elimination. The mosquito can, of course, transmit the disease only if it has access to the causal plasmodia in the blood of the infected human beings. Where the two exist together the disease can flourish and be spread. The disease varies according to the plasmodium involved but all can cause death and fatality rates among infected children are particularly high. In the mid-1960s the World Health Organisation estimated that some 100 million persons suffered from malaria, of whom one million would die each year. It has been suggested that endemic and epidemic malaria has played a major role in the population dynamics of the nations of the world, notably in the sub-tropical and tropical areas, over many centuries (Learmonth 1988). These, then, are the major diseases of the Developing World which are transmitted by insects and are associated with their habitats.

A second group of diseases is more closely related to the habits of man, to eating, drinking, excreting, of how man lives and where he works, of his personal hygiene and sanitary provision. Since these are features of cultures, life styles and standards of living, they are very much related to levels of development and the development process, and characteristics of man, the social animal. The worms which commonly infect and are parasitic on man in many parts of the Developing World are such manifestation of insanitary conditions. Open latrines, inadequate sewage facilities, polluted water and too

little water, are all associated with the infestation of hook-worms, round, whip and Guinea worms. All these infestations, and they are commonly multiple, are debilitating and drain energy, causing anaemia and generally weakening large percentages of the population. The killing bacterial diseases of cholera and typhoid are transmitted through water, milk and food, with flies assisting in insanitary and crowded conditions of living and eating. The dysenteries, both bacillary and amoebic, occupy a similar niche, while infective hepatitis is essentially transferred by the faecal–oral route.

These diseases are widespread in the Developing World. Cholera is believed to have been confined to the Indian subcontinent for a long period of time but in a series of four pandemics in the nineteenth century spread throughout wide areas of the world. In the early twentieth century the imposition of quarantine measures has prevented the intrusion of pandemic cholera into the western hemisphere and Europe. Today cholera is particularly associated with India, Bangladesh and Celebes in Indonesia where it can be considered endemic. It is not an environmentally specific disease but as Jacque May puts it 'it is a consequence of unwashed hands' (May 1958). The typhoid and paratyphoid salmonelloses diseases, classic examples of water-borne diseases, while occurring world-wide are very much associated with inadequacies in clean water supplies, insanitary living conditions and unhygienic food handling. As these situations are more prevalent in poor countries they are diseases of both town and country in the Developing World. Bilharzia, or schistosomiasis, is at once both a disease of insanitary conditions and of sub-tropical and tropical areas. The pathogen, the schistosome, requires both man and freshwater snail as alternate hosts at stages in its complex life cycle. Man is infected by drinking, washing in or working in, water containing the cercariae stage of the life cycle, which he completes by voiding his wastes into streams, ponds or irrigation ditches. This extremely debilitating disease is found throughout the whole of Africa, in the West Indies, Venezuela, Guyana, Surinam and French Guiana and wide areas of eastern Brazil, in irrigated areas in the Middle East, throughout the Indian sub-continent, Burma, most of south-east Asia and in parts of Indonesia and the Philippines. As the still water of irrigated fields provides ideal conditions, bilharzia is a disease of tropical, irrigated lands and where economic development has extended irrigation, so too has the disease spread (Kloos and Thompson 1979, Cairncross and Feacham 1983, Molyneux and Ashford 1983, Weil and Kvale 1985).

The third group of diseases are contagious diseases, commonly bacterial and viral, transmitted from person to person without necessarily the intermediary of insects, food or drink. They include leprosy (once not uncommon in Europe), yaws (the spirochaete infection similar to syphillis though not venereal and associated with tropical regions experiencing average annual temperatures exceeding 25°C), smallpox, influenza, measles, cerebro-spinal meningitis and tuberculosis. All are diseases which can kill, quickly or slowly, and most are not environmentally specific. Smallpox, until eliminated in the 1970s, reaped a heavy and continuous harvest and influenza has killed millions in its

pandemics. Measles, rarely a killing disease today in the industrialized world, is still characterized by high mortality in the tropics and when introduced into communities which had previously not known it, death rates and demographic consequences similar to those of the Black Death have been experienced. Tuberculosis most certainly is not a disease which has been confined to the Developing World but it is one very closely associated with poverty and with resulting poor nutrition and crowded housing conditions. It is in consequence very much related to levels of economic development and has been widespread in many developing countries.

All the diseases cited are subject, in varying degrees, to amelioration by medical treatment. It is frequently stated that the medicine of the scientific industrialized world has been responsible for the dramatic upsurge in the population of developing countries because medical science has reduced mortality levels as it did in Europe a century or so ago. This will be examined in terms of the nature of the process and its timing and with regard to the three groups of diseases which have been described.

DISEASE AND POPULATION DYNAMICS IN BRITAIN

The analogy with the demographic situation in Europe merits discussion. It will be recalled that the population of England and Wales began to rise towards the end of the eighteenth century and continued the upward trend throughout the nineteenth. Though the data for the eighteenth century are unsatisfactory, some historical demographers have attributed the increase beginning then to an increase in birth rates and a fall in death rates, with the latter as the most influential and attributable to improvements in medicine, social hygiene and hence health. Such developments were therefore not a direct consequence of the great structural change in the British economy which was taking place. Others claim that it was precisely these economic changes which encouraged larger families because of the greater employment opportunities they offered. It is difficult to see, however, how already high birth rates could be raised much further since there are physiological limits to reproduction. What can yield a big and rapid increase in population in circumstances of high birth rates is a fall in death rates. Holding the view that the latter is the more convincing explanation, McKeown and Brown have examined the role of medicine in the population dynamics of the eighteenth and early nineteenth century in England (McKeown and Brown 1965). They consider that the establishment of medical schools in the eighteenth century and the greater understanding of the body's structure and functions which resulted, desirable though it was, had little direct impact upon mortality rates nor did developments in surgery improve life expectancy. The nature and causes of diseases remained largely unknown. The setting up of lying-in (maternity) hospitals in Britain and Europe increased rather than reduced mortality of both the mother and the newborn by enhancing the risk of cross-infection of puerperal fever in circumstances where the role of hygiene and cleanliness was not appreciated. Likewise McKeown and Brown consider

the role of General Hospitals to have been detrimental to health certainly up until the mid-nineteenth century. They became places where diseases could be contracted since the nature of disease transmission was not fully understood and most medical drugs of the day were ineffective. With few exceptions, such as the pioneering work of Jenner in developing an effective vaccination against smallpox, the development of medical science up until the middle of the nineteenth century appears to have had little effect upon mortality rates yet these rates did fall with all evidence pointing to a steady decline between 1775 and 1850. Crude death rates stood at around 30 per 1000 in 1800, were 23 in 1850 and remained at that rate until 1870 before falling steadily to 13 in the 1920s. If deaths from infectious diseases were not markedly reduced by medical treatment, what was the cause? Mortality could be reduced by changes in the virulence of the disease or by the human population becoming more resistant. The virulence of scarlet fever and measles in Europe has diminished but in the twentieth rather than the nineteenth century. A better fed population could possess a higher resistance and so the economic development of the eighteenth and nineteenth centuries could, and probably did, have a role to play in disease diminution and in lowering mortality. Finally and importantly, improvements can serve to inhibit the transmission of diseases. These factors vary, however, in their significance from one disease to another.

Habakkuk considers that the falling death rates were due to improvements in environmental conditions (Habbakuk 1965, 1971). Did living conditions improve? Did the increasing proportion of the population living in the new industrial towns run a lesser risk of infectious diseases than the largely rural population of earlier periods? The towns of the nineteenth century left much to be desired in health terms but it could have been that room space was greater, and sewage disposal improved and separated from water supplies; and that as these utilities became more efficient the diseases of insanitation – the dysenteries, typhoid, hepatitis and cholera – declined and the incidence of tuberculosis, the great killer of nineteenth-century cities, diminished as housing bye-laws were enforced and, as in the latter part of the nineteenth century, isolation hospitals removing infectious cases from the community came into being. The evidence is incomplete. What is certain is that in England and Wales the vulnerability to harvest failure disappeared by the nineteenth century as subsistence agriculture was replaced by more productive commercial forms and as the dependence of local demand on local production was reduced. Where it had not, as in Ireland, crop failure could produce death, disaster and emigration. Better nutrition, a rise in living standards, a greater appreciation of the need for cleanliness and hygiene translated into practice at family and public level and manifest in completed town sewerage and water-supply schemes and building regulations, all reduced the significance of the diseases of the environment and all were improvements characteristic of the whole of the nineteenth century. Medical science improved but the impact of prophylactic inoculations and therapeutic drugs was yet to come and in many diseases post-dated 1945.

DISEASE CONQUEST AND FALLING DEATH RATES IN THE DEVELOPING COUNTRIES

Has this pattern of declining mortality initiated by improvements in living conditions and in public health facilities been replicated in the Developing World? In some countries it has been achieved but they are few. In most, public utilities of consequence for health, namely pure water supplies and adequate sanitation together with housing provision, are far from satisfactory. In 1897 the Annual Report for Lagos stated:

> Discussion is still going on as to a feasible scheme for the sanitary reform of Lagos town in connection with water supply and drainage that can be carried out reasonably within the means of the Colony. It will be easily comprehensible, that, on a malarial island a mile or two long by half a mile broad, with a population of 50,000 souls living on it and a much larger number of bodies dead and buried in it for many years past, disturbance of the soil is to be avoided by every possible means. No scheme has yet been approved
>
> (Thorp 1956).

Today, Lagos with several million inhabitants still has no comprehensive sewerage system, a feature common in both major and minor cities throughout the Developing World. Adequate water supply systems of pure water are likewise still rare and the diseases associated with these situations are still prevalent. The English pattern of a steady reduction in mortality from food, faeces and water-borne diseases as standards of living improved, does not characterize the rapid decline in mortality rates which has taken place in all developing countries since the Second World War. This decline, and it has been as dramatic as it has been swift, is the result of the application of modern scientific medicine with not only its understanding of the nature of diseases and their transmission but also armed with a weaponry of drugs and insecticides to combat them. It is a development which has been felt at one and the same time in both the affluent industrialized world and the poor developing countries.

The application of these remedies has varied in cost, ease and effectiveness across the disease spectrum. The most effective are those which immunize the individual. If the protection is secure, economically feasible and long-term, it obviates the need for other measures which may be more difficult and costly to implement. However, the protection offered by modern vaccines varies considerably. Against the serious diseases associated with insanitary conditions, cholera and typhoid vaccination gives only short-term and, in cholera's case, uncertain protection. Effective protection is afforded against diphtheria, measles, whooping cough, poliomyelitis and against tuberculosis, the disease long-associated with overcrowded and poor living conditions. Smallpox defeated by the world's oldest vaccine has been totally eliminated. Notably absent from these conquests are trypanosomiasis, bilharzia, leprosy, filariasis, and most importantly malaria. All, except leprosy, involve an insect