THE STAGES OF
ECONOMIC GROWTH
A NON-COMMUNIST MANIFESTO

By W. W. ROSTOW

Professor of Economic History
Massachusetts Institute of Technology

This book is a generalisation from the whole span of modern history. It gives an account of economic growth, based on a dynamic theory of production and interpreted in terms of actual societies. It helps to explain historical changes and to predict major political and economic trends: and it provides the significant links between economic and non-economic behaviour which Karl Marx failed to discern.

Professor Rostow distinguishes five basic stages of economic growth. He explains each stage in detail, and gives illustrative examples. In particular, he takes two superficially very different economies—those of the U.S.A. and the U.S.S.R.—and exhibits in their history the same five stages of growth. He shows, further, the relationship between military aggression and economic growth. Turning to current problems, he considers how far the concept of stages of growth may help us to cope with the nuclear arms race, and the problems of organising a world which will soon contain many new economically mature nations.

Professor Rostow does not subscribe to the Marxist view that history is uniquely determined by economic forces and motives; instead he offers a comprehensive, realistic and soundly based alternative to Marx's theory of how societies evolve.

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PREFACE

This book is the product of both a highly spontaneous and a highly protracted effort.

Proximately, it derives from a set of lectures prepared and delivered at Cambridge University in the autumn of 1958. While there on sabbatical leave from M.I.T., I was invited by the Faculty of Economics and Politics to present views on 'The Process of Industrialization' to an undergraduate audience. This book emerged directly from the effort to respond to that invitation, bearing still the marks of the occasion in its informality and non-technical character.

On the other hand the book fulfils, at least *ad interim*, a decision made when I was an undergraduate at Yale, in the mid-1930's. At that time I decided to work professionally on two problems: the relatively narrow problem of bringing modern economic theory to bear on economic history; and the broader problem of relating economic to social and political forces, in the workings of whole societies. As a student and teacher these two questions have engaged me ever since.

Specifically, I found Marx's solution to the problem of linking economic and non-economic behaviour—and the solutions of others who had grappled with it—unsatisfactory, without then feeling prepared to offer an alternative. Over the intervening years I explored facets of the relationship: in work on Britain of the nineteenth century; in teaching American history at Oxford and Cambridge; in studies of modern Russia, China, and the United States; and in elaborating general views on the process of economic growth. In addition, the experience of working from time to time on problems of military and foreign policy added some illumination. This book unifies what I have thus far learned about the central problem from all these directions.

The views presented here might have been elaborated, in a more conventional treatise, at greater length, in greater detail, and with greater professional refinement. But there may be some virtue in

CHAPTER 2

THE FIVE STAGES-OF-GROWTH—A SUMMARY

It is possible to identify all societies, in their economic dimensions, as lying within one of five categories: the traditional society, the preconditions for take-off, the take-off, the drive to maturity, and the age of high mass-consumption.

THE TRADITIONAL SOCIETY

First, the traditional society. A traditional society is one whose structure is developed within limited production functions, based on pre-Newtonian science and technology, and on pre-Newtonian attitudes towards the physical world. Newton is here used as a symbol for that watershed in history when men came widely to believe that the external world was subject to a few knowable laws, and was systematically capable of productive manipulation.

The conception of the traditional society is, however, in no sense static; and it would not exclude increases in output. Acreage could be expanded; some *ad hoc* technical innovations, often highly productive innovations, could be introduced in trade, industry and agriculture; productivity could rise with, for example, the improvement of irrigation works or the discovery and diffusion of a new crop. But the central fact about the traditional society was that a ceiling existed on the level of attainable output per head. This ceiling resulted from the fact that the potentialities which flow from modern science and technology were either not available or not regularly and systematically applied.

Both in the longer past and in recent times the story of traditional societies was thus a story of endless change. The area and volume of trade within them and between them fluctuated, for example, with the degree of political and social turbulence, the efficiency of central rule, the upkeep of the roads. Population—and, within limits, the level of life—rose and fell not only with the sequence

of the harvests, but with the incidence of war and of plague. Varying degrees of manufacture developed; but, as in agriculture, the level of productivity was limited by the inaccessibility of modern science, its applications, and its frame of mind.

Generally speaking, these societies, because of the limitation on productivity, had to devote a very high proportion of their resources to agriculture; and flowing from the agricultural system there was an hierarchical social structure, with relatively narrow scope—but some scope—for vertical mobility. Family and clan connexions played a large role in social organization. The value system of these societies was generally geared to what might be called a long-run fatalism; that is, the assumption that the range of possibilities open to one's grandchildren would be just about what it had been for one's grandparents. But this long-run fatalism by no means excluded the short-run option that, within a considerable range, it was possible and legitimate for the individual to strive to improve his lot, within his lifetime. In Chinese villages, for example, there was an endless struggle to acquire or to avoid losing land, yielding a situation where land rarely remained within the same family for a century.

Although central political rule—in one form or another—often existed in traditional societies, transcending the relatively self-sufficient regions, the centre of gravity of political power generally lay in the regions, in the hands of those who owned or controlled the land. The landowner maintained fluctuating but usually profound influence over such central political power as existed, backed by its entourage of civil servants and soldiers, imbued with attitudes and controlled by interests transcending the regions.

In terms of history then, with the phrase 'traditional society' we are grouping the whole pre-Newtonian world: the dynasties in China; the civilization of the Middle East and the Mediterranean; the world of medieval Europe. And to them we add the post-Newtonian societies which, for a time, remained untouched or unmoved by man's new capability for regularly manipulating his environment to his economic advantage.

To place these infinitely various, changing societies in a single category, on the ground that they all shared a ceiling on the productivity of their economic techniques, is to say very little indeed. But

we are, after all, merely clearing the way in order to get at the subject of this book; that is, the post-traditional societies, in which each of the major characteristics of the traditional society was altered in such ways as to permit regular growth: its politics, social structure, and (to a degree) its values, as well as its economy.

THE PRECONDITIONS FOR TAKE-OFF

The second stage of growth embraces societies in the process of transition; that is, the period when the preconditions for take-off are developed; for it takes time to transform a traditional society in the ways necessary for it to exploit the fruits of modern science, to fend off diminishing returns, and thus to enjoy the blessings and choices opened up by the march of compound interest.

The preconditions for take-off were initially developed, in a clearly marked way, in Western Europe of the late seventeenth and early eighteenth centuries as the insights of modern science began to be translated into new production functions in both agriculture and industry, in a setting given dynamism by the lateral expansion of world markets and the international competition for them. But all that lies behind the break-up of the Middle Ages is relevant to the creation of the preconditions for take-off in Western Europe. Among the Western European states, Britain, favoured by geography, natural resources, trading possibilities, social and political structure, was the first to develop fully the preconditions for take-off.

The more general case in modern history, however, saw the stage of preconditions arise not endogenously but from some external intrusion by more advanced societies. These invasions—literal or figurative—shocked the traditional society and began or hastened its undoing; but they also set in motion ideas and sentiments which initiated the process by which a modern alternative to the traditional society was constructed out of the old culture.

The idea spreads not merely that economic progress is possible, but that economic progress is a necessary condition for some other purpose, judged to be good: be it national dignity, private profit, the general welfare, or a better life for the children. Education, for some at least, broadens and changes to suit the needs of modern economic activity. New types of enterprising men come forward—

in the private economy, in government, or both—willing to mobilize savings and to take risks in pursuit of profit or modernization. Banks and other institutions for mobilizing capital appear. Investment increases, notably in transport, communications, and in raw materials in which other nations may have an economic interest. The scope of commerce, internal and external, widens. And, here and there, modern manufacturing enterprise appears, using the new methods. But all this activity proceeds at a limited pace within an economy and a society still mainly characterized by traditional low-productivity methods, by the old social structure and values, and by the regionally based political institutions that developed in conjunction with them.

In many recent cases, for example, the traditional society persisted side by side with modern economic activities, conducted for limited economic purposes by a colonial or quasi-colonial power.

Although the period of transition—between the traditional society and the take-off—saw major changes in both the economy itself and in the balance of social values, a decisive feature was often political. Politically, the building of an effective centralized national state—on the basis of coalitions touched with a new nationalism, in opposition to the traditional landed regional interests, the colonial power, or both, was a decisive aspect of the preconditions period; and it was, almost universally, a necessary condition for take-off.

There is a great deal more that needs to be said about the preconditions period, but we shall leave it for chapter 3, where the anatomy of the transition from a traditional to a modern society is examined.

THE TAKE-OFF

We come now to the great watershed in the life of modern societies: the third stage in this sequence, the take-off. The take-off is the interval when the old blocks and resistances to steady growth are finally overcome. The forces making for economic progress, which yielded limited bursts and enclaves of modern activity, expand and come to dominate the society. Growth becomes its normal condition. Compound interest becomes built, as it were, into its habits and institutional structure.

In Britain and the well-endowed parts of the world populated substantially from Britain (the United States, Canada etc.) the proximate stimulus for take-off was mainly (but not wholly) technological. In the more general case, the take-off awaited not only the build-up of social overhead capital and a surge of technological development in industry and agriculture, but also the emergence to political power of a group prepared to regard the modernization of the economy as serious, high-order political business.

During the take-off, the rate of effective investment and savings may rise from, say, 5% of the national income to 10% or more; although where heavy social overhead capital investment was required to create the technical preconditions for take-off the investment rate in the preconditions period could be higher than 5%, as, for example, in Canada before the 1890's and Argentina before 1914. In such cases capital imports usually formed a high proportion of total investment in the preconditions period and sometimes even during the take-off itself, as in Russia and Canada during their pre-1914 railway booms.

During the take-off new industries expand rapidly, yielding profits a large proportion of which are reinvested in new plant; and these new industries, in turn, stimulate, through their rapidly expanding requirement for factory workers, the services to support them, and for other manufactured goods, a further expansion in urban areas and in other modern industrial plants. The whole process of expansion in the modern sector yields an increase of income in the hands of those who not only save at high rates but place their savings at the disposal of those engaged in modern sector activities. The new class of entrepreneurs expands; and it directs the enlarging flows of investment in the private sector. The economy exploits hitherto unused natural resources and methods of production.

New techniques spread in agriculture as well as industry, as agriculture is commercialized, and increasing numbers of farmers are prepared to accept the new methods and the deep changes they bring to ways of life. The revolutionary changes in agricultural productivity are an essential condition for successful take-off; for modernization of a society increases radically its bill for agricultural products. In a decade or two both the basic structure of the economy and the social and political structure of the society are transformed

in such a way that a steady rate of growth can be, thereafter, regularly sustained.

As indicated in chapter 4, one can approximately allocate the take-off of Britain to the two decades after 1783; France and the United States to the several decades preceding 1860; Germany, the third quarter of the nineteenth century; Japan, the fourth quarter of the nineteenth century; Russia and Canada the quarter-century or so preceding 1914; while during the 1950's India and China have, in quite different ways, launched their respective take-offs.

THE DRIVE TO MATURITY

After take-off there follows a long interval of sustained if fluctuating progress, as the now regularly growing economy drives to extend modern technology over the whole front of its economic activity. Some 10–20% of the national income is steadily invested, permitting output regularly to outstrip the increase in population. The make-up of the economy changes unceasingly as technique improves, new industries accelerate, older industries level off. The economy finds its place in the international economy: goods formerly imported are produced at home; new import requirements develop, and new export commodities to match them. The society makes such terms as it will with the requirements of modern efficient production, balancing off the new against the older values and institutions, or revising the latter in such ways as to support rather than to retard the growth process.

Some sixty years after take-off begins (say, forty years after the end of take-off) what may be called maturity is generally attained. The economy, focused during the take-off around a relatively narrow complex of industry and technology, has extended its range into more refined and technologically often more complex processes; for example, there may be a shift in focus from the coal, iron, and heavy engineering industries of the railway phase to machine-tools, chemicals, and electrical equipment. This, for example, was the transition through which Germany, Britain, France, and the United States had passed by the end of the nineteenth century or shortly thereafter. But there are other sectoral patterns which have been followed in the sequence from take-off to maturity, which are considered in chapter 5.

The five stages-of-growth—a summary

Formally, we can define maturity as the stage in which an economy demonstrates the capacity to move beyond the original industries which powered its take-off and to absorb and to apply efficiently over a very wide range of its resources—if not the whole range—the most advanced fruits of (then) modern technology. This is the stage in which an economy demonstrates that it has the technological and entrepreneurial skills to produce not everything, but anything that it chooses to produce. It may lack (like contemporary Sweden and Switzerland, for example) the raw materials or other supply conditions required to produce a given type of output economically; but its dependence is a matter of economic choice or political priority rather than a technological or institutional necessity.

Historically, it would appear that something like sixty years was required to move a society from the beginning of take-off to maturity. Analytically the explanation for some such interval may lie in the powerful arithmetic of compound interest applied to the capital stock, combined with the broader consequences for a society's ability to absorb modern technology of three successive generations living under a regime where growth is the normal condition. But, clearly, no dogmatism is justified about the exact length of the interval from take-off to maturity.

THE AGE OF HIGH MASS-CONSUMPTION

We come now to the age of high mass-consumption, where, in time, the leading sectors shift towards durable consumers' goods and services: a phase from which Americans are beginning to emerge; whose not unequivocal joys Western Europe and Japan are beginning energetically to probe; and with which Soviet society is engaged in an uneasy flirtation.

As societies achieved maturity in the twentieth century two things happened: real income per head rose to a point where a large number of persons gained a command over consumption which transcended basic food, shelter, and clothing; and the structure of the working force changed in ways which increased not only the proportion of urban to total population, but also the proportion of the population working in offices or in skilled factory jobs—aware of and anxious to acquire the consumption fruits of a mature economy.

The age of high mass-consumption

In addition to these economic changes, the society ceased to accept the further extension of modern technology as an overriding objective. It is in this post-maturity stage, for example, that, through the political process, Western societies have chosen to allocate increased resources to social welfare and security. The emergence of the welfare state is one manifestation of a society's moving beyond technical maturity; but it is also at this stage that resources tend increasingly to be directed to the production of consumers' durables and to the diffusion of services on a mass basis, if consumers' sovereignty reigns. The sewing-machine, the bicycle, and then the various electric-powered household gadgets were gradually diffused. Historically, however, the decisive element has been the cheap mass automobile with its quite revolutionary effects—social as well as economic—on the life and expectations of society.

For the United States, the turning point was, perhaps, Henry Ford's moving assembly line of 1913–14; but it was in the 1920's, and again in the post-war decade, 1946–56, that this stage of growth was pressed to, virtually, its logical conclusion. In the 1950's Western Europe and Japan appear to have fully entered this phase, accounting substantially for a momentum in their economies quite unexpected in the immediate post-war years. The Soviet Union is technically ready for this stage, and, by every sign, its citizens hunger for it; but Communist leaders face difficult political and social problems of adjustment if this stage is launched.

BEYOND CONSUMPTION

Beyond, it is impossible to predict, except perhaps to observe that Americans, at least, have behaved in the past decade as if diminishing relative marginal utility sets in, after a point, for durable consumers' goods; and they have chosen, at the margin, larger families—behaviour in the pattern of Buddenbrooks dynamics.* Americans have behaved as if, having been born into a system that provided economic security and high mass-consumption, they placed a lower

* In Thomas Mann's novel of three generations, the first sought money; the second, born to money, sought social and civic position; the third, born to comfort and family prestige, looked to the life of music. The phrase is designed to suggest, then, the changing aspirations of generations, as they place a low value on what they take for granted and seek new forms of satisfaction.

valuation on acquiring additional increments of real income in the conventional form as opposed to the advantages and values of an enlarged family. But even in this adventure in generalization it is a shade too soon to create—on the basis of one case—a new stage-of-growth, based on babies, in succession to the age of consumers' durables: as economists might say, the income-elasticity of demand for babies may well vary from society to society. But it is true that the implications of the baby boom along with the not wholly unrelated deficit in social overhead capital are likely to dominate the American economy over the next decade rather than the further diffusion of consumers' durables.

Here then, in an impressionistic rather than an analytic way, are the stages-of-growth which can be distinguished once a traditional society begins its modernization: the transitional period when the preconditions for take-off are created generally in response to the intrusion of a foreign power, converging with certain domestic forces making for modernization; the take-off itself; the sweep into maturity generally taking up the life of about two further generations; and then, finally, if the rise of income has matched the spread of technological virtuosity (which, as we shall see, it need not immediately do) the diversion of the fully mature economy to the provision of durable consumers' goods and services (as well as the welfare state) for its increasingly urban—and then suburban—population. Beyond lies the question of whether or not secular spiritual stagnation will arise, and, if it does, how man might fend it off: a matter considered in chapter 6.

In the four chapters that follow we shall take a harder, and more rigorous look at the preconditions, the take-off, the drive to maturity, and the processes which have led to the age of high mass-consumption. But even in this introductory chapter one characteristic of this system should be made clear.

A DYNAMIC THEORY OF PRODUCTION

These stages are not merely descriptive. They are not merely a way of generalizing certain factual observations about the sequence of development of modern societies. They have an inner logic and

continuity. They have an analytic bone-structure, rooted in a dynamic theory of production.

The classical theory of production is formulated under essentially static assumptions which freeze—or permit only once-over change—in the variables most relevant to the process of economic growth. As modern economists have sought to merge classical production theory with Keynesian income analysis they have introduced the dynamic variables: population, technology, entrepreneurship etc. But they have tended to do so in forms so rigid and general that their models cannot grip the essential phenomena of growth, as they appear to an economic historian. We require a dynamic theory of production which isolates not only the distribution of income between consumption, saving, and investment (and the balance of production between consumers and capital goods) but which focuses directly and in some detail on the composition of investment and on developments within particular sectors of the economy. The argument that follows is based on such a flexible, disaggregated theory of production.

When the conventional limits on the theory of production are widened, it is possible to define theoretical equilibrium positions not only for output, investment, and consumption as a whole, but for each sector of the economy.*

Within the framework set by forces determining the total level of output, sectoral optimum positions are determined on the side of demand, by the levels of income and of population, and by the character of tastes; on the side of supply, by the state of technology and the quality of entrepreneurship, as the latter determines the proportion of technically available and potentially profitable innovations actually incorporated in the capital stock.†

In addition, one must introduce an extremely significant empirical hypothesis: namely, that deceleration is the normal optimum path of a sector, due to a variety of factors operating on it, from the side of both supply and demand.‡

* W.W. Rostow, *The Process of Economic Growth* (Oxford, 1953), especially chapter IV. Also 'Trends in the Allocation of Resources in Secular Growth', chapter 15 of *Economic Progress*, ed. Leon H. Dupriez, with the assistance of Douglas C. Hague (Louvain, 1955).

† In a closed model, a dynamic theory of production must account for changing stocks of basic and applied science, as sectoral aspects of investment, which is done in *The Process of Economic Growth*, especially pp. 22–5.

‡ *Process of Economic Growth*, pp. 96–103.

The equilibria which emerge from the application of these criteria are a set of sectoral paths, from which flows, as first derivatives, a sequence of optimum patterns of investment.

Historical patterns of investment did not, of course, exactly follow these optimum patterns. They were distorted by imperfections in the private investment process, by the policies of governments, and by the impact of wars. Wars temporarily altered the profitable directions of investment by setting up arbitrary demands and by changing the conditions of supply; they destroyed capital; and, occasionally, they accelerated the development of new technology relevant to the peacetime economy and shifted the political and social framework in ways conducive to peacetime growth.* The historical sequence of business-cycles and trend-periods results from these deviations of actual from optimal patterns; and such fluctuations, along with the impact of wars, yield historical paths of growth which differ from those which the optima, calculated before the event, would have yielded.

Nevertheless, the economic history of growing societies takes a part of its rude shape from the effort of societies to approximate the optimum sectoral paths.

At any period of time, the rate of growth in the sectors will vary greatly; and it is possible to isolate empirically certain leading sectors, at early stages of their evolution, whose rapid rate of expansion plays an essential direct and indirect role in maintaining the overall momentum of the economy.† For some purposes it is useful to characterize an economy in terms of its leading sectors; and a part of the technical basis for the stages of growth lies in the changing sequence of leading sectors. In essence it is the fact that sectors tend to have a rapid growth-phase, early in their life, that makes it possible and useful to regard economic history as a sequence of stages rather than merely as a continuum, within which nature never makes a jump.

The stages-of-growth also require, however, that elasticities of demand be taken into account, and that this familiar concept be

* *Process of Economic Growth*, chapter VII, especially pp. 164–7.

† For a discussion of the leading sectors, their direct and indirect consequences, and the diverse routes of their impact, see 'Trends in the Allocation of Resources in Secular Growth', *loc. cit.*

widened; for these rapid growth phases in the sectors derive not merely from the discontinuity of production functions but also from high price- or income-elasticities of demand. Leading sectors are determined not merely by the changing flow of technology and the changing willingness of entrepreneurs to accept available innovations: they are also partially determined by those types of demand which have exhibited high elasticity with respect to price, income, or both.

The demand for resources has resulted, however, not merely from demands set up by private taste and choice, but also from social decisions and from the policies of governments—whether democratically responsive or not. It is necessary, therefore, to look at the choices made by societies in the disposition of their resources in terms which transcend conventional market processes. It is necessary to look at their welfare functions, in the widest sense, including the non-economic processes which determined them.

The course of birth-rates, for example, represents one form of welfare choice made by societies, as income has changed; and population curves reflect (in addition to changing death-rates) how the calculus about family size was made in the various stages; from the usual (but not universal) decline in birth-rates, during or soon after the take-off, as urbanization took hold and progress became a palpable possibility, to the recent rise, as Americans (and others in societies marked by high mass-consumption) have appeared to seek in larger families values beyond those afforded by economic security and by an ample supply of durable consumers' goods and services.

And there are other decisions as well that societies have made as the choices open to them have been altered by the unfolding process of economic growth; and these broad collective decisions, determined by many factors—deep in history, culture, and the active political process—outside the market-place, have interplayed with the dynamics of market demand, risk-taking, technology and entrepreneurship, to determine the specific content of the stages of growth for each society.

How, for example, should the traditional society react to the intrusion of a more advanced power: with cohesion, promptness, and vigour, like the Japanese; by making a virtue of fecklessness,

like the oppressed Irish of the eighteenth century; by slowly and reluctantly altering the traditional society, like the Chinese?

When independent modern nationhood is achieved, how should the national energies be disposed: in external aggression, to right old wrongs or to exploit newly created or perceived possibilities for enlarged national power; in completing and refining the political victory of the new national government over old regional interests; or in modernizing the economy?

Once growth is under way, with the take-off, to what extent should the requirements of diffusing modern technology and maximizing the rate of growth be moderated by the desire to increase consumption *per capita* and to increase welfare?

When technological maturity is reached, and the nation has at its command a modernized and differentiated industrial machine, to what ends should it be put, and in what proportions: to increase social security, through the welfare state; to expand mass-consumption into the range of durable consumers' goods and services; to increase the nation's stature and power on the world scene; or to increase leisure?

And then the question beyond, where history offers us only fragments: what to do when the increase in real income itself loses its charm? Babies, boredom, three-day week-ends, the moon, or the creation of new inner, human frontiers in substitution for the imperatives of scarcity?

In surveying now the broad contours of each stage-of-growth, we are examining, then, not merely the sectoral structure of economies, as they transformed themselves for growth, and grew; we are also examining a succession of strategic choices made by various societies concerning the disposition of their resources, which include but transcend the income- and price-elasticities of demand.

CHAPTER 3

THE PRECONDITIONS FOR TAKE-OFF

THE TWO CASES

We consider in this chapter the preconditions for take-off: the transitional era when a society prepares itself—or is prepared by external forces—for sustained growth.

It is necessary to begin by distinguishing two kinds of cases history has to offer.

There is first what might be called the general case. This case fits not merely the evolution of most of Europe but also the greater part of Asia, the Middle East, and Africa. In this general case the creation of the preconditions for take-off required fundamental changes in a well-established traditional society: changes which touched and substantially altered the social structure and political system as well as techniques of production.

Then there is the second case. This case covers the small group of nations that were, in a sense, 'born free':* the United States, Australia, New Zealand, Canada, and, perhaps, a few others. These nations were created mainly out of a Britain already far along in the transitional process. Moreover, they were founded by social groups —usually one type of non-conformist or another—who were at the margin of the dynamic transitional process slowly going forward within Britain. Finally their physical settings—of wild but abundant land and other natural resources—discouraged the maintenance of such elements in the traditional structure as were transplanted, and they accelerated the transitional process by offering extremely attractive incentives to get on with economic growth. Thus the nations within the second case never became so deeply caught up in the structures, politics and values of the traditional society; and, therefore, the process of their transition to modern growth was mainly economic and technical. The creation of the preconditions for take-off was largely a matter of building social overhead capital—railways,

* A phrase used by Louis Hartz in *The Liberal Tradition in America* (New York, 1955).

ports and roads—and of finding an economic setting in which a shift from agriculture and trade to manufacture was profitable; for, in the first instance, comparative advantage lay in agriculture and the production of food-stuffs and raw materials for export.

The distinction between the two cases is real enough; but looked at closely the lines of demarcation turn out to be not all that sharp. The United States, for example, created for itself a kind of traditional society in the South, as an appendage to Lancashire, and then New England's cotton mills; and the long, slow disengagement of the South from its peculiar version of a traditional society belongs clearly in the general rather than the special case. Canada, moreover, has had its regional problem of a sort of traditional society in Quebec. The take-off of the American South is a phenomenon of the last two decades; while the take-off in Quebec may only now be getting whole-heartedly under way.

There are other types of fuzziness as well. Are the Latin American states to be regarded as in the general case, or among the lucky offspring of already transitional Europe? On the whole, we would judge, they belong in the general case; that is, they began with a version of a traditional society—often a merging of traditional Latin Europe and native traditional cultures--which required fundamental change before the mixed blessings of compound interest could be attained; but the Latin American cases vary among themselves. Similarly, Scandinavia, somewhat like Britain itself, faced less searching problems than many other parts of Europe in shaking off the limiting parameters of the traditional society. Sweden is almost in the second rather than the first category.

Nevertheless, the distinction between the two cases, properly and modestly used, is helpful.

This chapter is concentrated on the general case; that is, on the process, within a traditional society, by which the preconditions for take-off are created.

THE NATURE OF THE TRANSITION

The transition we are examining has, evidently, many dimensions. A society predominantly agricultural—with, in fact, usually 75% or more of its working force in agriculture—must

shift to a predominance for industry, communications, trade and services.

A society whose economic, social and political arrangements are built around the life of relatively small—mainly self-sufficient—regions must orient its commerce and its thought to the nation and to a still larger international setting.

The view towards the having of children—initially the residual blessing and affirmation of immortality in a hard life, of relatively fixed horizons—must change in ways which ultimately yield a decline in the birth-rate, as the possibility of progress and the decline in the need for unskilled farm labour create a new calculus.

The income above minimum levels of consumption, largely concentrated in the hands of those who own land, must be shifted into the hands of those who will spend it on roads and railroads, schools and factories rather than on country houses and servants, personal ornaments and temples.

Men must come to be valued in the society not for their connexion with clan or class, or, even, their guild; but for their individual ability to perform certain specific, increasingly specialized functions.

And, above all, the concept must be spread that man need not regard his physical environment as virtually a factor given by nature and providence, but as an ordered world which, if rationally understood, can be manipulated in ways which yield productive change and, in one dimension at least, progress.

All of this—and more—is involved in the passage of a traditional to a modern growing society. Now, how shall we go about analysing this transition? How shall we try to give to it a certain intellectual order?

We shall turn first to its economic aspects—in a reasonably narrow sense—and then to its non-economic dimensions.

THE ANALYSIS OF THE TRANSITION

The modern economist—or perhaps one should say, given the recent shift of interest to growth, the modern economist of a decade ago—might have been inclined to say to the historian something of this sort: 'This complexity about whole societies is all very well; and it is no doubt of some interest to you and your kind; but don't

make such heavy weather of it. What you are talking about is a rise in the rate of investment and in the *per capita* stock of capital. Get the investment-rate up to the point where the increase in output outstrips the rate of population increase—to, say, a rate of investment over 10% of national income—and the job is done. The difference between a traditional and a modern society is merely a question of whether its investment-rate is low relative to population increase —let us say under 5% of national income; or whether it has risen up to 10% or over. With a capital/output ratio of about 3, a 10% investment-rate will outstrip any likely population growth; and there you are, with a regular increase in output per head.'

And what the old-fashioned modern economist might have said was, of course, quite true.

But to get the rate of investment up some men in the society must be able to manipulate and apply—and in a closed system they must be able to create—modern science and useful cost-reducing inventions.

Some other men in the society must be prepared to undergo the strain and risks of leadership in bringing the flow of available inventions productively into the capital stock.

Some other men in the society must be prepared to lend their money on long term, at high risk, to back the innovating entrepreneurs—not in money-lending, playing the exchanges, foreign trade or real estate—but in modern industry.

And the population at large must be prepared to accept training for—and then to operate—an economic system whose methods are subject to regular change, and one which also increasingly confines the individual in large, disciplined organizations allocating to him specialized narrow, recurrent tasks.

In short, the rise in the rate of investment—which the economist conjures up to summarize the transition—requires a radical shift in the society's effective attitude toward fundamental and applied science; toward the initiation of change in productive technique; toward the taking of risk; and toward the conditions and methods of work.

One must say a change in effective attitude—rather than merely a change in attitude—because what is involved here is not some

vague change in psychological or sociological orientation, but a change translated into working institutions and procedures. Such change is not to be established by retrospective Gallup polls, but by the comparative examination of political, social and economic performance in response to similar objective profit possibilities.

Having peered briefly inside the process of investment in a world of changing production functions, we can conclude by agreeing that, in the end, the essence of the transition can be described legitimately as a rise in the rate of investment to a level which regularly, substantially and perceptibly outstrips population growth; although, when this is said, it carries no implication that the rise in the investment-rate is an ultimate cause.

TWO SECTORAL PROBLEMS

The rise of the investment-rate, as well as reflecting these more profound societal changes, is also the consequence of developments in particular sectors of the economy, where the transformation of the economy actually takes place. The analysis of economic growth can, then, proceed only a short and highly abstracted way without disaggregation.

To illustrate the need to pierce the veil of aggregative analysis in the transitional period we shall look briefly now at two particular problems shared, in one way or another, by all societies which have learned how to grow: the problem of increased productivity in agriculture and the extractive industries; and the problem of social overhead capital.

AGRICULTURE AND THE EXTRACTIVE INDUSTRIES

Although a good deal of the early growth process hinges on the food-supply, the first of these two sectoral problems is properly to be defined as that of agriculture and the extractive industries. The general requirement of the transition is to apply quick-yielding changes in productivity to the most accessible and naturally productive resources. Generally, this means higher productivity in food-production. But it may also mean wool, cotton, or silk—as in nineteenth-century New Zealand, the American South, and Japan. And in Sweden it meant timber; in Malaya, rubber; in the Middle

East, oil; and in certain American regions, Australia, and Alaska, gold helped to do the trick.

The point is that it takes more than industry to industrialize. Industry itself takes time to develop momentum and competitive competence; in the meanwhile there is certain to be a big social overhead capital bill to meet; and there is almost certain to be a radically increased population to feed. In a generalized sense modernization takes a lot of working capital; and a good part of this working capital must come from rapid increases in output achieved by higher productivity in agriculture and the extractive industries.

More specifically the attempt simultaneously to expand fixed capital—of long gestation period—and to feed an expanding population requires both increased food output at home and/or increased imports from abroad. Capital imports can help, of course, but in the end loans must be serviced; and the servicing of loans requires enlarged exports.

It is, therefore, an essential condition for a successful transition that investment be increased and—even more important—that the hitherto unexploited back-log of innovations be brought to bear on a society's land and other natural resources, where quick increases in output are possible.

Having made the general case in terms of requirements for working capital, look for a moment more closely at the question of agriculture and the food-supply. There are, in fact, three distinct major roles agriculture must play in the transitional process between a traditional society and a successful take-off.

1. Food

First, agriculture must supply more food. Food is needed to meet the likely rise in population, without yielding either starvation or a depletion of foreign exchange available for purposes essential to growth. But increased supplies and increased transfers of food out of rural areas are needed for another reason: to feed the urban populations which are certain to grow at a disproportionately high rate during the transition. And, in most cases, increased agricultural supplies are needed as well to help meet the foreign exchange bill for capital development: either positively by earning foreign exchange, as in the United States, Russia, Canada, and several other nations which generated and maintained agricultural surpluses while

their populations were growing (and their urban populations growing faster than the population as a whole); or negatively, to minimize the foreign exchange bill for food—like a whole series of nations from Britain in the 1790's to Israel in the 1950's.

The central fact is that, in the transitional period, industry is not likely to have established a sufficiently large and productive base to earn enough foreign exchange to meet the increments in the nation's food bill via increased imports. Population increases, urbanization, and increased foreign exchange requirements for fixed and working capital are all thus likely to conspire to exert a peculiar pressure on the agricultural sector in the transitional process. Put another way, the rate of increase in output in agriculture may set the limit within which the transition to modernization proceeds.

But this is not all. Agriculture may enter the picture in a related but quite distinctive way, from the side of demand as well as supply. Let us assume that the governmental sector in this transitional economy is not so large that its expanded demand can support the rapid growth of industry. Let us assume that some of the potential leading sectors are in consumers' goods—as, indeed, has often been the case: not only cotton textiles—as in England and New England—but a wide range of import substitutes, as in a number of Latin American cases. In addition, the modern sector can—and often should—be built in part on items of capital for agriculture: farm machinery, chemical fertilizers, diesel pumps etc. In short, an environment of rising real incomes in agriculture, rooted in increased productivity, may be an important stimulus to new modern industrial sectors essential to the take-off.

2. Market

The income side of the productivity revolution in agriculture may be important even in those cases where the transition to industrialization is not based on consumers' goods industries; for it is from rising rural incomes that increased taxes of one sort or another can be drawn—necessary to finance the government's functions in the transition—without imposing either starvation on the peasants or inflation on the urban population.

3. Investment

And there is a third distinctive role for agriculture in the transitional period which goes beyond its functions in supplying resources, effective demand or tax revenues: agriculture must yield up a

substantial part of its surplus income to the modern sector. At the core of the *Wealth of Nations*—lost among propositions about pins and free trade—is Adam Smith's perception that surplus income derived from ownership of land must, somehow, be transferred out of the hands of those who would sterilize it in prodigal living into the hands of the productive men who will invest it in the modern sector and then regularly plough back their profits as output and productivity rise.

In their nineteenth-century land-reform schemes this is precisely what Japan, Russia, and many other nations have done during the transition in an effort to increase the supply of capital available for social overhead and other essential modernizing processes.

It is thus the multiple, distinctive, but converging consequences of the revolution in agriculture which give to it a peculiar importance in the period of preconditions. Agriculture must supply expanded food, expanded markets, and an expanded supply of loanable funds to the modern sector.

Generalized observations about capital formation in the aggregate do not significantly illuminate these essential multiple connexions between agricultural and industrial growth.

SOCIAL OVERHEAD CAPITAL

Similarly, the conventional mode for dealing with capital formation in terms of national income aggregates does not usefully illuminate the crucial role, in the preconditions period, of the build-up of social overhead capital. Where data exist on the level and pattern of capital formation in pre-take-off societies—and for the take-off as well—it is clear that a very high proportion of total investment must go into transport and other social overhead outlays.*

Aside from their quantitative importance, social overhead outlays have three characteristics which distinguish them from investment in general, as usually presented in aggregative models. First, their

* See, for example, A. K. Cairncross, *Home and Foreign Investment, 1870–1913* (Cambridge, 1953), chapter III. pp. 44–8, on the composition of Canadian investment during the take-off period (say, 1895–1915). See also, for the pattern of investment in Sweden and the role within it of railway and housing investment in the period 1870–90, E. Lindahl and others, *National Income of Sweden, 1861–1930* (Stockholm, 1937), especially pp. 257–66.

periods of gestation and of pay-off are usually long. Unlike double-cropping or the application of chemical fertilizers, a railway system is unlikely to yield its results in a year or two from the time its construction is undertaken, although it will yield large benefits over a very long time. Second, social overhead capital is generally lumpy. You either build the line from, say, Chicago to San Francisco or you do not: an incomplete railway line is of limited use, although many other forms of investment—in industry and agriculture—can proceed usefully by small increments. Third, of its nature, the profits from social overhead capital often return to the community as a whole—through indirect chains of causation—rather than directly to the initiating entrepreneurs.

Taken together, these three characteristics of social overhead capital—the long periods of gestation and pay-off, the lumpiness, and the indirect routes of pay-off—decree that governments must generally play an extremely important role in the process of building social overhead capital; which means governments must generally play an extremely important role in the preconditions period. Put another way, social overhead capital cannot be formed—in some of its most essential forms—by an enlarging flow of ploughed-back profits from an initially small base. You cannot get well started unless you can mobilize quite large initial capital sums.

Thus, even in so highly capitalist a transitional society as the United States between 1815 and 1840, state and local governments played a major role in initiating the build-up of social overhead capital. The Erie Canal was built by the New York State legislature; and the great American continental railway networks were built with enormous federal subsidies in the form of land grants.

The argument about agriculture and social overhead capital in transitional societies underlines a point of method and a point of substance. The point of method is that orderly disaggregation is necessary for an analysis of economic growth that comes to grips with the key strategic factors. Aggregates which may be useful for purposes of short-run income analysis conceal more than they illuminate when carried over into the analysis of growth. The point of substance is that the preparation of a viable base for a modern

industrial structure requires that quite revolutionary changes be brought about in two non-industrial sectors: agriculture and social overhead capital, most notably in transport.

NON-ECONOMIC CHANGE

We turn, now, to the non-economic side of the preconditions for take-off.

The broad lines of societal change necessary to prepare a traditional society for regular growth are becoming familiar enough. It would be widely agreed that a new élite—a new leadership—must emerge and be given scope to begin the building of a modern industrial society; and, while the Protestant ethic by no means represents a set of values uniquely suitable for modernization, it is essential that the members of this new élite regard modernization as a possible task, serving some end they judge to be ethically good or otherwise advantageous.

Sociologically this new élite must—to a degree—supersede in social and political authority the old land-based élite, whose grasp on income above minimum levels of consumption must be broken where it proves impossible simply to divert that income smoothly into the modern sector.

And more generally—in rural as in urban areas—the horizon of expectations must lift; and men must become prepared for a life of change and specialized function.

Something like this group of sociological and psychological changes would now be agreed to be at the heart of the creation of the preconditions for take-off. But this is an insufficient view. While in no way denying the significance of some such changes in attitude, value, social structure and expectations, we would emphasize, in addition, the role of the political process and of political motive in the transition.

As a matter of historical fact a reactive nationalism—reacting against intrusion from more advanced nations—has been a most important and powerful motive force in the transition from traditional to modern societies, at least as important as the profit motive. Men holding effective authority or influence have been willing to uproot traditional societies not, primarily, to make more money but

because the traditional society failed—or threatened to fail—to protect them from humiliation by foreigners. Leave Britain aside for a moment and consider the circumstances and motives that set traditional societies in other regions on the road to modernization.

In Germany it was certainly a nationalism based on past humiliation and future hope that did the job: the memory of Napoleon, and the Prussian perception of the potentialities for power of German unity and German nationalism. It was German nationalism which stole the revolution of 1848 at Frankfurt and made the framework within which the German take-off occurred—the Junkers and the men of the East, more than the men of trade and the liberals of the West. In Russia it was a series of military intrusions and defeats, stretching out over a century, which was the great engine of change: Napoleon's invasion, the Crimean War, the Russo-Japanese War, and then, finally, the First World War. In Japan it was the demonstration effect not of high profits or manufactured consumers' goods, but of the Opium War in China in the early 1840's and Commodore Perry's seven black ships a decade later that cast the die for modernization. And in China, the deeply entrenched traditional society yielded only slowly and painfully; but it did, in the end, yield to a century of humiliations from abroad that it could not prevent.

And so also, of course, with the colonial areas of the southern half of the world. But there, in the colonies, a dual demonstration effect operated.

Although imperial powers pursued policies which did not always optimize the development of the preconditions for take-off, they could not avoid bringing about transformation in thought, knowledge, institutions and the supply of social overhead capital which moved the colonial society along the transitional path; and they often included modernization of a sort as one explicit object of colonial policy.

In any case, the reality of the effective power that went with an ability to wield modern technology was demonstrated and the more thoughtful local people drew appropriate conclusions. Ports, docks, roads, and later, railways were built; a centralized tax system was imposed; some colonials were drawn into those minimum modern economic activities necessary to conduct trade to produce what the