

Foreword-1962

THE THEME OF this book is a very simple one. It is that human progress consists in finding out how to do things, finding out how to do more things, and finding out how to do things better. If the question is asked whether some things are not better left unlearned, the answer is No; and the reason is, all things are related causally related. Learning to kill people might perhaps be thought of as a lesson better left unlearned. But not only is the art of killing people exactly the same as the art of killing animals for food (an activity which goes back not only to the dawn of human culture but even to our zoological predecessors); the art of killing people is indissociable from the art of keeping people alive. Doctors know best how to kill people, unless perhaps physicists know even better.

In using such comparatives as "more" and "better" it may seem as though I am prejudging the whole matter. What do "more" and "better" mean? The answer is, the meaning of such terms is implicit in the process. In both cases it is a processual, or operational, meaning. The meaning "more" is implicit in the meaning "amount," whatever may be quantified. Any quantity implies moreness and lessness: and the same is true of "better." This is an activity word. Any and every doing implies betterness and worseness, and in every doing the significance of "better" and "worse" is implicit in what is being done.

Moreover, all these meanings are aggregative and this is the most important point of all. They are so because that is the way the world is. Everything anyone does affects his other doings and also the doings of other people. The temptation is strong to think of certain things and acts as intrinsically good, and of others as intrinsically bad, as though each were suffused with good magic or bad magic. Indeed, the inveterate addiction of mankind to belief in magic is the source of our temptation. But the simple truth is that nothing exists by itself. No act is performed by itself. All are causally related, and can be known and judged only as aggregates.

Thus progress is an aggregative term. There can be small aggregates as well as large ones, of course. We can speak intelligibly of a single individual's progress in learning to swim, or of a whole community's progress in physical fitness. By the same token, we can speak of human progress in general, meaning the broadest possible aggregate of all human activities. At this point, however, a serious difficulty arises. Are all human activities alike in the sense of being parts of the same aggregate? The answer to this question assuredly is No. All are alike in the sense of being human. But through all human activities there runs a deep cleavage or perhaps it would be better to say a sort of polarity, since at all times we are to some degree subject to opposing influences. Two forces seem to be present in all human behavior in all ages: one progressive, dynamic, productive of cumulative change; the other counter progressive, static, inhibitory of change.

Our common tongue contains no satisfactory terms with which to designate these forces. The terms used in this book technology and ceremonialism derive from Thorstein Veblen, who pioneered the study of the interaction of these forces. Each must be understood as being used in a very broad and also a very special sense. Thus "technology" must be understood to include all human activities involving the use of tools all sorts of tools: the simplest striking stones of primeval man as well as the atomsplitting bevatrons of presentday physicists; written language, books, and the symbols mathematicians manipulate, as well as marks in the sand, notches on a stick, or the fire built around the trunk of a tree to fell it.

But tools are not technology. The two commonest mistakes people make with regard to technology are (1) thinking of it as nonhuman tools, and (2) thinking of it as human skill. Both misconceptions make it impossible to understand how technology develops. The former leads to the presumption that technology is a feature of the setting in which human beings carry on their activities, part of the physical environment

of mankind; and this suggests that it is static and inert. But the other conception of technology as human skill likewise fails us, since we know that human beings are no brighter, no more apt, today than a hundred thousand years ago.

This dilemma can be resolved and the technological process can be understood only by recognizing that human skills and the tools by which and on which they are exercised are logically inseparable. Skills *always* employ tools, and tools are such *always* by virtue of being employed in acts of skill by human beings. Once the dual character of the technological process is understood, the explanation of its dynamism is obvious. Technology advances by virtue of invention and discoveries being made by men, of course. But all inventions and discoveries result from the combining of hitherto separate tools, instruments, materials, and the like. These are capable of combination by virtue of their physical existence. The combining is of course performed by man, and especially by bright and restless men. But no one ever made a combination without there being something to combine. Furthermore, the more there is to combine in any given situation the more likely inventions and discoveries become unless the inveterate restless of human hands and brains is severely curbed.

It is what Veblen called ceremonialism that provides the curb. This type or mode of behavior manifests itself in various ways, particularly in these five ways. For one thing, the social stratification which seems to occur in all societies is such a manifestation. Second, this stratification (or hierarchy, or status system) is defined and sustained by a system of conventions which delimit and prescribe the behavior that is proper to persons of every social rank. These are commonly known as mores. Third, both status and mores are further sustained by an ideology, or system of tribal beliefs, which purport to explain the magic potency which distinguishes people of higher ranks and the awful consequences which are believed to follow infractions of the mores. Fourth, the members of every community are emotionally conditioned to acceptance of the beliefs in question, observance of the mores, and respect for lines of caste and status by systems of indoctrination which begin in infancy. And fifth, all these patterns of behavior are defined, codified, and intensified in mystic rites and ceremonies. It is by virtue of sacred ceremonies that persons of various ranks have imparted to them the mysterious powers the "ceremonial adequacy," as Veblen called it of their particular ranks, the ceremonies define the mores; they reenact what people believe to be their tribal history; and they are above all solemn, aweinspiring, fearinducing, and generally emotion-conditioning.

This system of behavior is static and inhibitory of change, such as technological activities promote, for a very obvious reason. In all its manifestations the ceremonial system is pastbinding. The ceremonies are re-enactments of what is presumed to be tribal history the more ancient the better; hence their emotional impact. Tribal beliefs resist change because they are presumed to have been laid down in the remote past, and the same is true of mores and status systems. Sacred commandments do not change, nor does the authority of ceremonially invested rank. The overall effect of this system of behavior is to keep things as they are and, presumably, always have been.

Thus what happens to any society is determined jointly by the forward urging of its technology and the backward pressure of its ceremonial system. A well known study of social change in a great number of primitive societies has established a positive correlation between change and movement. When peoples move around they come into contact with other peoples, and changes result from those contacts. This raises a further question. Why do peoples move around? The answer to this question would seem to be: people move when they have the technical means of doing so, if they are not prevented by recognized authority, moral law, and emotional attachments.

The question may still be asked, What motivates such movement? In all cases the answer is the same. People climb a mountain to see what is on the other side or, in the words of a celebrated mountain climber who lost his life on Mount Everest: "Because it's there." These very words are being quoted today by

astronauts. In short, the motive is implicit in the process. This is true of both processes. Ancestor worshippers do not decide to oppose change. They oppose change only because they hate it, and they hate it because they love "the old ways." Scientists do not seek knowledge because they are dissatisfied with the knowledge they already have. As has been said thousands of times by thousands of scientists, every discovery raises more questions than it answers. In short, the motive is implicit in the process. Mount Everest was eventually climbed by use of improved techniques for bottling oxygen in portable tanks. Thus it is literally true that what led to the climbing of Mount Everest was the bottling of oxygen.

Veblen did not schematize his basic principles quite as I have done. But he did show their applicability to all societies, including our own. Such is the import of one of his most celebrated dicta, the one I have already quoted at the end of Chapter VIII:

. . . history records more frequent and more spectacular instances of the triumph of imbecile institutions over life and culture than of peoples who have . . . saved themselves alive out of a desperately precarious institutional situation, such, for instance, as now faces the peoples of Christendom.

These words appear in *The Instinct of Workmanship*, which was published in March, 1914: six months before the assassination of Sarajevo triggered the wars of the twentieth century. But they are even more pertinent today than when they were written. Science and technology are now advancing faster than ever. We can do things now that were not even dreamed of in 1914. And our institutional situation is more desperately precarious than ever.

2

All that I have said in the preceding pages has already been said in the body of this book. I have nevertheless repeated it here because, as I now feel, this is how the book should begin affirmatively, with a positive statement of the basic principles with the significance of which it is concerned. This decision is based in part on the changed circumstances in which *The Theory of Economic Progress* is now being re-issued.

During the years which have passed since the book was first published the process of economic development has become the subject of a vast outpouring of books and articles. This literature is of course a product of circumstances. More than ever before, the Second World War, as it has come to be known, made nonEuropean peoples throughout the world familiar with at least the distant view of the most advanced products of Western technology. The establishment of air fields and military depots throughout the world gave millions their first acquaintance with the Western way of life. At the same time the extensive conquests of the Japanese gave incontestible evidence that industrialization is not racelimited.

As everyone knows, these circumstances gave rise to what has become known as "a revolution of expectations" throughout the world. All the less industrialized countries are now seeking economic development, and economists have responded generously to this demand. At the present time, therefore, it is inevitable that a book bearing the title *The Theory of Economic Progress* will be assumed to be a contribution to this literature; and since the book does in fact deal with the process of economic development, this now seems clearly to be the foot it should now put forward.

But that is not how the book was originally conceived. The effort which resulted in this book was begun years earlier, and was an attempt to define the "institutionalist" way of thinking. That is why it began with a repudiation of the "classical" tradition. Even today there is no clearly defined body of principles on which institutionalists are generally agreed and by which they are known. But if there is anything that all institutionalists have in common it is dissatisfaction with "orthodox" price theory. Thus it seemed to me during the years when this book was in process of gestation that any positive statement of institutionalist

principles would be unintelligible unless preceded by an explicit rejection of traditional economic theory.

But even this is not as easy as it sounds. What is it that we object to in orthodox price theory? A poll of institutionalists would, I fear, produce a bewildering variety of answers to such a question. Indeed, I myself would answer the question differently today from the way I tried to answer it in the opening section of this book, and that is one of the principle reasons for the present Foreword. As the years have passed during which I have debated these matters with successive generations of students I have become convinced that the decisive issue is not that of price, or capital, or value, but that of our conception of the nature of the economy itself. This I hasten to say, does not mean that I am now "taking back" anything I have said earlier about these other concepts. The point is rather that traditional ideas of the functioning of the price system are themselves incidental to an overall conception of the economy. Our trouble so I would now argue all stems from a fundamental misconception of the nature of the economy itself, one to which Western society was committed by force of historic circumstances long before books began to be written on "The Principles of Political Economy."

Economics is by definition the study of the economy. But what is this "economy?" On one thing, at least, all economists agree. It is a system of interrelated activities having to do with "the ordinary business of living." So far so good! The definition is vague enough to suit everybody. Everybody agrees that the activities in which we all engage in the ordinary business of getting a living are somehow interrelated. The decisive question is, How? The author of this ordinarybusiness definition was Alfred Marshall, the fountainhead of modern orthodoxy. He assumed as a matter of course that the agency by which all ordinarybusiness activities are organized and interrelated is "the market." He did not prove this to be the case, and nobody else has ever done so. That has simply been taken for granted. It was taken for granted centuries before Adam Smith wrote that Magna Carta of political economy, *An Inquiry into the Nature and Causes of the Wealth of Nations*, and it was taken for granted, as it still is, for what have always seemed to be entirely convincing reasons.

What, after all, are the most conspicuous the most public activities in which people engage in the ordinary business of living? The answer is, of course, buying and selling. Making a living is often a lonely business. But spending it is gregarious. People make their livings in thousands of different ways. But spending is the same for all. Making a living is monotonous work. But spending it is always interesting and sometimes dramatic.

Furthermore, this has always been so. At the dawn of modern times even more than today the activities of husbandmen and craftsmen were lonely and humdrum. Such people are drudges. The community takes them and their occupations for granted, as it does housewives. But the fair was an exciting break in the humdrum of existence. Mystery and high drama suffuse the activities of merchants.

Moreover, from the dawn of modern times onward, merchants and financiers were becoming important people, more and more important as time passed. This, too, has had its effect. As I have indicated in Chapter I, our obsession with the market does not seem to me to be the result of a capitalist conspiracy. But that the importance of merchants throughout modern times has affected the common sense of the community, as Veblen used that phrase, with regard to the importance of mercantile activities seems virtually axiomatic.

At the same time, as I tried to point out in Chapter II, various challenges to statecraft which arose in early modern times had the effect of focusing attention on the market long before there was any such discipline as political economy and even before scholars had begun to think of the ordinary business of living as constituting a system of interrelated activities. One is tempted to say that the conception of a market-organized economy antedates the conception of the economy.

All this is entirely consistent with what I wrote in 1944 about our traditional obsession with the price system, and about the ambiguity of the concept of capital and the inadequacy of the pecuniary conception of value. I am now only trying to carry this reasoning to what now seems to me its ultimate conclusion, namely, that the economy itself which has all the time been the subject matter of our discipline has been completely misconceived.

Even so, the question might be raised whether it would not be wiser to ignore the misconceptions of the past and proceed at once to try to set the record straight. In some areas of human knowledge this might be wise counsel. But in this area such a simple correction of our course is impossible. It is impossible because, unlike neutrinos and polymers, supply and demand are well known to everybody. So plausible is the classical conception of the economy that everybody "knows" that the economy is the market, supply and demand, the buying and selling mechanism. This is what J. K. Galbraith has called "the conventional wisdom" of our society. To ignore it is to be unintelligible.

That is why it seemed to me when I wrote this book that I must make clear at the outset that I was dissenting from the conventional wisdom. It now seems to me that I would have made this demurrer more understandable if I had said that it was the traditional conception of the economy itself from which I was proposing to dissent.

3

One major advantage which results from focusing attention upon the nature of the economy itself is that it brings economics into line with other disciplines. According to anthropologists every culture includes an economy. In a sense this is only to say that every community has some way of getting a living, which is a truism. The significant truth is that each society has its own distinctive way of getting a living. Among simple peoples some one food source is usually so important for each people's living that its economy can be meaningfully identified with that food. Thus we recognize fish cultures, taro cultures, yak cultures, and so on indefinitely. There is some evidence that the earliest known human inhabitants of Europe had a mammoth culture.

At first blush it would appear that the economies of advanced civilizations, and especially that of the modern Western world, do not lend themselves to such a designation. For the more advanced a people is, the more varied is its dietary. But a moment's reflection will resolve this difficulty, and the resolution will be borne out by the facts. The truth is that every economy, however simple, is technologically based. In order for a certain article of food to have become the mainstay of any people, that people must have developed suitable tools and techniques for obtaining that food substance. The mammoth hunters who followed the retreating continental glacier, living off the huge pachyderms which fed on the vegetation of the tundra, are known to have specialized on calves. They must have developed specialized techniques for cutting the calves out of the herds and then dispatching them. They may have even used glacial ice as a readymade deep freeze. This is true of all food-designated economies. Each is in fact a specialized tool-and-technique economy. Indeed, whole cultures have been transformed by the introduction of new instruments. When the plains Indians of the Old West obtained horses from the Spaniards, they abandoned their ancient corn technology and commenced following the herds of bison. As identified by their principal source of food, theirs was now a bison economy. But its real foundation was horses and horsemanship.

In the same sense industrial technology is the real substance of the modern economy. This conception of the economy is not a denial of the existence of its market aspect, any more than traditional price theory is a denial of the existence of machine technology. The question is, Which is the dog and which is the tail? Granted that no exponent of the market theory has ever denied the existence of what Veblen called "the machine process"; nevertheless that theory in all its manifestations does imply that the creative principle-

the economic magic of the Western economy somehow emanates from the market, from mercantile activities, from buying and selling. Some exponents of this conception of the economy have even gone so far as to attribute all the distinctive features of modern Western civilization not only machine technology but even science itself, and not only science but all the arts, indeed all the achievements of the human spirit to the mercantile mentality. Absurd as such claims are, they are only an exaggeration of the concept that has been basic to our economic thinking throughout modern times. As Adam Smith put it, "As it is the power of exchanging that gives occasion to the division of labour, so the extent of this division must always be limited to the extent of that power, or, in other words, by the extent of the market."

But surely the true state of affairs is almost the exact reverse of this. Indeed, it can be stated most succinctly in these very words. As it is the state of the industrial arts that gives occasion to exchange, so the extent of the market must always be limited by the state of the industrial arts. Swapping is possible only when there is something to swap. People can indulge Adam Smith's famous "propensity to truck, barter and exchange" only to the extent that exchangeable goods exist.

Thus another and most important advantage which results from identifying our economy, like all others, by its technology is that its genesis then becomes apparent. The origin of the market-conceived economy is a profound mystery. Once the industrial revolution of the eighteenth century was accepted as a fact, sound theory required that it be preceded by a commercial revolution which might be conceived to have "made it possible." It was relatively easy for economic historians to show that buying and selling were going on, that fortunes were being made, and even that merchants were dominating the scene, long before the steam engine came into industrial use. But what brought all this about? Medieval Fairs? The wealth of the monastic orders? The Protestant Reformation? All these suggestions and many more have been duly offered. But as scholars have become more and more absorbed in the effort to advise the less industrialized nations how to achieve economic development they have come to realize more and more disturbingly that none of the familiar explanations of our own economic development is entirely satisfactory. The truth is, we do not know how our own economy developed.

But if ours is an industrial economy if its creative genius lies in its machine technology, just as that of a hunting economy lies in its bows and arrows then the solution is obvious. Our development has been the result of a series of discoveries and inventions. Those discoveries and inventions have come about in our society just as all technological developments come about in all societies.

True, we have benefited from an extraordinary series of revolutionary technological advances, and this circumstance still requires to be explained. But when we couch the question in these terms, the answer appears quite obvious. What situation could have given rise to so vast a technological revolution? The answer calls for a unique series of combinations of technical culture traits occurring in a uniquely fluid institutional situation. If we then look back over the centuries this is exactly what we find.

4

Although this book was written and published before the onset of the present paroxysm of economic development, it does contain, at least by implication, certain basic principles.

The first of these is that the process of economic development is indivisible and irresistible. If we consider it country by country, or invention by invention, there have already been many industrial revolutions. But in a much more significant sense all have been incidents in a general process which began in Western Europe at the dawn of modern times (thereby marking the onset of modern times) and has been spreading throughout the world ever since.

The propelling force of this vast cultural revolution has been technological. But this does not mean that

institutional circumstances have not been a causal factor of equal importance. In the centuries that followed "the fall of Rome" (that is, the separation of "All Gaul" from the Empire) Western Europe manifested a unique combination of technological continuity and institutional detachment. The former meant that the technological possibility of invention and discovery was as great here as anywhere in the world, and the latter meant that Europeans enjoyed a greater freedom to bring such possibilities to fruition than did the inhabitants of any ancient center of civilization.

The "breakthrough" occurred during the fifteenth century. What was broken through was feudalism, the manorial agricultural economy, the medieval world view, the absolute spiritual authority of the Roman Catholic Church, and European isolation. The forces which became manifest during this century had of course been operative for many centuries. A revolution in land transport had already been brought about by horse shoes and the horse collar, and the germs of powered machinery had been introduced in the form of windmills and water wheels and medieval clocks. The Arabic numerals and Chinese printing had been introduced, and gunpowder had been invented. By the end of the fifteenth century printing from movable types had been invented and (bibliophiles calculate) twenty million books had been printed and, for the first time in human history, were spreading literacy throughout the entire community. Ships, and the arts of navigation, had been developed to carry Europeans equipped with arms vastly superior to those of any other people to the shores of all the continents. The Copernican revolution was imminent, and cracks in the monolithic structure of the Church were beginning to appear. In short, Western Europe was launched upon a "takeoff" from which there was no turning back.

The second basic principle of economic development is that the technological revolution spreads in inverse proportion to institutional resistance. The irresistible dynamism of the technological revolution which became manifest in Western Europe during the fifteenth century does not mean that no resistance was offered. Ceremonial traditions always resist change. They have done so in Western Europe from medieval times onward, though with steadily diminishing force; and they do so everywhere else, with results that still remain to be determined.

Since the technological revolution made it possible, Europeans have penetrated to all parts of the world. Their motives for doing so have been extremely various and on that account alone may be safely disregarded. The determining factor in all cases has been their ability to do so. Moreover, wherever they have gone, Europeans have taken their tools and knowhow with them. Where they have encountered no effective resistance from alien cultures, technological development has continued and has even spurred ahead faster than in the mother countries, where despite all change a considerable "residue" of ancient ceremonialism still persists. That is why the United States, Canada, and Australia now stand among the most advanced industrial countries in the world today. But wherever ancient cultures prevail, and most especially among a dense population, resistance to change is correspondingly great.

Such resistance is both passive and active: passive in the sense that illiteracy is more difficult to cope with in large masses than in small ones, active in the sense that teaching people to read and write almost inevitably involves interfering with their traditional way of life and may even involve drastically modifying the language habits of a thousand years all of which people bitterly and even violently resist. What language should the people of India be taught to read and write?

In this matter of institutional resistance the practitioners of total revolution enjoy a tremendous advantage. During the colonial period Europeans made it a matter of deliberate policy not to "interfere" with "native" cultures. They did so partly as a matter of snobbery by holding themselves aloof from the indigenous population, and partly out of respect for the human rights of the "subject" peoples as a matter of humanitarian conviction. Revolutionaries scorn both these motives, and so make the extirpation of the indigenous culture their first order of business, following which the introduction of industrial technology is relatively easy. This is the secret of the astonishing rapidity with which the Soviet Union has been

catching up with the West. To be sure, revolutionaries may be afflicted with traditions of their own which act as a brake on the developmental process. The compulsive collectivization of agriculture may be such an institutional liability.

Short of total revolution, what is to be the outcome of the confrontation of the irresistible force of the technological process by the seemingly immovable obstacle of a population that is vast and dense and saturated with a preindustrial culture? Can such a mass of human beings be transformed without resort to violence? We do not know. None has been yet. But we do know the principle by which alone such a transformation must be governed.

This is the third principle of economic development: that of the creation of human capital. The nature of human capital and its significance for economic development have never been more clearly stated than by Thorstein Veblen in his two essays "On the Nature of Capital," first published in the *Quarterly Journal of Economics* in 1908, and reprinted in *The Place of Science in Modern Civilization and Other Essays* in 1919. His argument was of course based on his conception of technology. Granted that technology is human skills and knowhow and the complement of tools and equipment in which such skills and knowhow are embodied and through which they are exercised; the equipment is useless without the knowhow. But given the skills and knowhow, equipment can be reproduced. Hence the most important factor in the economic life of any people is the educational level, as we now call it, of the community. A technically sophisticated community can and will equip itself with the instrumentalities of an industrial economy. There is no instance of any such community having failed to do so. Conversely, an ignorant and unskilled community cannot advance except by acquiring knowledge and skills.

Obvious as these propositions are, they have been obscured by the "conventional wisdom." As I have tried to show in the chapters that follow, we have traditionally conceived capital both as industrial plant and as accumulated funds, and in both guises have supposed it to be indispensable to economic growth. Consequently both of those conceptions have seemed quite plausible when applied to the development of the less industrialized peoples.

Thus it seems to stand to reason that lack of funds is the decisive impediment to economic growth, and vast efforts have been made to supply a flow of funds to regions in which such development is being fostered. This presumption is based in part on what is quite generally taken to be the actual experience of countries such as the United States in which very considerable and very rapid growth has indeed taken place. It is commonly assumed that such development was made possible by the advancement of funds by older and wealthier countries. But in a paper entitled "The Contribution of Foreign Investments: A Case Study of United States Foreign Investment History," published in the spring, 1961 issue of *InterAmerican Economic Affairs*, my colleague Professor Wendell Gordon has showed conclusively that such was not the case. Using figures most carefully compiled by the National Bureau of Economic Research he shows ". . . that for the period 1790 to 1900 (or 1914) net earnings on foreign investments in the United States substantially exceeded net increase in United States indebtedness. And this relationship prevailed generally throughout the whole 125year period." In short, the hardy bands of men and women who first landed on these shores were quite capable of instituting a viable economy from the very start, and of paying for whatever imports they required with their own exports. This, and not a supply of funds from abroad, is the explanation of the growth of the American economy.

It is nevertheless true, as Professor Gordon himself remarks, that this demonstration ". . . does not question the importance of capital equipment. Capital equipment, the shipment of which is financed by outright purchase in the supplying country, may make quite a contribution." The question is, To what? Students of economic development have been much troubled in recent years by a phenomenon they speak of as "economic dualism." This is the coexistence of islands of industrial enterprise in the midst of relatively primitive economies of oceanic proportions. In some cases the industrial islands have not only

been financed by foreign interests but have been built and continue to be operated by the human capital of the initiating power. In other cases the industrial islands are, or have become, largely indigenous. The industrial cities of India offer the most conspicuous example of such development. They are surrounded by rural India, where a population mass of some 350 million people live virtually untouched by the world-wide technological revolution. In short, capital equipment will work anywhere. But it will affect the lives only of those who are in direct contact with it. It does not automatically bring economic development to a whole people.

Only education can do that: hence my emphasis on the role of literacy in the "takeoff" of the Western peoples. Reading and writing (and of course ciphering) are basic skills. As such they are even more fundamental to the process of industrialization than basic industries. To qualify for even the most "unskilled" industrial employment one must be able to "read the directions" and to keep a simple record. The industrialization of Japan dates, as everyone knows, from the Meiji revolution. What is not so widely appreciated is that the Meiji revolution not only transformed the power structure and the class system of Japanese society. It was an educational revolution which brought literacy to the Japanese people and so laid a solid foundation for the industrialization that followed. The same was true of the Russian revolution. Bolshevik seizure of power was immediately followed by a massive educational effort: "Every one teach one." Without such an effort Soviet industrial achievements would have been impossible.

This is the culturearea in which the "bigpush" must be made. As development experts speak of it, the "big-push" means setting an industrial complex going of such magnitude that its momentum will draw the whole community in its wake in an accelerating process of "sustained growth." But if it is not to be island growth if the rest of the community is not to be left behind on "reservations," however populous, such as those of the American Indians the big push must be applied to the entire community. Only education (by whatever name it is to be called) can do that.

Whether success is possible in any given case remains to be determined. No doubt Hindu priests and Mohamamedan mullahs will resist the enlightenment of their people with all the wiles at their command, just as the Christian Church resisted the translation of the Bible from Latin into the various regional dialects. According to their lights, they will be right in doing so; for we must face it technological revolution brings its own values to fruition, to the detriment of all local and tribal value systems.

This is the fourth, and perhaps consummatory, principle of economic development. As I said at the beginning of this Foreword, and had already said in the closing chapters of this book, the values which are engendered in the technological process are universal values. Science, the intellectual aspect of technology, assumes and requires a commitment to the discovery of truth, and science prescribes its own conception of truth. It is a processual, or operational, or instrumental tooldefined- conception of truth.

This conception of truth and of human values generally is at variance with all tribal legends and all tribal authority; and since the technological revolution is itself irresistible, the arbitrary authority and irrational values of prescientific, preindustrial cultures are doomed. Three alternatives confront the artisans of tribal values and beliefs. Resistance, if sufficiently effective, though it cannot save the tribal values, can bring on total revolution. Or ineffective resistance may lead to sequestration like that of the American Indians. The only remaining alternative is that of intelligent voluntary acceptance of the industrial way of life and all the values that go with it.

We need make no apology for recommending such a course. Industrial society is the most successful way of life mankind has ever known. Not only do our people eat better, sleep better, live in more comfortable dwellings, get around more and in far greater comfort, and notwithstanding all the manifold dangers of the industrial way of life live longer than men have ever done before. Our people are also better informed than ever before. In addition to listening to radio and watching television, they read more books, see more

pictures, and hear more music than any previous generation or any other people ever has. At the height of the technological revolution we are now living in a golden age of scientific enlightenment and artistic achievement.

For all who achieve economic development profound cultural change is inevitable. But the rewards are considerable.

C.E.A.

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