Readings in Economics

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PREFACE

As teachers of introductory economics, we have long felt the need to supplement the standard textbooks with readings. Supplementary readings serve several purposes. They help the student relate the systematic treatment of his textbook to selected issues as seen by other scholars and by the more articulate participants in business, labor, and government. Some of these issues are timeless; others have a special contemporary relevance. Both help the student grasp a little better the significance of the topics covered in his introductory course. They add life to his studies. At the same time, supplementary readings also expose the student to a desirable variety of points of view on the more controversial questions. Finally, they also present him with some specific problems to which he can apply his economic "principles."

Like its two predecessors, our present third edition has been prepared under the guidance of those general considerations. Naturally we have dropped some selections, whose topical significance seemed to be fading, in favor of new ones with a more nearly up-to-date interest. We have not, however, made changes for the sake of change. Most of the items that give the student a brief encounter with the larger figures in the development of economic thought, from Smith and Malthus to Keynes and Schumpeter, have been retained. And we have also retained certain lesser items when we felt they were peculiarly apt in catching the students' interest. In all, as compared with the second edition, we have taken nineteen selections out and put eighteen new ones in.

These readings are designed to supplement any standard textbook in elementary economics. They are arranged so that they can be assigned concurrently with the text; or they can be used by themselves in that part of a one- or two-semester course dealing with such topics as Economic Development, Comparative Economic Systems and Isms, Industrial Organization and Price Policies, etc. Classroom experience shows how much the beginner's understanding of basic economic principles and problems is enriched by exposure to many points of view and to the current problems the American

economy faces. Bringing together such material in one volume is an efficient way of dealing with this teaching need.

Compiling these selections turned out to be more enjoyable than we had anticipated; it also took longer. Surveying the multitude of journals, books, and anthologies, we at first felt overwhelmed by the number of eligible items. Here our students, serving as guinea pigs, helped a great deal. Many items that we, as economists, thought promising they found difficult or dull or trivial. Indeed some of the stock gems of anthologies—Adam Smith on pins, Alfred Marshall on scope and method—eliminated themselves for use with present-day beginners. However, Adam Smith criticizing government interference with trade remains ever fresh and relevant.

We discovered a great bias in ourselves: as specialists we found ourselves frequently tempted to include in this collection many selections that do not properly belong there. We hope we have successfully resisted such temptations. Every item has been scrutinized by a searching test of its contemporary relevance and comprehensibility to a moderately intelligent undergraduate taking his first course in economics; if any article, however important, did not meet this test, we rejected it. For example, to meet our aim of introducing many of the great names of economics to the student, we had often to search and search before the right item could be found. Usually it could be; in the cases where it could not, we omitted the author—however great his stature.

We also had to learn to resist the temptation to use many short items. Most of these in practice turn out to be relatively useless for actual classroom assignment; fewer and longer selections are more fruitful.

The readings are arranged in rough correspondence to that of the usual course: easier institutional material comes at the beginning, and applications of principles to problems come later on. There is a rough correspondence with the order in Samuelson's *Economics*; but in making our selections we had all the other standard postwar texts in front of us, and kept in mind the goal that this volume should be a useful supplement to any one of them. Because each of our sections and selections is self-contained, any teacher can easily alter the arrangement without loss of comprehensibility and in a half hour's time arrange his own key for any text.

These readings, of course, do not represent the personal opinions of the editors. In the interests of lively debate and to prepare the student for what he will meet in later civic life, we have included arguments for and against various policies and viewpoints. In particular those viewpoints that sometimes receive less emphasis in the academic classroom have been consciously

given due weight. Thus we have relied very much on material from *Fortune* and have given numerous selections from labor spokesmen, from special industry spokesmen, and so forth. Congressional hearings, too, turned out to have great student interest. The net result will be, we hope, an enhanced and informed appreciation of the merits of the American economy, as well as a realization of the areas where it faces friendly and unfriendly criticism.

Each item has been edited. We have (1) abridged almost every selection by omitting unessential paragraphs, sentences, and phrases; (2) changed punctuation; (3) added titles and subtitles; (4) provided relevant biographical data on authors and very brief introductions; (5) cited the original source; and so forth. We have tried not to change the material in any other way. Since in most cases we selected from readily available sources, to which any scholar would always turn for quotation, we have spared the reader the annoying reminders of omitted passages. Applying various yardsticks, we found that, as far as the elementary student is concerned, such editing increases readability and interest—in a few cases markedly. But we must emphasize that this is an advantage only from the standpoint of the beginner; anyone who wishes to pursue a topic in a scholarly way will necessarily want to go back to the originals.

It is a pleasure to acknowledge help from teachers at numerous colleges and universities, who have generously provided us with reading lists and evaluations. We are grateful to our colleagues at M.I.T., and especially to Professor E. Cary Brown, whose earlier anthologies for private M.I.T. use we have shamelessly plundered. Richard S. Eckaus and Romney Robinson, both of Brandeis University, have given us valuable assistance. We should also like to thank Mrs. Fran Postma, who helped in the typing and preparation of the manuscript. Specific permissions from the authors and publishers are acknowledged at the beginning of each item. We wish to record thanks for these permissions while emphasizing that such permissions do not necessarily constitute approval from the original authors of the form of our abridgment.

Paul A. Samuelson
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1. THE STUDY OF ECONOMICS *

BEN W. LEWIS, professor of economics at Oberlin College, has devoted much time and thought to the question of economic education in American colleges and high schools. His case for the study of "The Economic Problem" is a useful point of departure for any student.

The case for economics in the schools is made of the same stuff as the case for democracy itself. The logic is inexorable, and its import in today's situation is alarming. Democracy—and this we have on the very highest authority—means government by the people. But the affairs of government, in large and increasing measure, are economic affairs. To be sure, they have political and other overtones; but no one who casts his glance even casually over the range of matters with which modern governments have to deal will doubt that these matters are economic in substance or in effect. Look for a moment: money, credit, commerce, corporations, tariffs, quotas, foreign aid, development, monopoly, fair trade, farm support, small business, oil prorates, highways, rails, communications, private power, public power, inflation, employment, management-labor relations, distribution of income, education, health, public debt—and taxes.

The relationship between government and economics is reciprocal. Somehow—and almost whether we will it or not—our economics classes are invaded by the Securities Exchange Commission, the Interstate Commerce Commission, the Communications Commission, the Power Commission, the Trade Commission, the Tariff Commission, the Economic Cooperation Administration, the Monetary Fund, the World Bank, the Labor Board, the Federal Reserve, the Treasury, the Labor, Commerce, Agriculture, and Interior Departments, the Social Security Agency, the TVA, Bonneville, the Army Engineers, the Budget Bureau, the Social Security Agency, the Council of Economic Advisers—and the current incarnation of the Hoover Commission.

The simple business of living in the United States in our age calls in-

* From Ben W. Lewis, "Economic Understanding: Why and What," *American Economic Review,* Papers and Proceedings of the Sixty-ninth Annual Meeting of the American Economics Association, May, 1957, pp. 653–670. Reprinted with kind permission of the author and the editor.

creasingly upon men to participate actively with other men in the gigantic undertaking of collective governmental decision making on a vast array of complex economic problems and issues. It is demanded of these men that they have economic understanding. The stakes, to put the matter bluntly, are the survival of democracy and human freedom. Freedom will not remain if democracy expires, and democracy will not last beyond the day when it fails to discharge the political-economic tasks which we ask it to perform. Remember, democracy is government of and by the people, and the capacity of the people to perform will set the level of performance which it is possible for democracy to attain.

Freedom and democracy are abstract concepts, but the matter of their preservation is concrete and immediate. This is our democracy, and we are "the people" on whose economic understanding and economic sense the outcome of our epic adventure in self-government rests.

It will not have escaped notice that in making the case for extending and deepening economics in the schools, I have resisted the temptation to speak of the need of each individual in our highly specialized and interdependent economy for knowledge and skills which will help him to operate more effectively as a buyer and seller of goods and services. Men need to know about credit facilities and practices, installment buying, insurance, tax forms, social security provisions, and a host of other matters in order to move intelligently in making and enjoying their living. But information about these matters is not to be accepted as economics, or in lieu of economics. Such information may come to the student as a by-product of his study of economics, and it is often both possible and productive to employ topics of this kind as a vehicle for developing economic understanding. It may be that many of these things should be taught for their own sake in the schools, if this does not mean too much time and resources diverted from more important work. But the call for more and better economics in the schools does not derive from the need for formal instruction in whether to buy or rent a home or the conditions under which term-insurance is to be preferred to an annuity. A man may be very shrewd in his personal dealings in these matters and still be sadly deficient in economic understanding.

Before setting out my understanding of the shape and nature of economic understanding, let me first clear the ground with a set of negatives. Economic understanding does not consist in the accumulation of a stock of economic information or of an array of useful economic facts. It does not consist of the possession of a "Do-it-yourself" kit of answers to public economic problems or of a package of rules of sound thinking for solving these problems. Nor does it consist of skills or precepts to be employed in the conduct of economic transactions. Economics makes use of all these things, but we are talking here about economic *understanding,* and "understanding" means *understanding.* Understanding is concerned with "why." Its interest in "what" is strictly ancillary to its interest in "why."

I believe economic understanding is to be gained through an understanding of the central core of economics that dominates all economic situations and issues—"The Economic Problem" faced by all societies of men who live and make their living together. We have economic systems or economies because we are confronted by "The Economic Problem"; economies, all economies irrespective of characteristics or qualities, are fashioned, molded and maintained solely because this problem exists. To understand "The Economic Problem" is to know the purpose and functions of economic systems, and thus to have a clear unmistakable point of reference, a firm home base, from which to proceed in considering any and all questions of economic public policy. I do not claim eternal and universal economic salvation as the reward for such understanding, but I do not hesitate to say that, in its absence, only confusion can prevail.

"The Economic Problem," let us be reminded, is simply: What disposition shall society make of its limited human and natural resources in light of the unlimited needs and desires which these resources can be used to satisfy? This is the most important concept in economics, whether regard be had for economics as a formal study or for what it has to contribute at the school level to general education.

Let me elaborate this thesis. But, first another precautionary negative before I am accused of treating you solely to a bill of thawed-out economic ideas chipped out of our nineteenth-century deep-freeze, and of ignoring the shattering impact upon our thinking of today's dynamic flows, growth modeling, and equation splitting. "The Economic Problem" is not confined to static division; it does not reflect an assumption that produce is fixed in amount and that economic alternatives relate only to kinds and direction. The problem is, what use shall be made of our resources? And I offer "use" to you as a dynamic concept which confronts us with choices bearing on fullness and growth as well as with choices of kind—with questions of "how much" and "how quickly" as well as with questions of "what?"

"The Economic Problem" emerges from two basic, interrelated conditions —(1) man's unlimited desires for goods in the aggregate and (2) the limited human and natural resources available to society for the production of goods in the aggregate.

Mankind has unlimited desires for goods in the aggregate. Each one of us wants at least a minimum of material goods and services to satisfy his basic needs—such things, for example, as food, shelter, household furnishings, clothing, medical services, and so forth. But each of us desires much more than this basic minimum of essentials. Each would like more, and more varieties, of all of these things and many things in addition. The fact is that if each of us did not have to restrain himself by some notion of what he could afford, his individual desires or wants would run on endlessly. In the aggregate, such limitless desires, multiplied in volume by the number of individuals who inhabit the world, go far beyond anything that society can ever dream of actually satisfying from its limited resources.

Society's human and natural resources available for the production of goods in the aggregate are limited. The goods and services with which we satisfy our desires do not grow in limitless quantities upon limitless trees; they do not appear out of nowhere when we rub a magic lamp or utter a "secret word." Goods must be produced (even those few that do "grow on trees" have to be picked—or picked up and prepared for use). Production requires the use of human resources (labor) and natural resources (land, water, ores, minerals, fuels, etc.), together with techniques and methods for organizing and combining and processing these resources. And we know that, basically, these resources are scarce relative to human needs and desires. Despite our marvelous advances in technology and despite the fact that our standard of material living has on the average risen markedly over the centuries, we can never produce such an abundance of goods that everyone in the world can have all he wants of everything, with lots left over.

Let there be no confusion on this point. Occasionally in our society we are confronted by so-called "surpluses" of particular products (the "butter surplus," the "potato surplus," for example, or the "surplus of used automobiles"). These represent supplies of particular goods in excess of the amounts which buyers with purchasing power at a particular time and place are willing to buy at prevailing prices. In an economic sense they represent particular overproduction in relation to effective demand for particular goods —misproduction or malproduction, or a use or allocation of society's resources of which society, by its market calculus, indicates it does not approve. In the world as we know it, "too many" potatoes means "too few" of other things; it can never mean "too much of everything." Breakdowns in society's institutional arrangements for bringing goods and desires together are not to be interpreted as evidence of society's power to produce without limit. By the same token, we must not be misled by terms and phrases which suggest contradictions where none exist. Specifically, there is no contradiction between

an "economy of scarcity" and an "economy of plenty," where "scarcity" is understood as a condition of economizing and "plenty" is understood as its goal.

The reason we bother to manage or economize our resources is simply that, since they are limited in supply relative to the uses to which we would like to put them—that is, since in an economic sense they are "scarce"—it makes a difference to us how they are used. The degree and manner and direction of their use and the disposition of the product resulting from their use have, of sheer necessity, been a primary, basic concern of all societies through the ages. This is what the study of "economizing," or economics as a social science, is about. It is *all* that economics is about.

Presumably any society will want its scarce resources to be "fully" employed (particularly its labor resources), and so used that their power to produce is great and expanding, and that the "right" goods are produced in the "right" amounts and, in each case, by using the "best" combinations of resources. Any society will be concerned, too, that the goods which are produced from its scarce resources are divided fairly among its members.

But the use of such terms as "fully," "right," "best," "fairly," etc., in defining the disposition to be made of resources suggests that alternative uses are possible and that society is faced with the never-ending problem of making millions of continuous and simultaneous decisions in the management or economizing of its resources. Surely we want our resources to be used fully and in the right and best way, but how full is fully? Exactly which ways are right and best and fair? We must remember, too, that society's answers to some of the questions may condition and set limits on its answers to other questions: a decision to promote technological advance *may* make employment less stable, a decision to divide the aggregate product more evenly among everyone *may* have an adverse effect upon the total amount produced, and public policies designed to bring about full employment *may* also promote productive inefficiency and aggravated inequities as an undesired consequence. Nonetheless, answers must be provided by society to "The Economic Problem" faced by men who want to live in harmony and well-being in a world where not everyone can have all he wants of the goods and services that make up his material living.

Thus it is that all societies of men who make their living together must inevitably establish and maintain (or acquiesce in) an economic system or economy—a set of man-made arrangements to provide answers to the all-important economic questions which make up the over-all economic problem: How fully shall our limited resources be used? How shall our resources be organized and combined? Who shall produce how much of what? To

whom and in what amounts shall the resulting product be divided among the members of society?

It is the job of the economic system (any economic system) to make the decisions and turn out the answers that society wants, whatever they may be, to these questions; and economics as a discipline is a study of "The Economic Problem" in all its parts, and of the institutional arrangements which men have devised to grind out the necessary answers to the questions which it poses.

The data and materials, the concepts and the "principles" with which the study of economics is concerned and the problems to which it attends all stem from and bear on this central problem: How do we and how might we dispose of the resources upon which the level and quality of our material life depend? This is "The Economic Problem." All other economic problems and issues—for example, the farm problem, the labor-management problem, the problem of taxation, the inflation problem, the problem of full employment, the antitrust problem—are simply partial manifestations of it in particular quarters and under particular conditions and can be dealt with effectively only in conscious relation to the central problem—the *core* of economics. This should be the starting point of our economics teaching, and its destination. Between the starting point and the terminus, students should become familiar with the significant features of our own mid-twentieth century economy with its ever changing combinations of individual markets and collective governmental economic activities and processes. They should become aware of its rationale and of how it has come to be what it now is and of how it contrasts with earlier and other economic systems. They need to know something of the structure and operations of our major economic institutions and the mechanics of income determination, resource guidance, and income distribution. They should experience the centering of issues and the marshaling and weighing of considerations involved in the determination of policy in one or two areas of public economic policy. But all of this—systems, processes, institutions, mechanics, policy problems—I repeat, all of this should be tied constantly to the core of economics—"The Economic Problem"—and related at every turn to the purposes for which men build economic systems because that problem exists.

A person who possesses economic understanding will relate his consideration of public economic issues, easily and purposively, to the central core—to the starting point, to home base. He will have a sense of the interrelationship of economic phenomena and problems—the "oneness" of the economy—the tie-in between each sector of the economy and the whole and between the economy and himself.

He will know his "way around" and his "way home" in the economy. He will face such choices as those between alternative satisfactions, between present and future goods, between alternative methods of production, between production and leisure, between stability and security and innovation and progress, and between economizing by the market and economizing by government, under whatever conditions and guises these choices may appear, with awareness and a balanced sense of consequences.

He will know that products come from production and will have an appreciation of the contribution made by diverse groups to the totality of production.

Familiarity with the mechanics of economics will not blind him to the reality that the operating forces in any political economy are human. He will know that economic life involves, essentially, the rational living together of human beings—a constant adjustment and readjustment in economic matters comparable to, indeed a part of, the constant adjustment and readjustment that characterize the total business of living together. He will realize that these adjustments frequently bring discomfort, even pain, to those established (vested) interests that are required to adjust, but that failure of one group to adjust may mean privation for other groups and stagnation for the economy as a whole. And he will relate this to situations in which his own interest lies in resistance to change (tariff, price supports, "fair trade," "featherbedding") as well as to those in which his own interest would be served by the adjustment of others.

He will distinguish between areas where "scientific" economic answers are possible, areas where such answers are impossible because necessary information or data are absent, and areas where only value judgments are called for and possible. He will realize it is not the function of economics to provide answers to ethical or value problems but, rather, to help to define and identify such problems and to place them in sharper focus.

Finally, his realization that, in the very nature of the case, economic problems permit of very few "right" answers will be one measure of the depth of his economic understanding—and the realization will fill him with a sense not of futility but of purpose. It will point up for him his personal role in the political economy in which he lives.

This is what economic understanding can mean. This is what we would like to have for all of our people as members of a free, democratic society. We will never have all of it for everyone, but we cannot afford to seek and work for less.

2. FACTS AND THEORY IN ECONOMICS *

SIR HENRY CLAY, who taught theoretical economics at Oxford and Manchester University and also applied economics at the Bank of England, deals here in down-to-earth terms with the vexing question of "theory" and "practice."

NATURE OF ECONOMIC THEORY

The practical man is suspicious of "theory." His suspicion is justified, if "theory" is used as a substitute for ascertainable facts. But generalization, the making of theories, is unavoidable. Facts do not explain themselves. In some problems, the causes of trade fluctuations for example, the multitude of facts is so great that we cannot begin to collect them unless we collect on some plan; we shall be overwhelmed if we do not take with us to the facts some coordinating idea; in other words if we do not frame a theory and take it to the facts to test it by them. On some important questions we cannot hope to enumerate *all* the ascertainable facts; if we wait to form our judgment on the influences that fix wages until we have examined all the ascertainable facts, we shall never form a judgment, their number is so great. On other problems some decision has to be reached for purposes of action, although facts are scarce or unobtainable; taxes are often based on theories which it has been impossible to verify, the collection of the taxes subsequently eliciting the facts that are needed to verify the theories.

Again facts may be contradictory, at any rate on the surface: it is a fact that the introduction of labor-saving machinery has on many occasions displaced labor; it is also a fact that the amount of labor-saving machinery in use has steadily increased for generations without being accompanied by any corresponding increase in the proportion of the population unemployed. Or the facts may bear more than one interpretation. Facts are seldom simple and usually complicated; theoretical analysis is needed to unravel the complications and interpret the facts before we can understand them.

* From Henry Clay, *Economics for the General Reader* (The Macmillan Company, New York, 1934), pp. 9–12. Reprinted with kind permission of the publisher.

THEORY AND PRACTICE

The practical man's objection to "theory" is a valuable protest against hasty generalization on an insufficient basis of fact or on an inadequate survey of available facts. But the opposition of "facts" and "theory" is a false one; their true relation is complementary. We cannot in practice consider a fact without relating it to other facts, and the relation is a theory. Facts by themselves are dumb; before they will tell us anything we have to arrange them, and the arrangement is a theory. Theory is simply the unavoidable arrangement and interpretation of facts, which gives us generalizations on which we can argue and act, in the place of a mass of disjointed particulars. What we are seeking in our study of economic problems, whether it is a conscious and systematic study or not, are principles. We want to know what, in the operations we observe, is the rule, what is the exception; why certain arrangements are as they are, and what will happen if we change them. Unrelated facts will not answer our questions; we want chains of facts, regularities, relations of cause and effect. We are seeking principles in order that we may act on them, because the ultimate motive of economic study is not curiosity, but the necessity to act, and rational action must be based on principles; facts are of use only as they represent or illustrate principles. Economics, therefore, in order to discover the principles on which the present system is constructed and operates, surveys the facts of the system, arranges them, analyses them, generalizes on the basis of them. Like every other science it advances by constantly discarding generalizations which newly discovered facts have revealed as unsound or inadequate, and devising new generalizations which will cover and explain the new facts.

Conscious and deliberate theorizing is necessary, because there is so much unconscious and haphazard theorizing. The man who opens a discussion by saying that he is going to "deal with facts not theories" does not mean that he is going to refrain from generalizations; he usually means that he wishes to confine attention to a few facts that support his generalization, and to ignore all facts that conflict with it. The field of political controversy is strewn with hasty generalizations treated as if they were established truths, and used as the basis of argument. "Trade follows the flag," "Wages depend on the cost of living," "The present competitive system," are examples; and even more insidious are the theories of wages, profits, value, exchange, on which people base their judgment of economic problems without ever formulating them even to themselves. The time-honored "Law of Supply and Demand" has been misused so long to justify quiescence in the face of obvious evils that a natural reaction has led to the view that it can be ignored.

INDIVIDUAL PRESUPPOSITIONS AND THEORY

One of the great difficulties of all study of which man and his activities are the subject matter is that the student, being himself part of the subject matter of the study, is likely to be influenced in his judgments by assumptions, based on interests and prejudices, of which he is unconscious. The danger is particularly great in the study of the economic system, and the most careful student can hardly hope to attain a perfectly impartial judgment. It is doubly important, therefore, that economic theorizing should be carried on "in the open," that the assumptions underlying economic policies should be brought to light, and the "views" (or unconscious theories) on which people in practice base their judgment of problems of wages, prices and other things, should be stated explicitly, in order that they may be critically examined. If everybody is, as has been said, an economist, certainly everybody has his own economic theories; if those theories are not formed by conscious and deliberate study, they will be based on a limited experience and on prejudices, interests, ideals, which mislead the judgment just because they are unsuspected.

3. POPULATION GROWTH AND POVERTY *

THOMAS ROBERT MALTHUS (1766–1834), a distinguished member of the "Classical School" of British economists, is best known for the views on population set forth here. His argument, that excessive population impairs economic welfare, is still fundamental; his special argument, that misery is unavoidable if the preventive checks are weak, is still all too relevant in many parts of the world.

PART I: RATIOS OF THE INCREASE OF POPULATION AND FOOD

In an inquiry concerning the improvement of society, the mode of conducting the subject which naturally presents itself, is,

1. To investigate the causes that have hitherto impeded the progress of mankind towards happiness; and,

2. To examine the probability of the total or partial removal of these causes in future.

The principal object of the present essay is to examine the effects of one great cause intimately united with the very nature of man; which, though it has been constantly and powerfully operating since the commencement of society, has been little noticed by the writers who have treated this subject. The facts which establish the existence of this cause have, indeed, been repeatedly stated and acknowledged; but its natural and necessary effects have been almost totally overlooked; though probably among these effects may be reckoned a very considerable portion of that vice and misery, and of that unequal distribution of the bounties of nature, which it has been the unceasing object of the enlightened philanthropist in all ages to correct.

The cause to which I allude, is the constant tendency in all animated life to increase beyond the nourishment prepared for it.

It is observed by Dr. Franklin, that there is no bound to the prolific nature of plants or animals, but what is made by their crowding and interfering with each other's means of subsistence. Were the face of the earth, he says, vacant of other plants, it might be gradually sowed and overspread with one

* From T. R. Malthus, *An Essay on the Principle of Population* (Reeves and Turner, London, 1878, 8th ed.).

kind only, as for instance with fennel: and were it empty of other inhabitants, it might in a few ages be replenished from one nation only, as for instance with Englishmen.

This is incontrovertibly true. Through the animal and vegetable kingdoms Nature has scattered the seeds of life abroad with the most profuse and liberal hand; but has been comparatively sparing in the room and the nourishment necessary to rear them. The germs of existence contained in this earth, if they could freely develop themselves, would fill millions of worlds in the course of a few thousand years. Necessity, that imperious, all-pervading law of nature, restrains them within the prescribed bounds. The race of plants and the race of animals shrink under this great restrictive law; and man cannot by any efforts of reason escape from it.

Population has this constant tendency to increase beyond the means of subsistence, and it is kept to its necessary level by these causes. The subject will, perhaps, be seen in a clearer light, if we endeavour to ascertain what would be the natural increase of population, if left to exert itself with perfect freedom; and what might be expected to be the rate of increase in the productions of the earth, under the most favourable circumstances of human industry.

THE POTENTIAL RATE OF INCREASE OF POPULATION

It will be allowed that no country has hitherto been known, where the manners were so pure and simple, and the means of subsistence so abundant, that no check whatever has existed to early marriages from the difficulty of providing for a family, and that no waste of the human species has been occasioned by vicious customs, by towns, by unhealthy occupations, or too severe labour. Consequently in no state that we have yet known, has the power of population been left to exert itself with perfect freedom.

In the northern states of America, where the means of subsistence have been more ample, the manners of the people more pure, and the checks to early marriages fewer, than in any of the modern states of Europe, the population has been found to double itself, for above a century and a half successively, in less than twenty-five years. In the back settlements, where the sole employment is agriculture, and vicious customs and unwholesome occupations are little known, the population has been found to double itself in fifteen years. Even this extraordinary rate of increase is probably short of the utmost power of population. Sir William Petty supposes a doubling possible in so short a time as ten years.

But, to be perfectly sure that we are far within the truth, we will take the slowest of these rates of increase, a rate in which all concurring testimonies

agree, and which has been repeatedly ascertained to be from procreation only.

It may safely be pronounced, therefore, that population, when unchecked, goes on doubling itself every twenty-five years, or increases in a geometrical ratio.

THE POTENTIAL RATE OF INCREASE OF FOOD PRODUCTION

The rate according to which the productions of the earth may be supposed to increase, it will not be so easy to determine. Of this, however, we may be perfectly certain, that the ratio of their increase in a limited territory must be of a totally different nature from the ratio of the increase of population. A thousand millions are just as easily doubled every twenty-five years by the power of population as a thousand. But the food to support the increase from the greater number will by no means be obtained with the same facility. Man is necessarily confined in room. When acre has been added to acre till all the fertile land is occupied, the yearly increase of food must depend upon the melioration of the land already in possession. This is a fund, which, from the nature of all soils, instead of increasing, must be gradually diminishing. But population, could it be supplied with food, would go on with unexhausted vigour; and the increase of one period would furnish the power of a greater increase the next, and this without any limit.

From the accounts we have of China and Japan, it may be fairly doubted, whether the best-directed efforts of human industry could double the produce of these countries even once in any number of years. There are many parts of the globe, indeed, hitherto uncultivated, and almost unoccupied; but even in new colonies, a geometrical ratio increases with such extraordinary rapidity, that the advantage could not last long. If the United States of America continue increasing, which they certainly will do, though not with the same rapidity as formerly, the Indians will be driven further and further back into the country, till the whole race is ultimately exterminated, and the territory is incapable of further extension.

The science of agriculture has been much studied in England and Scotland; and there is still a great portion of uncultivated land in these countries. Let us consider at what rate the produce of this island might be supposed to increase under circumstances the most favourable to improvement.

If it be allowed that by the best possible policy, and great encouragements to agriculture, the average produce of the island could be doubled in the first twenty-five years, it will be allowing, probably, a greater increase than could with reason be expected.

In the next twenty-five years, it is impossible to suppose that the produce

could be quadrupled. It would be contrary to all our knowledge of the properties of land. It must be evident to those who have the slightest acquaintance with agricultural subjects, that in proportion as cultivation extended, the additions that could yearly be made to the former average produce must be gradually and regularly diminishing. That we may be the better able to compare the increase of population and food, let us make a supposition, which, without pretending to accuracy, is clearly more favourable to the power of production in the earth, than any experience we have had of its qualities will warrant.

Let us suppose that the yearly additions which might be made to the former average produce, instead of decreasing, which they certainly would do, were to remain the same; and that the produce of this island might be increased every twenty-five years, by a quantity equal to what it at present produces. The most enthusiastic speculator cannot suppose a greater increase than this. In a few centuries it would make every acre of land in the island like a garden.

It may be fairly pronounced, therefore, that, considering the present average state of the earth, the means of subsistence, under circumstances the most favourable to human industry, could not possibly be made to increase faster than in an arithmetical ratio.

THE POTENTIAL RATES OF INCREASE OF POPULATION AND FOOD COMPARED

The necessary effects of these two different rates of increase, when brought together, will be very striking. Let us call the population of this island eleven millions; and suppose the present produce equal to the easy support of such a number. In the first twenty-five years the population would be twenty-two millions, and the food being also doubled, the means of subsistence would be equal to this increase. In the next twenty-five years, the population would be forty-four millions, and the means of subsistence only equal to the support of thirty-three millions. In the next period the population would be eighty-eight millions, and the means of subsistence just equal to the support of half that number. And, at the conclusion of the first century, the population would be a hundred and seventy-six millions, and the means of subsistence only equal to the support of fifty-five millions, leaving a population of a hundred and twenty-one million totally unprovided for.

Taking the whole earth, instead of this island, emigration would of course be excluded; and, supposing the present population equal to a thousand millions, the human species would increase as the numbers 1, 2, 4, 8, 16, 32, 64, 128, 256, and subsistence as 1, 2, 3, 4, 5, 6, 7, 8, 9. In two centuries the population would be to the means of subsistence as 256 to 9; in three centuries as

4096 to 13, and in two thousand years the difference would be almost incalculable.

In this supposition no limits whatever are placed to the produce of the earth. It may increase for ever and be greater than any assignable quantity; yet still the power of population being in every period so much superior, the increase of the human species can only be kept down to the level of the means of subsistence by the constant operation of the strong law of necessity, acting as a check upon the greater power.

PART II: OF THE GENERAL CHECKS TO POPULATION, AND THE MODE OF THEIR OPERATION

The ultimate check to population appears then to be a want of food, arising necessarily from the different ratios according to which population and food increase. But this ultimate check is never the immediate check, except in cases of actual famine.

The immediate check may be stated to consist in all those customs, and all those diseases, which seem to be generated by a scarcity of the means of subsistence; and all those causes, independent of this scarcity, whether of a moral or physical nature, which tend prematurely to weaken and destroy the human frame.

These checks to population, which are constantly operating with more or less force in every society, and keep down the number to the level of the means of subsistence, may be classed under two general heads—(i) the preventive, and (ii) the positive checks.

THE PREVENTIVE AND POSITIVE CHECKS DESCRIBED

(i) The preventive check, as far as it is voluntary, is peculiar to man, and arises from that distinctive superiority in his reasoning faculties, which enables him to calculate distant consequences. The checks to the indefinite increase of plants and irrational animals are all either positive, or, if preventive, involuntary. But man cannot look around him, and see the distress which frequently presses upon those who have large families; he cannot contemplate his present possessions or earnings, which he now nearly consumes himself, and calculate the amount of each share, when with very little addition they must be divided, perhaps, among seven or eight, without feeling a doubt whether, if he follow the bent of his inclinations, he may be able to support the offspring which he will probably bring into the world. In a state of equality, if such can exist, this would be the simple question. In the present state of society other considerations occur. Will he not lower his rank

in life, and be obliged to give up in great measure his former habits? Does any mode of employment present itself by which he may reasonably hope to maintain a family? Will he not at any rate subject himself to greater difficulties, and more severe labour, than in his single state? Will he not be unable to transmit to his children the same advantages of education and improvement that he had himself possessed? Does he even feel secure that, should be have a large family, his utmost exertions can save them from rags and squalid poverty, and their consequent degradation in the community? And may he not be reduced to the grating necessity of forfeiting his independence, and of being obliged to the sparing hand of Charity for support?

These considerations are calculated to prevent, and certainly do prevent, a great number of persons in all civilised nations from pursuing the dictate of nature in an early attachment to one woman.

If this restraint do not produce vice, it is undoubtedly the least evil that can arise from the principle of population. Considered as a restraint on a strong natural inclination, it must be allowed to produce a certain degree of temporary unhappiness; but evidently slight, compared with the evils which result from any of the other checks to population; and merely of the same nature as many other sacrifices of temporary to permanent gratification, which it is the business of a moral agent continually to make.

When this restraint produces vice, the evils which follow are but too conspicuous. A promiscuous intercourse to such a degree as to prevent the birth of children, seems to lower, in the most marked manner, the dignity of human nature. It cannot be without its effect on men, and nothing can be more obvious than its tendency to degrade the female character, and to destroy all its most amiable and distinguishing characteristics. Add to which, that among those unfortunate females, with which all great towns abound, more real distress and aggravated misery are, perhaps, to be found, than in any other department of human life.

When a general corruption of morals, with regard to the sex, pervades all the classes of society, its effects must necessarily be, to poison the springs of domestic happiness, to weaken conjugal and parental affection, and to lessen the united exertions and ardour of parents in the care and education of their children:—effects which cannot take place without a decided diminution of the general happiness and virtue of the society; particularly as the necessity of art in the accomplishment and conduct of intrigues, and in the concealment of their consequences necessarily leads to many other vices.

(ii) The positive checks to population are extremely various, and include every cause, whether arising from vice or misery, which in any degree contributes to shorten the natural duration of human life. Under this head, therefore,

may be enumerated all unwholesome occupations, severe labour and exposure to the seasons, extreme poverty, bad nursing of children, great towns, excesses of all kinds, the whole train of common diseases and epidemics, wars, plague, and famine.

On examining these obstacles to the increase of population which I have classed under the heads of preventive and positive checks, it will appear that they are all resolvable into moral restraint, vice, and misery.

Of the preventive checks, the restraint from marriage which is not followed by irregular gratifications may properly be termed moral restraint.

Promiscuous intercourse, unnatural passions, violations of the marriage bed, and improper arts to conceal the consequences of irregular connexions, are preventive checks that clearly come under the head of vice.

Of the positive checks, those which appear to arise unavoidably from the laws of nature, may be called exclusively misery; and those which we obviously bring upon ourselves, such as wars, excesses, and many others which it would be in our power to avoid, are of a mixed nature. They are brought upon us by vice, and their consequences are misery.

THE MODE OF OPERATION OF PREVENTIVE AND POSITIVE CHECKS

The sum of all these preventive and positive checks, taken together, forms the immediate check to population. In every country some of these checks are, with more or less force, in constant operation; yet, notwithstanding their general prevalence, there are few states in which there is not a constant effort in the population to increase beyond the means of subsistence. This constant effort as constantly tends to subject the lower classes of society to distress, and to prevent any great permanent melioration of their condition.

These effects seem to be produced in the following manner. The constant effort towards population, which is found to act even in the most vicious societies, increases the number of people before the means of subsistence are increased. The food, therefore, which before supported eleven millions, must now be divided among eleven millions and a half. The poor consequently must live much worse, and many of them be reduced to severe distress. The number of labourers also being above the proportion of work in the market, the price of labour must tend to fall, while the price of provisions would at the same time tend to rise. The labourer therefore must do more work, to earn the same as he did before. During this season of distress the discouragements to marriage and the difficulty of rearing a family are so great, that the progress of population is retarded. In the mean time, the cheapness of labour, the plenty of labourers, and the necessity of an increased industry among them, encourage cultivators to employ more labour upon their land, to turn

up fresh soil, and to manure and improve more completely what is already in tillage, till ultimately the means of subsistence may become in the same proportion to the population, as at the period from which we set out. The situation of the labourer being then again tolerably comfortable, the restraints to population are in some degree loosened; and, after a short period, the same retrograde and progressive movements, with respect to happiness, are repeated.

One principal reason why this oscillation has been less remarked, and less decidedly confirmed by experience than might naturally be expected, is, that the histories of mankind which we possess are, in general, histories only of the higher classes. We have not many accounts that can be depended upon, of the manners and customs of that part of mankind, where these retrograde and progressive movements chiefly take place.

A circumstance which contributed to conceal this oscillation from common view, is the difference between the nominal and real price of labour. It very rarely happens that the nominal price of labour universally falls; but we well know that it frequently remains the same, while the nominal price of provisions has been gradually rising. An increased number of labourers receiving the same money-wages will necessarily, by their competition, increase the money-price of corn. This is, in fact, a real fall in the price of labour; and, during this period, the condition of the lower classes of the community must be gradually growing worse. But the farmers and capitalists are growing rich from the real cheapness of labour, and thus the wages of labour, and consequently the condition of the lower classes of society might have progressive and retrograde movements, though the price of labour might never nominally fall.

But without attempting to establish these progressive and retrograde movements in different countries, which would evidently require more minute histories than we possess, and which the progress of civilisation naturally tends to counteract, the following propositions are intended to be proved:—

1. Population is necessarily limited by the means of subsistence.

2. Population invariably increases where the means of subsistence increase, unless prevented by some very powerful and obvious checks.

3. These checks, and the checks which repress the superior power of population, and keep its effects on a level with the means of subsistence, are all resolvable into moral restraint, vice and misery.

4. BIRTH RATES AND MANKIND'S RESOURCES *

MORTON CLURMAN, a member of the staff of the American Jewish Congress, here considers the relevance of Malthusian doctrine for the modern world. From the views of the pessimists and of the optimists, he extracts what appear to him to be the most significant conclusions for major areas of the world.

Almost forty years ago an agricultural economist, George F. Warren, wrote: "The questions whether our soil is exhausted and how we are to be fed in the future, are constantly being discussed in newspapers and magazines." This ought to remind us that the modern food-versus-population controversy has been around for a long time. But it has been percolating with exceptional vigor ever since William Vogt's *Road to Survival* and Fairfield Osborn's *Our Plundered Planet* reopened the dispute four years ago.

In the days before I.B.M. machines it was possible for any reasonably intelligent man to get into the middle of a discussion like this and take his stand; the facts, being unavailable, played a minor role in shaping opinion. Today, in the age of science, any argument not buttressed by a maze of figures is considered suspect. But where, as in the present case, both sides to a dispute can assemble an equally impressive stack of charts, tables, and diagrams, the statistics may merely bury the argument without settling it.

For example, the neo-Malthusians, or pessimists, tell us that every year the world's population is growing by slightly more than 1 per cent. That makes twenty-five million more mouths to feed every twelve months and this number accelerates as the earth's population expands. At the present rate of increase, the world's population, now almost two and a quarter billion, will reach three billion in fifty years, over four billion in one hundred years, nearly eighteen billion in two hundred years, and one hundred billion in four hundred years.

Now, only 2 per cent of the earth's surface is crop land on which food can be grown efficiently, which means that there are about two arable acres per person. This figure is shrinking rapidly as population increases, yet at the

* From Morton Clurman, "Will Births Outstrip Mankind's Resources?", *Commentary*, March, 1952. Reprinted with kind permission of the author and the publisher.

present time more than three-fifths of the world's inhabitants live on near-starvation rations. With the United States' farming practices, which are superior to most, it takes two and one-half acres to keep one person well fed and properly clothed. So our worldwide two-acre average is already too low —with the future gloomy indeed.

But things look a lot brighter when the optimists take their turn at the computing machines. Food production can be increased at the rate of 1.5 per cent per annum—this tops the population increase by almost .5 per cent, so the table can stay well ahead of the cradle. It is only the populations in the backward, unindustrialized portions of the globe that are increasing at an alarming rate—with the industrialization and urbanization of these backward lands their population growth will begin to taper off in a civilized fashion. Even more promising are the spectacular developments in technology that promise to master nature's secret of food manufacture by photosynthesis and thus provide cheap and abundant food for many billions more people. In addition, new agricultural techniques combined with the development of new species such as hybrid corn are opening an unprecedented era of abundance. Thus, in 1944, farmers in the United States harvested 44 per cent more corn, using only 5 per cent more acreage, than they did in any year from 1935 to 1939. This represents a truly spectacular increase, in less than a decade, of 32 per cent per acre. The yield per acre of cotton jumped from 174 pounds per acre in 1928–1932 to 260 pounds in 1941–1945—an increase of 50 per cent in a dozen years. What we can do, so can others; the world has little to worry about. So runs the argument of the optimists.

Whom are we to believe?

The argument of the pessimists goes back to Malthus, who said in the first of his three main propositions: "It may be safely pronounced, therefore, that population, when unchecked, goes on doubling itself every twenty-five years, or increases in a geometrical ratio. . . . Considering the present average state of the earth, the means of subsistence, under conditions most favorable to human industry, could not be made to increase faster than in an arithmetical ratio. . . . Supposing the present population to be a thousand millions, the human species would increase as the numbers 1, 2, 4, 8, 16, 32, 64, 128, 256; and subsistence as 1, 2, 3, 4, 5, 6, 7, 8, 9; in two centuries the population would be to the means of subsistence as 256 to 9, in three centuries as 4,096 to 13. . . ."

But, of course, there are the "population checks," which Malthus divided into two kinds—"positive" and "preventive." Positive checks were those imposed by nature—famine, disease, wars, and vice; while preventive checks were those voluntarily imposed by man on himself, such as celibacy, delayed marriage, or continence after marriage. Birth control, except when based on continence, Malthus classified as vice.

Under certain specific conditions, the Malthusian doctrine does have an important measure of truth. It is drawn by analogy from the least rigorous of the natural sciences, biology, and it can be applied to man in direct proportion to man's social proximity to the animal world. In pre-industrial and primitive agrarian economies, the food supply is the chief limiting factor on population growth and it is easily possible to demonstrate this relation.

Some two years ago, Warren S. Thompson, director of the Scripps Foundation for Research in Population Problems, analyzed the doubling of Sweden's population from 1751 to 1850. He showed that although the rate of increase for the entire century averaged 6.7 per 1,000 yearly, actually there were enormous fluctuations varying from a natural increase of 16 per 1,000 during one year to a decrease of 27 per 1,000 in another. In these fluctuations, the key factor was the death rate, which varied far more than the birth rate. In every year in which deaths were abnormally high, says Thompson, "the high death rate was preceded by a period of scarcity of food, generally accompanied by an increase in epidemic disease." Food also affected the birth rates, though less severely, with good harvests being followed by an increase in marriages, and a corresponding rise in births. Thus, the death rate followed the harvest curve inversely, the marriage and birth rates followed it directly.

But when the first proposition of Malthus is applied to a Western industrial civilization it collapses completely. For this proposition assumes that population always and inevitably presses on food supplies—in other words, that there is a high and constant birth rate. Yet the Swedish figures, extended beyond 1850 to modern times, show that the conquest of epidemic and famine has not only lowered the mortality rate from about 20 per thousand to less than 10, but that, at the same time, the birth rate has declined from 31 per 1,000 to about 14 per 1,000 in the 1930's, indicating a virtually stationary population. Sweden typifies the highly un-Malthusian population situation in the industrial nations—low birth rates, low death rates, and a low or stationary rate of natural increase.[1]

To understand how badly the Malthusian proposition really operates when applied indiscriminately to the modern world, one has only to stand the axiom on its head and observe its superiority in this inverted form. In other words, a very good case can be made out for the thesis that population in-

[1] The postwar spurt in births has somewhat upset the population experts. There are indications, however, that the birth rate has again begun to recede.

crease is *inversely* proportional to the food supply. Ireland, Scandinavia, and Australia, all areas that consume more than 3,000 calories daily, have a low rate of natural increase. India, North Africa, and Central America, which consume less than 2,000 calories daily, have a high rate of natural increase. In general, it is in the areas that live on a subsistence food level that population is increasing fastest. Countries in which there is plenty to eat have relatively stationary populations.

The operation of Malthus's powerful law has been dampened, not so much by the new-fangled techniques of Farmer Simpson, as a *Time* article too glibly put it, as by the fact that human beings obstinately refuse to act like fruit flies as soon as they discover the conveniences of modern civilization. Social and cultural factors, rather than the bio-technical one of food production, have proved decisive in determining the rate of natural increase in industrial societies. But most of the world today is still living under pre-industrial conditions, where Malthus's doctrine *is* applicable and where the population *does* fluctuate very much according to the availability of food. It is the failure to recognize this distinction in population patterns, to narrow the field to specific areas and sharply defined problems, that gives most of the writing on the subject, whether pro-Malthusian or con, a nebulous, inconclusive quality.

A happy exception to this rule is the previously mentioned article by Warren Thompson. Thompson divides the countries of the world into three areas. Group A, consisting of most of Western Europe, Oceania, and North America, makes up about 20 per cent of the world's population. It is characterized by low birth rates, low death rates, high caloric intake (about 3,000 per day), and a relatively stable population. The food problem of these countries is negligible, and there seems to be no doubt of their ability to feed their inhabitants in any foreseeable future.

Group B, another 20 per cent of the world's population, consists of Eastern and Southeastern Europe, Japan, Spain, and a few South American countries like Brazil and Argentina. Here there is a low but rising industrial productivity, a high but falling birth rate, and a medium but falling death rate. These areas have the highest rates of natural increase, largely because their birth rate is not falling as fast as the death rate. Since they enjoy a food level of 2,300 to 2,800 calories per day—somewhat better than subsistence—the food-versus-population problem in these countries will depend largely on how fast they industrialize and what measures are taken to increase their food supplies.

Group C is the critical area. Taking in Asia and its adjacent islands, most of Africa, and most of South and Central America, it contains three-fifths of

the world's population, lives on a semi-starvation level, about 2,000 calories per day or less, and starkly illustrates the Malthusian pressure of population on food. The area has a high and constant birth rate, and a high but widely fluctuating death rate, which drops when the harvests are good, soars when they are bad. It is an area whose perpetual state of crisis is broken only by periodic catastrophes. The immensity of its food problems reminds one of the grim joke Jimmy Durante used to tell about his family, consisting of his "mudder, fadder, and fourteen kids," all of whom lived in a leaky one-room shack with nobody working. If they were lucky they had a dry crust of bread for them all to gnaw on. Things went on this way for a number of years but then, said Durante, "came the depression."

It is this area that constitutes the real problem—the three-fifths of mankind that live on a starvation level. They have probably always lived this way, but what is different today is that assorted political fanaticisms are sweeping these countries on an unprecedented scale, and are combining with hunger to make an explosive mixture. And with Russia busily tossing matches, a problem that the richer nations once might shrug off now threatens to ignite the world.

Kingsley Davis's imposing and remarkable book *The Population of India and Pakistan* (Princeton University Press, 1951) is an excellent example of the techniques which must be applied to make any sense out of the great Malthusian debate. India's demographic statistics go back to 1871, when the first census estimated a population of 255 million. The next fifty years were marked by the same wide variation in death rates and population growth that Thompson showed for Sweden in the century between 1750 and 1850. Thus, in 1871–1881, the population rose only 2 million, but the following decade the jump was 15 million. Then, in 1891–1901 the increase sank again to 3 million, but it leaped to almost 18 million during the next ten years. In the succeeding decade, the increase once more dropped, this time to less than 3 million.

The reason for these peculiar fluctuations is known, and it fits in well with the general picture of the Malthusian countries. The Indian famine of 1876 slashed that decade's increase; the decade of 1891–1901 was marked by another famine; the 1911–1921 period was punctuated by the terrible influenza epidemic of 1918. Over the entire fifty years from 1871 to 1921 the population of India and what is now Pakistan rose from 255 to only 305 million, or about .35 percent each year.

Then the picture changed completely. The 1931 census showed a ten-year growth of 33 million. The 1941 census came through with another ten-year