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Edited by Mancur Olson and Hans H. Landsberg

A line drawing of a hand with roots extending downwards, symbolizing the 'No-Growth Society'. The hand is open, palm facing forward, with five fingers spread. The roots are thick and branch out into many smaller, hair-like roots at the bottom. The drawing is simple and uses black lines on a light background.

THE NO-GROWTH SOCIETY

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Essays by

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Publisher's Note

The publisher has gone to great lengths to ensure the quality of this reprint but points out that some imperfections in the original may be apparent

CONTENTS

<i>Preface</i>	vii
MANCUR OLSON • Introduction	1
KINGSLEY DAVIS • Zero Population Growth: The Goal and the Means	15
JOHN P. HOLDREN • Population and the American Predicament: The Case Against Complacency	31
NORMAN B. RYDER • Two Cheers for ZPG	45
E. J. MISHAN • Ills, Bads, and Disamenities: The Wages of Growth	63
KENNETH E. BOULDING • The Shadow of the Stationary State	89
RICHARD ZECKHAUSER • The Risks of Growth	103
MARC J. ROBERTS • On Reforming Economic Growth	119
HARVEY BROOKS • The Technology of Zero Growth	139
LESTER BROWN • Rich Countries and Poor in a Finite, Interdependent World	153
WILLARD R. JOHNSON • Should the Poor Buy No Growth?	165
WILLIAM ALONSO • Urban Zero Population Growth	191
ROLAND N. MC KEAN • Growth vs. No Growth: An Evaluation	207
MANCUR OLSON, HANS H. LANDSBERG, JOSEPH L. FISHER • <i>Epilogue</i>	229
<i>Index</i>	247

PREFACE

THIS book is the product of a unique collaboration between *Dædalus*, the Journal of the American Academy of Arts and Sciences, and Resources for the Future. Our thanks are due to both those institutions for recognizing the opportunity provided by this subject, and for affording us the possibility to pursue it in the way that we have. We wish to express our thanks to Joseph Fisher of Resources for the Future and to Stephen R. Graubard of *Dædalus*.

M. O.
H. H. L.

The No-Growth Society

MANCUR OLSON

Introduction

ALL SIDES AGREE that the changes in intellectual attitudes in the last decade have been unusually great.¹ A new generation of intellectuals has grown up not only with a somewhat different ideological coloration, but also, and more significantly, with a focus on a new set of problems and purposes. These new concerns and objectives, like the altered life style that goes with them, are for the most part alien both to the old left and to the old right. Though the new style of thought is more remarkable for the intensity of its social criticism than the specificity of its proposals, it does offer a few fresh proposals and a somewhat different conception of what issues are worth fighting about.

Of the policy proposals that are receiving a new emphasis, two are particularly notable, and perhaps even prototypical. Though not entirely original, they owe nothing to the long-standing and often tiresome controversies between left and right. Rather, they suggest new perceptions of reality and a changing sense of values. They are, moreover, thoroughly radical, and indeed subversive, since they attack two fundamental features of modern society: its tendency to exponential growth and its assumption of continuous progress. The two proposals are zero economic growth and zero population growth.

However original and rapidly growing the no-growth movement may be, it is tempting for those of us who are economists to dismiss opposition to economic growth as unworthy even of serious discussion; surely the desire for a more wholesome environment calls for a change in the composition of output entailing more expenditure on environmental improvement and less use of pollution-intensive goods and productive processes, rather than a ukase against growth itself. Similarly, as demographers are quick to point out, zero population growth *now*, when a particularly large proportion of the population is in the young and reproductive stages of life, would for some time require fewer than two children per family, and would before long bring about a society with the top-heavy age distribution of a Florida retirement community. Is there anything to be gained, many of us may ask, from discussing such ill-conceived proposals as these?

II

This essay will argue that there is much to be gained—that even those of us who cannot accept the no-growth proposals literally should take them seriously. At the very least, it is clear that if many people are mistaken, it is important that they should be told why, especially if they are from cohorts that will be around long after most of their critics have passed away. It must be obvious too that the antigrowth arguments should be studied for the clues they offer into the subtle dynamics through which perceptions and values are so rapidly changing.

Less obviously, but more importantly, there is the value of the novel insights that can be discovered amidst some of the no-growth arguments, even some of the more confused of them; there is nothing about valuable insights that makes it impossible for them to lie lost within logically inadequate or seriously unbalanced arguments. This is particularly possible when the insight results from a special experience or opportunity for observation. And some of the opponents of growth have been particularly disturbed by some of the more uncivilized features of modern life which many proponents of growth seem to endure rather too easily. The unsatisfying aspects of modern life behind many no-growth arguments are by no means found only, or perhaps even mainly, in the natural environment. As the Epilogue endeavors to show, no-growth arguments may owe more to the social and psychological stresses of modern life than to the environmental degradation that they normally invoke. Proponents of growth should try to appreciate even some of the less impressive arguments against growth, the way a wise policeman would listen to the testimony of a drunk who was the only witness to an accident.

There is another reason why some no-growth arguments should be taken seriously even by those who cannot now accept them: they will become increasingly attractive the longer modern rates of growth of population and economic growth continue. Even if nothing else about the future is known, we can be certain that current rates of population growth cannot continue on this earth indefinitely, because, to state only one of many reasons, the weight of the human bodies produced would in a few centuries exceed the mass of the earth. So the issue of zero population growth, at least for the world as a whole, is not “whether,” but “when and how,” and there can be no doubt that this matter needs attention now.

The long-run implications of continued economic growth are far more complicated; nonetheless, it is clear that the problems that have led to the proposal to halt economic growth will ultimately become far more difficult if current economic policies and growth rates continue. Because of the law of the conservation of mass, the weight of materials taken into the economy must equal the weight of materials released as waste minus that of any additional materials recycled. This means that if the exponential growth

in the material output of the economy continues, there must be an enormous increase either in pollution or in recycling, or in both, notwithstanding the fact that changes in the form and distribution of pollutants, as well as in our adjustments to them, are also important. It may also be the case that some biological processes have inherent limits which set maximum levels for biologically degradable residuals. And, as Georgescu-Roegin has emphasized, entropy could ultimately restrict the human race to a level of economic activity that could be sustained by power garnered from the *current* flow of energy from the sun. Kenneth Boulding has said that anyone who believes exponential growth can go on forever in a finite world is either a madman or an economist. Even if one does not accept this view, it is clear that no sensible person can deny the seriousness of the possibility that current rates of economic growth cannot be sustained indefinitely because of the environmental constraint. And if environmental necessity did not ultimately limit growth rates, a more general concern about the adverse effects of economic growth on what is loosely called the "quality of life" still might. Thus the advantages, disadvantages, and other properties of a society with little or no economic growth demand serious attention, however one views demands for an immediate halt to economic growth.

III

Any meaningful inquiry into the zero-zero school of thought must first of all be clear about what ZPG and ZEG mean. In the case of ZPG there isn't much doubt about what people have in mind. One can raise questions about whether all of its proponents understand that it does *not* mean an average of two children per couple, and in general will not until a steady state is reached. One can also wonder whether the arbitrariness of the zero level and the practical impossibility of reaching *precisely* that level have always been appreciated (why not Negative Population Growth, perhaps combined with a growing level of per capita income?). But certainly it is clear what people mean by the word "population," and obvious that the proponents of ZPG don't want it to get any larger.

The case of zero economic growth is by no means so straightforward. Indeed, a significant part (though by no means all) of the disagreement over ZEG is due to the fact that "economic growth" means different things to different people. To many, especially in the ZEG camp, it means growth in the quantity of "material" goods produced for sale in the stores—more cars, color television sets, and the like. There is no basis on which anyone can say that one definition is correct and another is incorrect, so this definition must be taken seriously, especially since it is so often taken for granted outside of the economics profession. Yet it is profoundly arbitrary. If people buy automobiles or television sets, it is presumably because they want transportation, entertainment, or some other *service*; in other

words, people buy cars and TV sets for the same reasons they buy bus tokens and theater tickets. Thus it would be totally arbitrary to exclude services from the definition of economic output, and happily the existing statistics normally do not do so. Nor need economic growth be used to satisfy the tastes that we are accustomed to describe as less exalted. If the tastes of modern man were suddenly to change in such a way that he devoted most of the time and money he now devotes to cars and television to cathedrals and art galleries, the change would not reduce economic output or growth: it could, like other changes in the composition of output, be perfectly consistent with an increase in the rate of economic growth. It is also arbitrary to think of economic growth as involving only the goods and services obtained in the marketplace. It makes no sense to say that on the day a nation nationalizes its health services or raises taxes to spend more on schools, its economic output has fallen, and indeed the income statistics do include government expenditures on health, education, and other purposes as part of the national income or product.

Because of the arbitrariness involved in any restrictive definition of what is economic, I have, like other economists of the more single-minded sort, often defined utility or welfare from any source or of any kind as part of income or welfare. With this definition, there is an economic problem whenever people have wants which cannot be entirely satisfied with existing resources, and economic growth whenever existing wants are satisfied to a greater degree than they were in a previous period. Reality, in this view, is not divided into departments like a university; the economic dimension has no logical outer limit. If this definition is accepted, then belief in ZEG comes down simply to saying that people should have no more of anything they want—even a cleaner environment—unless they give up something of equal value that they now have; it comes down to opposing progress of any kind. Perhaps it is the habitual use of this definition in theoretical writings that partly accounts for the “progrowth” tendencies I may reveal in these pages.

Unfortunately, what the economic purists’ definition gains by avoiding arbitrariness it loses, at least for general purposes, through its unfairness and unfamiliarity. It is unfair and unhelpful to consider the demand for a halt to economic growth a demand for a halt to general progress. When environmentalists advocate zero economic growth, they do not mean that we should not be better off; on the contrary, they mean that if what they understand to be economic growth were to cease, we would be better off.

Where does this leave us? With agreement, one hopes, that the debate about whether or not there should be an end to economic growth is partly a matter of definition. If this isn’t understood, and it usually isn’t, there is a great deal of pointless polemic. But what is the meaningful—the necessary—debate about? What definition of economic growth can both sides agree to use for the duration of the debate?

There is, happily, a fairly satisfactory and, I think, more or less generally accepted operational definition of economic growth in the national income statistics. Economic growth, from this pragmatic perspective, is simply what the Department of Commerce and comparable institutions in other countries define it to be: if real (that is, price-deflated) Net National Product per capita has gone up, there has been economic growth, and otherwise there hasn't. Admittedly, official calculations or definitions of national income can vary a little from country to country and from time to time. More seriously, there is some likelihood that if critics of economic growth (or others) show that economic growth as officially defined is a bad thing, the official definitions will, in the interest of more useful statistics, be changed in such a way as to make the critics wrong. But in the short run these problems don't matter much, so it is fortunate that many proponents and opponents of ZEG have focused on the question of whether income, as it is measured in the national accounts, should grow.

IV

If there is agreement to define growth in terms of official income statistics, then the next task is to ask whether growth in this sense is, from some specified perspective, desirable. But this depends on the composition of output—on what specific goods and services are made available in larger quantities. And this depends most notably on what goods and services people in the society want more of. If people want to spend additional income on transistor radios, then growth means essentially more such radios. If, on the other hand, people want to have additional income spent on government projects to clean up the environment, or on individual purchases of recycled products, or on the arts, growth will have a different meaning.

If we leave aside many complications that have little relevance here, the NNP can be defined as the sum of consumer, government, and business expenditures on final goods and services, including investment in new capital, minus an estimate for the depreciation of capital. It follows that an increase in real per capita income means, *approximately*, that the people of a society can do more of whatever they want to do, either as individuals acting separately or as a collectivity through government. From this it would seem that the single-minded welfare economists' definition of growth forms the basis for the design of the national accounts, and that the ZEG school is facing a stacked deck of computer cards.

Not quite. The word "approximately" covers a range of issues on which a number of people (the present writer included) are writing books. There is a need to examine changes in the availability of leisure and in the output of housewives' services, as well as a variety of other developments that are not measured in the national accounts. This is a huge and rather technical task that cannot be handled in a single essay.

But there is one aspect of the problem that is so fundamental to the no-growth debate that it must be discussed. That is what the economist calls "external diseconomies," or roughly speaking the costs firms or individuals impose on others for which they are not charged, such as noise, pollution, crime, and congestion. How do official statistics deal with an increase in output that is accompanied by an increase in external diseconomies?

This by itself is a huge question, and one which some distinguished economists have recently got wrong. In essence, the answer, which I prove elsewhere,² is that if the external diseconomies affect only consumers in their role as consumers or nonproducers, then they are left out or misconstrued in the national accounts, whether they directly affect "psychic" income alone or also lead to "defensive" expenditure. If, on the other hand, they raise producer costs, as when air pollution reduces the yields of the truck farmer, they are already properly accounted for in the national accounts.

Basically then, the national accounts offer a fairly comprehensive measure of the extent to which the people in a society are getting what they want, but they do, most notably for present purposes, leave out external diseconomies affecting consumers. On the one hand, they are so comprehensive that one must doubt whether many of the proponents of ZEG understand the implications of their proposals. On the other hand, the neglect and misconstrual of diseconomies that impinge upon consumers, along with other shortcomings of the accounts, mean that economic growth, as officially measured, definitely can become undesirable, and that it is logically possible that it has already become so. Thus the question of whether, given present tastes and policies and the resulting composition of output, it would be better if we had less economic growth is a valid one. It cannot be answered *a priori* and thus justifies inquiry and reflection. One's answer depends in part on his value judgments about the relative importance of the marketed goods and government activities that are now obtained as compared with the damage growth does to the quality of life. It also depends in part on one's empirical judgments about how much current patterns of economic growth endanger the ecological system. If the composition of the Net National Product were changed to suit the wishes of the critic of growth, it would, to be sure, be far more difficult for him to find a valid reason to oppose growth. Yet, as the Epilogue shows, there are some atypical but probably significant value judgments which could consistently justify opposition to economic growth even when the composition of output is allowed to vary in response to the desires of the opponent of growth. An individual, moreover, may reasonably believe that the particular change in the composition of output that he wants will not occur, so that if he finds existing growth on balance undesirable, he sees no alternative but to oppose growth itself. Finally, even if there were no doubt that economic growth as defined in the official statistics is

on balance desirable now, it certainly does not follow that this will always be true in the future.

V

Once growth has been defined, and it is clear that no-growth proposals and predictions do not necessarily result from misunderstandings about definitions or from national income accounting procedures, it is meaningful to ask what a no-growth society might be like. Quite apart from the question of the desirability of a no-growth society, or even the possibility that it may ultimately be a necessity, what properties would it have? How would its social, political, and economic systems function? What would people be like in such a society? What sort of culture or "consciousness" would be appropriate in it? If anything resembling a no-growth society is to come about, whether as a result of social choice or of ecological necessity, what will the path from a growth-oriented to a stability-oriented society be like? These are questions that are very hard to answer—so hard that they are not, in the fullest sense of the word, researchable. Yet they are questions which every advocate of a no-growth society is obliged to answer and which everyone concerned about our planet's future must concede are significant.

The importance of asking questions about a no-growth society becomes evident when we realize that life in such a society would probably have some features that are not immediately obvious. It is, for example, entirely possible that a no-growth society would be torn by conflict over distribution. If there were no growth of income and a constant population, there would be no possibility of anyone having more without someone else having less.³ It is easy to say that people could strive for nonmaterial and culturally exalted ends, but resources devoted to such highbrow ends tend to be included, not only in the economist's definition of welfare, but for the most part in the national income statistics as well, so that if such ends could always be attained in increasing degree without the sacrifice of others it would not be a no-growth society. If whatever the poor would gain, the nonpoor would lose, could the standard of living of the poor increase? It has occasionally been suggested that the cessation of growth would bring distributional issues to a head, and that in such a charged situation there might, because of the heightened resentments of the poor, be an increased demand for redistribution of income despite the fact that it would cause a drop in the living standard of the nonpoor. The history of traditional, nongrowing societies is not by any means encouraging about the prospects for redistribution in a future steady state economy. Yet it is, perhaps, conceivable that an end to growth in a democracy would change political attitudes in such a way that redistribution of income would become possible, maybe even without introducing more divisive-

ness than a democratic society can endure. But what about foreign aid, or redistributions to those who don't have a vote in the matter? It strains the imagination to suppose that even the present modest provisions for foreign aid would survive the passage of no-growth proposals.

It is also possible that a no-growth society would require a different psychology or morality. Diverse observers have noted that in traditional societies most people take it for granted that what one gains, others must lose. Though underdeveloped societies are criticized for having this zero-sum attitude, it must be recognized as appropriate to their pregrowth situation, and would be natural also in any future no-growth world. Similarly, in a world where economic growth was ruled out, there would be no need for the pioneering spirit, for there would be no frontiers. Not only would geographical frontiers have been extended about as far as possible, as they already have been, but the frontiers of science and innovation would also be closed off. A society that continues to innovate will not be a no-growth society. Frederick Jackson Turner spoke of the frontier of the American West as a "safety valve" which could draw the energies of the discontented and thereby bring social peace. Since then scholars have rightly pointed out that the prairies were not the only frontier; there were urban and technological frontiers as well. But there would be few if any frontiers or safety valves in a no-growth society. Where then should the discontented and the aggressive and the venturesome go? There would be few, if any, places, for them to go, and so it seems not unreasonable to assume that a culture or consciousness would and should emerge which would minimize the number of people with dynamic and creative personality characteristics.

VI

Another characteristic that no-growth societies have is an extraordinary degree of governmental or other collective action. This would be true whether growth ceased through ZEG and ZPG policies now or because growth had someday proceeded to the point where it was obviously and immediately impossible to grow any further. Whether it became so by choice or by necessity, a no-growth society would presumably have stringent regulations and wide-ranging prohibitions against pollution and other external diseconomies, and thus more government control over individual behavior than is now customary in the Western democracies. Even if effluent fees or other taxes were the only means used to internalize external diseconomies, the scope of government and the degree of its control over citizens would still increase because of the number of such taxes that would be required, the need to change tax levels with changing conditions, and the fact that, since we lack a simple and objective way of calculating the optimal levels for such taxes, administrators or politicians

would have to exercise arbitrary authority in setting them. It happens that democratic society—and indeed what we call modern civilized society—has emerged in places and periods in which society and politics were pluralistic and private enterprise the major form of economic activity. The *laissez-faire* ideologists may very well be wrong in saying that there was a causal connection, but no one has the evidence to prove them so. Thus there is reason to ask how well democracy as we know it would fare amidst the ubiquitous controls that would be involved either in stopping growth now or in adjusting ultimately to the inescapable environmental constraint. An examination of the attitudes and “consciousness” of the undergraduate generation suggests that there is more resistance to bureaucracies and “establishments,” and perhaps more fondness for decentralization and for letting each individual do his own thing than was evident in the fifties. How would the New Left resistance to hierarchy mate with the centralized regulation a halt to economic growth would involve?

Zero population growth might in some cases also involve hazardous or offensive forms of control. If, for example, the desire or need to limit births is sufficiently intense, mightn't there be a special concern to limit the procreative possibilities of the less desirable or fortunate elements of the population? Why not tell the least fit that they are really sweet, but that we don't want anyone like them around in the next generation? How would traditional morality and egalitarian values stand up in such a situation? It might seem that inoffensive monetary incentives would be sufficient to limit the planet's population to an appropriate level, but how can one tax parents who have too many children without damaging the children? The point is that it is possible that the number of births occurring under free and decentralized decision making by families, even in a situation in which birth control prevented all unwanted births, would not give us a world with zero population growth. In that case, new solutions or controls, possibly very offensive to us, might be demanded or required. This is at any event another matter that deserves thought, not only because zero population growth is widely demanded today, but also because it is obvious that if the human race is to survive it will be needed someday.

When we focus on the longer-run possibility that growth will be limited by immediate physical necessity, we can see also the danger that the world of the environmentalist's vision (or nightmare) will be far more interdependent and vulnerable than the one we live in. If the world's population should double or, as is entirely plausible, reach a level of 10 or 15 billion, it would probably be much more dependent upon compact urban services than we are today. What, in such a world, would be the effect of another East Coast blackout, a new variety of wheat rust, or a new contagious disease? What would be the vulnerability to sabotage of a world in which growth of income and population had proceeded to the point where the environmental constraint was the overriding one? If nu-

clear fission had to be used to obtain energy and thus created vast residues of fissionable waste material that must be *permanently* stored, there would be a need for a responsible organization that would last longer than any government the world has yet seen. We cannot be sure about any aspect of such a world, but it might very well have vulnerabilities and shortcomings that have no parallel in present-day societies, and which we may need to think through before too long.

VII

We also need to ask how a society could maintain a constant level of income, assuming it wanted to do so. It is by no means easy to specify acceptable policies that would halt growth at whatever level of income was thought best and then maintain that level. Monetary and fiscal policy could, of course, be used to maintain a more or less constant level of aggregate demand, and thereby to prevent growth, but the firms in the economy would still have some incentive to innovate, so that as time went on less resources would be needed to produce the target level of output and unemployment would continually increase. In order to avoid an ever-increasing level of unemployment, some set of policies or social arrangements would be needed to insure that individual firms had incentives to behave in a way that would prevent growth and at the same time insure that those who wanted jobs could get them. Firms would also have to develop incentives, whether of a monetary or an extra-monetary kind, that would induce employees to provide the appropriate level of output at a cost the firm could afford.

Under the present system, each firm knows that if it can find a more economical way of producing its output, or change its product in such a way that consumers will be willing to buy it even at a higher price, it will be better off. Firms in turn try to offer their employees incentives to be more productive. It might seem that a satisfactory no-growth world could be obtained simply by ending all connection between reward and productivity so that firms and employees would get the same reward no matter how much or what quality they produced. But in fact this wouldn't work, for people would then have no incentive to produce the ideal level of income, if indeed they would produce anything at all.

At this point the critic may say that the answer is obvious: firms must be rewarded for producing the ideal, fixed level of output (taking into account some *post hoc* adjustment for weather and other productive factors beyond each firm's control), but given no reward for producing either more or less than that. This method would indeed make it possible to attain a more or less constant level of output, but it has a serious shortcoming that no opponent of economic growth, to my knowledge, has dealt with: it would fix the *composition* as well as the level of output. Consumers'

needs and tastes change over time: in a cold year they need more fuel, in a hot one more refrigeration, in one decade they will want cars with fins, in another bicycles. In the world we live in, an extra demand for fuel or bicycles normally raises the price of these products just as the corresponding drop in demand for some other products normally causes their relative prices to fall. These changes in relative price induce firms producing the goods which are in greater demand to produce more and those producing the goods which are in less demand to produce less or even to close down or shift into another line of production. Workers who seek higher wages and owners of other factors of production who seek higher returns face incentives which bring about a shift from the production of goods that are in less demand to those that are in more demand.* In a no-growth world, however, in which firms were not generally given greater rewards for commanding higher prices or for producing and selling more than in the past, there would be no tendency for resources to be reallocated in response to changes in needs and tastes. It might well be possible to design a system that would somehow acquire information on changes in the pattern of consumer demands and then induce firms and resources to shift in ways appropriate to the changing composition of demand, without inducing growth. But it wouldn't be easy.

It won't do simply to say that "planning" is the answer. The planning systems the world has had experience with have been designed to induce growth and, to the extent to which they work ideally, they provide the same maximum output that perfectly competitive markets would. The kind of planning or market system that would be needed is one in which agencies or firms were punished for overproduction as well as for underproduction, and in which the quotas for each enterprise somehow kept changing in response to consumer demands. Presumably such a system could be designed; perhaps it could even be made to work. But a proposal to stop economic growth cannot be taken seriously and literally unless it is accompanied by a plan for such a system.

VIII

If the questions asked here have meaning, surely any adequate effort to answer them would have a considerable impact on our understanding of some of the most important emerging features of modern life. A no-growth society poses in an extreme form problems that already exist to

* This analysis of the existing arrangement, it may be well to add, does not depend upon the unreal assumptions of the economist's model of pure competition; useful, though not optimal, reallocations in response to shifts in demand would tend to occur even in a world where all firms had monopoly power; and there is massive empirical evidence that the existing economies in the developed nations of the West do reallocate resources in response to changes in demand.

some degree in all economically developed nations, but which have failed to attract the curiosity of most researchers or to fit into the controversies that until recently have divided left from right, religious from secular. As the Epilogue will attempt to show, a careful examination of the no-growth proposals helps to reveal a number of the most fundamental failings and fears of modern life, some of which have no important relationship to the natural environment. If the arguments in the Epilogue are correct, however, it is also clear that many opponents of growth have not thought through the implications of their own proposals.

But neither have the supporters of growth grasped the ultimate consequences of their position. Surely any extended study of this issue will remind growthmen of the obvious possibility that modern rates of growth cannot continue forever in a world with finite resources and capacity to absorb wastes. Whether or not Boulding was right in saying that it is a sign of madness to suppose that exponential growth can go on forever in a finite world, it is unquestionably true that current world rates of population growth cannot continue very much longer, and that the economy can continue to grow at its current speed only if there are unending advances in recycling and, in addition, since recycling is out of the question for materials from which energy is drawn, the development of clean and continuously expandable forms of energy. Only a transcendent faith in the idea of permanent progress could persuade anyone that recycling and the development of sufficient nonpolluting energy sources will always advance fast enough to prevent an increase in residuals in an economy with permanent rapid growth.

Though it is utopian to assume that the output of clean energy and recycling can increase forever without increasing costs, it is also unrealistic to suppose that technological advance in energy conversion must at some point permanently cease, or that the potential for recycling must necessarily reach a permanent limit short of 100 percent (in fact, complete recycling would be consistent with continuous growth, albeit at a cost of ever-expanding inventories). As long as man and society retain a capacity to innovate, a more plausible possibility is that there will be at least occasional increases in output, however severe the environmental constraint becomes, because of advances in energy conversion, increases in recycling, or improvements in the efficiency with which nonpolluting services are provided. In other words, there is an assumption about the future that falls in between the extreme visions of the growthman who sees a world in which continuous breakthroughs in recycling permit high rates of exponential growth to go on forever, and the antigrowthman who sees a world in which the environmental constraint prevents emission of more pollutants and yet man is permanently unable to think of any ways to increase the ratio of output to pollutants. This in-between assumption ultimately suggests, of course, a world of slower, presumably far slower, rates of growth of income.

This probability—that growth will slow down for environmental reasons—and the extra-environmental grounds for opposition to economic growth set forth later in this issue remind us that a few of the proponents of no-growth might speak differently if they expected to be believed. Perhaps some of the advocates of the zero-zero slogans don't mean to be taken quite literally. Conceivably, they are pushing their arguments to the zero extreme and relying exclusively on the nearly universal desire for a habitable natural environment in the hope that in this way they may attain a marginal change in the direction they favor. Indeed we must, notwithstanding any distaste we may have for hyperbolic argument, wonder whether it is all that unfortunate that the zero-zero proposals have taken such an extreme and slogan-oriented form. Perhaps it takes new slogans and even a new generation to tell us that, as growing incomes bring increasingly ambiguous luxuries associated with an imperiled environment, strident social protest, and unabated examples of personal despair, it is time to do some new thinking.

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1. The author particularly thanks Jack Cumberland, Joseph L. Fisher, Hans Landsberg, Talbot Page, and Fred Singer for contributing ideas to this draft, and the National Science Foundation and Resources for the Future for support of his writing and research. He alone is responsible for the views expressed.
2. See my "National Income and the Level of Welfare," *Proceedings of the American Statistical Association*, 1971, pp. 198-207, and a forthcoming book on the subject.
3. Incomes could, of course, increase over the life cycle with old or middle-aged people receiving a large part of the total than young people. I am thankful to Martin McGuire for calling this point to my attention.

KINGSLEY DAVIS

Zero Population Growth: The Goal and the Means

WHEN IN 1967 “zero population growth” was first mentioned as a goal of population policy,¹ it was not itself defended or discussed; only the means of reaching it were considered. Since that time, with ZPG becoming the name for a movement, a lively debate has ensued over the goal as well as the means. In what follows, I shall first consider some of the main developments in the debate, then search for what lies behind the debate, hoping to illuminate the nature of population policy.

I

The question at issue when ZPG was introduced was whether the population policies then current were effective or ineffective. To answer that question, one obviously needed to know what goal the policies were trying to achieve. A search of the literature of the population movement revealed no clear statement of the goal. “Population control” could not be considered a goal, because it did not specify “control to what end.” However, since population control was frequently justified in the policy literature by graphic accounts of the dangers of population increase—dangers seldom specific for given rates of increase but ascribed to any continued exponential rate—I drew the conclusion that the implied aim was no population growth at all. I therefore undertook to determine whether the population measures being pursued or advocated in official circles were likely to achieve ZPG. Although a prominent fellow demographer described me as having “vigorously endorsed” the goal of ZPG,² the question was simply, *if* ZPG is the goal, will the measures being adopted succeed or fail? The answer was independent of whether I or anyone else actually held that aim, but, as subsequent debate proved, ZPG or even NPG (negative population growth) was indeed a common aspiration among people concerned about population growth.

My conclusion was that measures then current did not provide population control for any collective purpose, least of all for population stability. Limited to “family planning” and hence to couple control, about all they

could accomplish would be to help countries approaching a modern condition reach *an industrial level* of fertility, a level they would soon reach anyway. An industrial level, however, is far above ZPG. Between 1960 and 1970, for example, the fifty industrial countries of the world increased their population by 14 percent, a rate that would double it in less than fifty years. As a class these countries had a more rapid increase after World War II than the underdeveloped countries ever had before that.

For ZPG as a goal, it was unfortunate that the concept first arose in the context of a critique of family planning as the exclusive approach to population policy. The powerful interests vested in this approach reacted by attacking not only the idea that other means than family planning might be necessary, but also the goal of ZPG itself. Spokesmen for the population programs of foundations, international agencies, and government bureaus—all committed to the assumption that the population problem is due to unwanted births (unwanted, that is, by the people who have them) and that therefore the solution is to provide massive contraceptive services—felt that their leadership had been challenged. Accused either of not pursuing a goal that many of their ardent supporters had assumed they were pursuing and which their own arguments seemed to imply, or else of using means incapable of reaching that goal, they had either to deny the goal or to affirm the adequacy of the means. Actually, they began by doing both but later yielded ground, especially with reference to the goal. Let us examine the arguments and counterarguments.

ZPG as a Goal

To declare that ZPG was not the goal of existing population programs was dangerous. Yet soon after the ZPG concept appeared, three leaders of the population movement not only made this declaration but went further to say that the family-planning program, at least in the United States, is not for population limitation at all. "The federal program [of family planning] has been advanced," they said, "not for population control, but to improve health and reduce the impact of poverty and deprivation."³ Others were less hasty. They did not directly repudiate ZPG as a goal but painted its advocates as naive, unrealistic, or authoritarian. For instance, the uncertain *timing* of ZPG was used as a basis for criticism. By interpreting ZPG advocates as demanding ZPG immediately, critics could accuse them of being enthusiasts ignorant of the science of demography who were unwittingly threatening Americans with a child embargo. On the other hand, by interpreting them as wanting ZPG only sometime in the indefinite future, critics could say that they were merely recommending the inevitable. These points are worth examining.

Immediate ZPG would certainly require a drastic reduction in fertility. Since existing societies have had more births than deaths, their age

structure is younger and more favorable to future births than it would otherwise be. To compensate for this fact, if instant ZPG were to be attained, each current young woman would have to reduce her fertility, on the average, below her own replacement. This prospect was described in frightening terms:

Dr. Frejka warns that to achieve zero population growth immediately, it would be necessary for each family to limit itself to one child only for the next 20 years or so, with two-child families not permissible until after the year 2000.⁴

The U.S. Population Commission said that the sudden drop in reproduction would create a regrettable cyclical fluctuation in fertility.⁵

This [ZPG] would not be possible without considerable disruption to society. . . . In a few years, there would be only half as many children as there are now. This would have disruptive effects on the school system and subsequently on the number of persons entering the labor force. . . . The overall effect would be that of an accordion-like continuous expansion and contraction.

Actually, Frejka found that, with migration excluded, a U.S. population fixed from 1965 would require age-specific birth rates during the next twenty years which, if experienced by each woman during her reproductive life, would yield an average of 1.2 children per woman. However, not all women bear children. Among white women aged 35 to 39 in the U.S. in 1960, some 15.5 percent had either never married or never borne a child. So, in Frejka's fixed population, each woman who *did* have a child could bear, on the average, 1.4 children—a mean that could be reached if 60 percent had one child and 40 percent had two. Put in these terms, instantaneous ZPG does not sound so frightening. As for "disruption to society," the resulting fluctuation in school-age children would be less than that actually experienced in the past. During the twenty years from 1950 to 1970 the number of children aged 5 to 19 in continental United States shot up from 34.9 million to 59.5 million, a 70 percent increase. In Frejka's hypothetical calculations of ZPG beginning in 1965, the most drastic change in children of this age would be that of the twenty-five-year period from 1965 to 1990, when the number would fall by 41.5 percent.

In trying to discredit immediate ZPG, the Population Establishment was arguing against a straw man, because ZPGers, scarcely so literal-minded, would have been happy to see ZPG achieved within their lifetime. But not content with hitting them over the head for presumably wanting ZPG instantaneously, the Establishment buffeted them for the opposite as well, for supposedly wanting it in the indefinite future. "Zero growth," said Notestein, "is . . . not simply a desirable goal; it is the only possibility in a finite world. One cannot object to people who favor the inevitable."⁶ The answer to this was given by Judith Blake:⁷

By this reasoning, the human effort to control the time and manner of all sorts of inevitabilities—the effort expended on postponing death, maintaining houses,

saving money—is all pointless. The spokesmen for ZPG do not argue that a stationary world population will never come about without ZPG policy, but rather that, without directed effort, zero growth will occur only after human numbers have greatly increased over present levels, and perhaps then by the mechanism of high mortality instead of fertility control.

A related question was whether ZPG advocates had in mind an “actual” or a “stable” zero rate. In demography the term “stable population” refers to the population that would eventually result if age-specific fertility and mortality rates remained constant long enough (usually three or more generations) to produce a fixed age structure, at which time the birth and death rates (called “stable” or “intrinsic” rates) would be different from the current ones. The “stable population” is an abstract concept used, among other things, to measure the import of current age-specific rates independently of the current age structure. Thus a population that is actually growing at the moment is sometimes described as “failing to replace itself,” because *with the age structure that would eventually be produced by the current age-specific birth and death rates, the population would decline*. This usage, however, is misleading; the stable population concept has no relevance to the actual future for it rests on the assumption of constant age-specific rates, a situation which never comes about in reality. It is useful to calculate the attributes of a nongrowing stable population (called a “stationary population”) together with the demographic changes required to reach it in given lengths of time, and this has often been done,⁸ but this is different from calculating an actual nongrowing population and the age-specific birth and death rates required to reach it in some given length of time from the present. In any case, the question of which kind of ZPG they meant was at first confusing to those ZPGers who were not acquainted with technical demography. Soon, however, they overcame that hurdle.

Apart from cavils about the timing of ZPG, there were two objections to a nongrowing population regardless of when it came about: that it would interfere with economic development and that it would produce a high proportion of aged persons. These arguments, both old, are worth examining.

The economic argument holds that some population growth is a good thing because it provides economies of scale, promotes a bullish investment psychology, and provides openings for the young; but, as the economist Stephen Enke pointed out, “the more slowly population grows the more capital can be accumulated per member of the labor force,” and “only those who own something valuable and scarce can count on larger real incomes as a result of population growth.”⁹ His simulation models for the United States show that a net reproduction rate of unity from 1975 on would yield a higher per capita GNP than either of two higher growth trends.

One has only to look at history to see that slow population growth does not mean economic stagnation nor does fast growth mean prosperity. Between 1890 and 1940 Ireland’s population *declined* by 16 percent, yet

during that period, according to figures compiled by Colin Clark,¹⁰ the real product per manhour rose by 99 percent, whereas in Great Britain, whose population grew by 42 percent, the improvement in product was only 62 percent. France, whose population rose more slowly than Britain's, had a rate of rise in real product nearly three times that of Britain. Sweden had such a low fertility that its cohorts born after 1885 were not replacing themselves,¹¹ yet after that time it had what is probably the most rapid economic rise and is now the richest country in Europe. If human productivity is a function of resources and technology, and if resources are limited (as they indubitably are), the way to get a higher product—once population has gone beyond the point of providing adequate specialization—is to advance technology and decrease population. As Enke points out, the entire world is involved in a system of specialization and trade; there is no economy of scale to be gained from further population increase. In comparison to India, Sweden is not impoverished by virtue of the fact that India's population is 68 times greater and its average density 9 times greater. Probably Japan's technology is now the equal of Sweden's, so, if Sweden's per capita income is more than twice that of Japan, as the United Nations data for 1970 show, one reason may be that Japan's population density is sixteen times as great.

The other objection—that ZPG means an aged population—was voiced as follows in 1968:

A stationary population with an expectation of life of 70 years has as many people over 60 as under 15. . . . A society with such an age structure is not likely to be receptive to change, and indeed would have a strong tendency towards nostalgia and conservatism.¹²

Actually, there are three questions involved here. First, since "life expectancy" is an average, can the age distribution vary independently of that average? The answer is yes, because it is affected by the skew in deaths by age. Suppose, for example, that in a stationary population everybody died at exactly age 70. The proportion of the population under age 15 would be 21.4 percent, and over 60, 14.3 percent. Even assuming a probable distribution of deaths by age, would the age structure of a ZPG population be highly abnormal? Table 1 shows the age structure of the U.S. population under two assumptions—that ZPG starts immediately, and that it is reached sometime between 1995 and 2000. In either case, not only is the proportion aged 65+ considerably less than that found in West Berlin now and close to that found in Sweden, but the distribution is especially favorable to economic production because of the high proportion of people in the productive ages. Third, would the age distribution of a ZPG population "disrupt the normal workings of the society"? Again no. There seems to be no correlation between the age structure and political outlook. The age distribution of the USSR is very similar to that of the USA; socialist Sweden