

# GROWTH AND SURVIVAL

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Growth and survival are two intertwined concepts that are essential for individuals, communities and species to thrive. Growth refers to the process of development, expansion and evolution while survival refers to the ability to remain alive and resilient in the face of challenges and adversity

If the calculations of a group of social and physical scientists are correct, it will take only another 50 years of population growth and economic expansion at present rates to cause collapse of our life supporting ambient, bringing mass famine in some areas, industrial breakdown in others, a drastic shortening of life spans nearly everywhere.

This terrifying scenario stems primarily from the work of Jay Forrester and a team of scientists at the Massachusetts Institute of Technology (M.I.T) who have projected, by means of computerized models the complex interactions of human activity and the environment. The model forms the basis for two clarion calls for an immediate halt to the destruction of the environment- "A Blueprint for Survival" widely circulated book, "The Limits to Growth", sponsored by The Club of Rome, an international "invisible college" of 70 scientists and specialists. Essentially both studies tell us the same thing – that if we are to provide the life supporting capabilities of our all important film of air, water and soil, economic growth must be brought to a halt as rapidly as possible. From the projections on which the two studies rest show that even if population growth halts within two generations, even if we discover "unlimited" new resources, and even if we remove three quarters of the populations we generate, continued industrial growth by itself will still bring us to a condition of "self-destruct" within the life times of our grandchild.

This is a projection so overwhelming in magnitude that it is difficult to confront it with any sense of detachment and balanced appraisal. Indeed, rather than detachment, the need of the hour seems to be a call to arms – or rather, to the crash program described by the scientists of the "Blueprint" and the "Limits" – aiming at both zero population growth and zero economic growth. Yet, in full recognition of the gravity of the situation, I would propose a different course. In the end, the scenario that I project is no less sobering than of anti-growth school, but as we shall see, it leads to a very different strategy for our times.

## **THE IMPERATIVES OF GROWTH**

It may be helpful to begin by considering economic growth from another point of view- paying no heed for a moment to its destructive effects and emphasizing instead its constructive implications.

This brings us back to the population explosion that provides the initial point of entry into the ecological problem. Given the minimum figure of 15 billion a century hence – or more than four times the estimated present world population of 7.3 billion – we confront a human problem that immediately places growth in a wholly new population of its ability to subsist. Such a design might impose a very rapid "solution" to the population problem, but it would be the solution of starvation. Moreover, since most of the prospective population of the coming generations will be crowded into the underdeveloped areas, the forecast also makes it clear that growth in industrial output in those areas must take place faster, the forecast also makes it clear that growth in industrial output in those areas must take place faster than population, if the billions who are to be born in those regions can ever attain a standard of living better than that which they now "enjoy."

Admittedly, gross national product is a very inadequate indicator of human well-being in many of the developing countries important improvements could be made in the quality of life merely by the attainment of stable and just government and economic systems. The introduction of literacy the vigorous promotion of public

health measures including birth control and the repair of nutritional deficiencies, these changes are not likely to be reflected in changes in GNP to the extent that increases in steel production would be even though their importance may be incomparably greater and their demands on the environment incomparably less. Therefore than need for growth in living standards must not be assumed inevitably to require environmental damage.

Yet, with all these caveats, the fact of a relentless burgeoning of population and the hope of a rise in their material consumption makes inevitable the need for very large increased in physical output, Huge additions to food production, textile output and simple shelters will be required to sustain, much less elevate, the prospective billions in the developing world. In turn this requires output of vast quantities of fertilizer, of steel, of cement and bricks and lumber. This vast through somewhat in terminate increase in needed output provides a powerful incentive to rethink the desirability of “zero industrial growth.”

Now let us add to it the demands for growth stemming from the industrialized world. We may be tempted, of course, dispute the moral value of much of this growth. Do we keep alive, so there will be vast increases in whether we have the resources and the absorptive capacity to allow that mounting trend of industrial output to materialize need more luxury goods per capita ? Would not our own quality of life be vastly improved by increase nonmaterial “output,” or by the redistributing of what we already possess. However valid these queries, they are as morality of the projected populations increases in the East and South. What we are interested in, both with regard to population and industrial output, are the levels to which the world will be “pressing” under the enormous inertia of its present social forces. Any realistic appraisal tells us that just as there will be vast increase in population if that population can be kept alive, so there will be vast increases in whether we have the resources and the absorptive capacity to allow that mounting trend of industrial output to materialize.

### **Flexible Resources**

This returns us to the question of basic resources of metals, coal, petroleum and natural gas whose alarming limitations the studies under discussion have computed. Do those limitations mean that potential industrial growth will be throttled by resources exhaustion within the next 50 to 100 years, just as potential population growth may be curbed by food exhaustion ?

“proved” reserves of many resources than it started with suggests that the size of our “known” reserves is mainly determined by the effort we invest in looking for them. In the Soviet Union, for example, the huge Siberian subcontinent has barely been prospected one Russian economist recently estimated of handily that it contained the wherewithal for “a thousand years” of Russian resource needs. So, to, the South American continent is still largely terra incognita, and may reveal as much totally unexpected wealth as did, for example, the rich Alaskan oil slope or the Libyan oil fields. Both vast reservoirs which have been discovered only in the last eighties. Thus and “optimistic” estimate of the availability of resources any in reality not be five times the present estimated, as projected by the Limits to Growth, but ten or 50 times. This does not rescue the world from the problem of exponential growth per capita, but it defers the day of reckoning by another generation or two.

A second technological reality must take into account is the substitutability that exists among resources. For instance, there is a strong likelihood that we will use up our reservoirs of natural gas and patrolling of another generation, However, the anti - growth scientists do not discuss the possibility of shifting to alternative sources of fossil fuel, such as the enormous reserves of shale the world with low grade ores, that 50 years ago, when Mesabi Range was still yielding its high grade ores were not even considered as potential “reserves”. Thus, resource substitution also defers the day of reckoning by and indoctrinate, but possibly quite substantial, period.

### **The Possibility of Technological Solution**

That pushing back of the time frontier is all important with regard to the globe has limitless resources – limit less at least, in reference to the needs of its microbial surface – I the minerals locks into its rocks and seawater, given enough power, which nuclear energy now begins to processes. To be sure, this would entail the processing of enormous quantities of seawater or granite, with associated problems of disposal and thermal pollution. But from the point of view of sheer bottlenecks of supply, the long term future holds out much more promise than the anti - growth school of thought reveals.

The basic question, then, when we consider that ultimate resources of seawater and granite, is now long it will take us to have the power and the techniques needed to bring the alchemic possibilities into

actuality. I do not know what time sales are to be attached to these objective, but on the answers will depend the rate at.

If the scientific consensus is that fusion power which is improbable (we know It is not impossible) of an “indefinite” period, we shall have to reconcile ourselves to the scale of resource us that is compatible with fission power. If our scientists agree that certain problems of synthetic chemistry will take “generations” to solve, then we shall have to husband actually those substances whose supplies will be limited to the amounts we can recycle each year from our industrial process. Thus the resource problem hinges finally on our scientific and technological capabilities. Judging by the past it would be foolish to take an attitude of determined pessimism before these capabilities.

But what about barriers imposed by pollutant ? These are the most serious of the limits to growth put forth by the M.L.T. studies Yet there is a certain arbitrariness in their treatments of pollutant. The models showing “Collapse” in 50 to 100 years make the “generous” assumption that we can reduce pollution by a factor of four. Why not 40 or 400? At this critical juncture” the anti – growth school musters no evidence at all. Yet, could not one argue pushy that the technology along with growth?

In the end, we are left, to be sure, with the long run problems of carbon dioxide and heat. The former may be avoided by a shift of technologies away from combusting toward nuclear fission or fusion, the latter remains a brooding presence. It is only fair to add, however, the price is uncertain. The measurements of changes in the temperature of the earth’s ambient are imprecise, we do not even compared pollution with nature’s ambient – there are, after all, volcanoes, geothermal springs and currents. The steady heat input of solar energy. Thus, there is every reason to be cautious, and panic, is hardly indicated”. The principal defect of the sustainable.” In the end, that charge, with its exponential emphasis, cannot be fault. That end, however, is still probably far distant, The question, then, is what to do about it now industrial way of life with its ethos of expansion, “begins” A Blue print for Survival,” is that it is not sustainable.” In the end, that charge, with its exponential emphasis, cannot be fault. That end however, is still probably far distant, The question, then is what to do about it now.

### **A Stationary State**

The authors of the Blueprint” and Limits have a very clear idea of what to do about it now, We must engage in an all out effort to bring about zero population and zero industrial growth as soon as possible to that end. Every technological means to reduce waste, expand resource availability through recycling, and to lower pollution must be vigorously pushed. But ultimately, the prime requirement is the attainment of a society in which both the size of population and of the capital stock are sable. In a word, thinly solution for ecological equilibrium is the stationery growth less state.

This is very curious solutions for two reasons. The forest, to which the studies pay only fleeting heed, is that a “stationary “state – one is which industrial growth had cause – would not necessarily be a society in ecological balance. This is because a society can be “stationary” and can still be polluting the environment. Indeed, under the assumptions of the M.I.T model, a stationary state will still asphyxiate itself, although it will take somewhat longer to do it.

Second, a stationary state as we have seen, would impose fearful costs on the populations of the under developed world and severe institutional strains within the industrialized world. Suppose, however, consumer goods – without adding to pollution, by the discovery of new and better seeds, or cleverer production process. Would their then be ant reason to deny more food any more consumer goods to the poor, or even to the rich ? I can think of none, and suspect that the members of the anti – growth school can not either.

### **The Enemy : Not Growth but Pollution**

A very important conclusion follows, As the M.I.T models themselves show, it is not “growth” that is the mortal enemy, but pollution. The program of the ecologically minded scientist, therefore, should not be aimed against growth, but only against pollution generating growth. Any technological change that will increase output without further damaging the air or water or soil. Any technological change that will enable us to increase output by shifting from a less to a more abundant resource (again without an in cream in pollution), represents perfectly safe growth, and should be welcomes with open arms.

This emphasis on finding “cures” for population, resource exhaustion, and population growth clearly put technology in the key position. To this the M.I.T. scientists reply too much reliance on technology diverts us from taking “effective action” on the problem of growth. Does it? Let us assume that the anti-growth scientists are correct and that they convince their colleagues around the world that collapse will be inevitable within a generation or two unless fully corrective measures begun today.

What sorts of measures would there be? In the underdeveloped worlds we would certainly require imposition of compulsory birth control aimed at a negative net reproduction rate (say only on children – not on female held per family) in the advanced countries, stringent measures to bring immediate zero population growth. In the underdevelopment world. We would have stop the “green revolution.” which its agricultural increase bought only at the expense of vast, pollution generating fertilizer inputs, in the developed world, we would necessarily anticipate decreases in food production as a result haps be permitted in then neediest countries - a few steel mills in Asia and Africa, and absolute halt to capital formation would be necessary in the west.

### **Political Realities**

I could extend list of particulars, but here is little point in doing so. For it is clear that the imposition of such a program is far beyond our existing political and social capabilities. What Asian, African or South America leader, confounded with all the scientific evidence in the world, would endorse such a program for his people now? What Western states man and would advocate a program of immediate asceticism to avert a disaster that is still at least a county away?

What is at stake here is more than the obvious resistance that such measures would encounter from existing political and economic institutions. It is also a matter of our personal willingness to undergo presided, for example how may of the 100 – Odd signers of the “Blueprint” and the “Limits” have sold their automobiles or never takes a taxi? I wonder how many have dispensed that unnecessary gadgets in but one a day and generally conduct themselves with the Spartan restraint integrator a program of economic limitation such as they urge?

In a defiantly, constituted society such an identification with future generations might be possible. It is not easy to find in our own. Of course, I know hat in beginning has been made. Some toxic products have been banned. Antipollution laws have been written. A concerned for ecology has become part of the standard political rhetoric. But measured against the sale of action demanded by the anti-growth scientists, what has been done is pitifully inadequate.

The problem evaded by the anti-growth school, in other words, is how to mobilize the social will-how to induce to apply existing technologies against the resistance of entrenched interests and ordinary people alike. If we are to mount a response on the scale the propose, I suspect there is only one way-by the ghastly appearance of the initial stages of ecological disaster itself. A temperature inversion that take the lives of few thousand people in New York or Tokyo (New Delhi Beijing etc many lead to banning cars and smoke from those cities, a horrific rise in infant mortality to nitrate based fertilizers any bring effective bands on chemical additives to the oil. Short of such terrible stimuli, I do not believe that the pace of industrial growth will be significantly slowed in these of environmental safety or that the overawing of the environment will be significantly diminished. Thus if, in the end. I pin my faith on “Technology” – meaning the search of resource for a long while unused – it is because I can not think of any thing today that is more likely to be useful in the solution of the problem that one day mankind will have to solve.

### **Implications for Institutional Change**

That bring us finally to the fundamental problem of chanting within finite system an ever – mounting volume of contaminants. Here, as I have said, the scientists are right. However,” alarmist, the data on which their models are based. However naïve their call for social changes on a scale that is beyond reach and by means they do not make explicit. One can not fault their assertion that the exponential curves of growth, human and industrial, will sooner or later overtake the finite capabilities of the biosphere, bringing dreadful declines in population and in the quality of life. I have suggested that the period off race before that time of catastrophe and collapse may be considerably longer than they project but it is not an indefinite period. Sooner or later the problem must be faced.

But how is it to be faced? Let me try to answer the problem by stressing an aspect of it which we hitherto ignored – the extent of the institutional changes needed to attain a condition of ecological equilibrium. Central among these changes will assuredly be the extension of public control far beyond anything yet experienced

in the west. Socialist or Capitalist, to bring environmental stability the course the volume and composition of industrial and agricultures output. In a world the social price of ecological control is a vast increase in the scope and penetration of regulatory authority, designed to enforce the necessary zero-growth behaviour at the local level, on which our collective safety will depend at the planetary level.

It is here that my scenario departs most strikingly from that of the authors of the “Limits” and the “Blueprint” and the anti-growth community in general. More signal than they about the technological possibility of containing industrial growth for a considerable period. I am far more pessimistic about the ease with which such a social transition can be made. In the West for example, surely the eventual necessity of a stabilized flow of output (quite aside from the other regulatory interventions that may be needed) spells the end of mindlessly self-aggrandizing corporations as we now know it. Whether capitalism can adapt to the tensions of such a static state, in which growth no longer tempers the struggle over the division of the social product, is a moot question. If something called “capitalism” does survive, it will surely be cast in a very different mould than it is today.

Nor is the prospect an easy one for the industrialists, Socialist nations, Ministries as well as corporations find the ethos of growth both exhilarating and socially useful and will find the constraint of a growth less state much more camping than those of an expanding one. Perhaps more fundamental, socialism has always assumed a condition of “abundance” as the precondition of the inaugurating of a “true” can not be safely breached, that ideological premise must be abandoned, and the instructions and incentives of true communism rethought

More sobering yet - for who cares, in the perspective of ultimate environmental safety, if the institutions of present day capitalism or socialism disappear? Is whether global requirements of pollution control and resource conservation can be imposed on or will be shattered by the ferociously guarded boundaries of “national interest” indeed. We might well ask whether the approach toward the ecological disaster point will encourage the more equitable international distribution of the means of life, or will only serve to fortify the resolve of favoured nations to preserve their own good fortune against the rest?

### **Assuring A Human Future**

Thus, the ecological problem is indeed fundamental, but in another way than that which the anti-growth and finite environmental space involves problem of technology that will be solved- or will not be solved – over a fairly long run. But much more immediate, there is another problem in the social changes that will have to be begun in our generation and carried further in the next generation to come. The “fundamental” problem is therefore a social as well as a technical one, and where as I have indicated so reason of optimism with regard to our technical capabilities for adaptation, I do not find it so easy to be sanguine with respect to our near-term ability to about the needed social and institutional changes.

But that very fact may help us answer the question with which we began and with which we now end, how is the environmental challenge to be faced? For clearly something is required in addition to that “since of detachment and balanced appraisal” of which I spoke before, This additional attitude to the environment – indeed, to life itself, an attitude based on whole new awareness of the fragility of our planet as a life supporting.

As I have stressed. It would be foolish to expect such a change in attitude to manifest itself quickly in the face of the needs, the desires, and the institutional inertial of our time. None the less a beginning has been made – indeed, is being made by the very arguments we have been conceding in this piece. In becoming aware of the hitherto unsuspected existence of a crucial environmental challenge, we feel within ourselves the first stirring of an unaccustomed view of the human future. Our generation is unlikely to solve the technical problems that will guarantee the indefinite viability of the planet and created with mankind’s survival. But in the stated recognition survival. But in the started recognition and ultimate ecological problem exists, it set the stage for more decisive action by generations to follow.

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