The Myth of Absolute Abundance:

Economic Development as a Shift in Relative Scarcities

By OLEG ZINAM

ABSTRACT. Scarcity lies at the heart of *economic science. Scarcity and abundance* are dialectical terms flowing into each other by imperceptible degrees. They are always relative. While absolute abundance in terms of both internal and external factors is an unattainable dream, life would be extinguished long before absolute scarcity is reached. At any point in time, people can be placed between these two extremes. Such a position of relative scarcity can be either close to the *subsistence* level or to relative *plenty* at a high *standard of living*. Economists of a pessimistic breed fear that pressure of *population* on subsistence will lead to *equilibrium* at a subsistence level or even to eventual extinction unless the *rate of population growth* and *resource use* are checked. Optimists believe that *technological advance* will continue to provide an offset to *diminishing returns* and that human institutions will respond to pressures of scarcities in constructive ways. Some implications of these attitudes for economic development are analyzed within a framework of the theory of discontent.

I

THIS STUDY AIMS at placing the concept of scarcity into global and historical perspectives and thereby attempts to throw some light on the role it plays in influencing economic development. The analysis is carried out first on a global and then a national level. Readers are warned that this article is an excursion into what Baumol calls "magnificent" dynamics which involves "simple deduction from fairly broad generalizations" and focuses on "the development of the whole economy over long periods" (1).

Traditional economic theory places scarcity in a pivotal position in most of its theorizing. Scarcity, alongside with utility and transferability, is an indelible property of an economic good. Since in conventional analysis wants are given, scarcity applies to all economic goods and services including factors of production. Scarcity is always relative to the amount of economic goods demanded. Moreover, scarcity can appear on the demand side itself. In such a case the amount of economic goods and factors of production exceeds the

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demand for them. A "bottleneck" either on the demand or supply side can interrupt the growth and development of an economy. As Kindleberger stated: "A small discrepancy on one side or the other along a path of balanced growth, where supply and demand are equal, can interrupt growth" (2)

In general, economic growth seems to be controlled more by factors which are scarce than by those which are abundant. This is in line with a broader generalization derived from biology. Liebig's law of minimum states that "a biological reaction at any level is controlled not by factors which are present in excess, but by the essential factors which are present in minimum quantity" (3). Is it possible to interpret economic development in terms of shifting scarcities? Spiegel, for example, attempted to integrate his studies of development of economic thought by raising the question: "How did a writer of his school propose to cope with the fundamental economic problem of scarcity?" (4)

II

SCARCITY PLAYS A DECISIVE ROLE in human behavior. People in general tend to take for granted the things which are available in abundance. They place high value on those things which are limited in quantity, especially if they fear that these things may be lost. Scarcity plays a deciding role in both economic development and in the development of economic science. Economists tend to concentrate their attention and efforts on the problems which they consider most pressing, and nothing is as pressing as scarcity of desirable and necessary things. Human decisions influencing economic development are also made in response to the most pressing problems of scarcity. A study of the shift of scarcity throughout history can throw some significant light on the logic of both economic development and economics as a science.

Ancient and medieval history suggest that technology was relatively stable and adjustment to scarcity was made either by moderation or by imposed controls and restrictions on the demand side. The idea that technological advance can help increase the supply of scarce goods emerged much later. Classical economists were preoccupied with scarcity on the supply side and took demand for granted. Only after significant advance in technology was attained and abundance of economic goods became possible did scarcity on the demand side emerge as an additional problem for both economies and economists.

To place the general problem of scarcity in perspective, it is useful to juxtapose the conflicting views of some illustrious political economists of the

past. On the optimistic side, Karl Marx considered private exploitation under capitalism the major cause of scarcity and poverty. For him, the removal of exploitation of man by man would lead to an abundance of material goods and to liberation from toil. As a result, mankind would be permitted to attain satisfaction of higher, distinctly human wants of a social, ethical and spiritual character. Jean Baptiste Say hypothesized a state of economic abundance due to technological advance and continued cost reduction. "Political economy," he wrote, "would no longer be a science; we should have no occasion to learn the mode of acquiring wealth; for we should find it ready made to our hands" (5). In the same vein, John Maynard Keynes, paradoxically the spiritual father of the "secular stagnation" theory, envisioned a state of affluence in which economics would lose its importance. In his words: "Assuming no important wars and no important increase in population, the economic problem may be solved, or be at least within sight of solution, within a hundred years. This means that the economic problem is not—if we look into the future—the permanent problem of the human race" (6). All of this suggests that "not even economists themselves have been altogether immune to the beatific vision of the abolition of economics" (7).

This leads to the important question of whether technological advance, with its creation of abundance, might lead to the destruction of economics by elimination of its essential problem of scarcity (8). Boulding emphatically rejects such a possibility. "It is my considered view," he said, "that these projections . . . of effortless abundance in which economics, like the state, has withered away are fantasies arising from a rather naive extrapolation of what may eventually be seen historically as a rather brief period in the history of man" (9). It is true that in the last two centuries in some areas the standard of living of advanced economies has substantially risen in terms of per capita real income. But this is true only for about one third of the world population. The other two thirds are still struggling with poverty caused by severe scarcity even of basic necessities. But even in technologically advanced countries, growth is also slowing down. A state of global abundance seems to be very remote and highly improbable (10).

III

A STATE OF RELATIVE ABUNDANCE can be reached if the human population and its wants can be limited. If scarcity can be expressed in terms of a race between the creation of wants and their satisfaction and if Galbraith is correct in stating that "wants emerge *pari pasu* with the production" (11), techno-

logical advance creating abundant goods will never be able to create abundance. Scarcity will persist forever. Moreover, the existence of infinitely expandable relative wants can help an economy to maintain adequate demand to balance expanded production made possible by technological advance.

If the expansion of wants can be ultimately checked while technological advance produces an abundance of all goods and services, a state of relative external abundance will be reached. Yet scarcity will shift to such internal factors as time, human capability to enjoy things and human energy available to consumers. Though external scarcity might be eliminated, the problem of choice among different abundant goods which can be enjoyed under the constraints of limited time, capacity and human energy at the disposal of consumers, will still remain and with them the need for economizing. As long as human beings are mortal and have to live within time and other limits imposed on them by their nature, internal scarcities cannot be removed. Therefore, absolute abundance, based on the elimination of both external and internal scarcities, is a myth and a utopian dream. In a so-called "economics of plenty" internal scarcities will play a pivotal role.

It is much more probable, however, that a state of relative abundance, with external scarcities eliminated, might not be attainable because of the limitations of potential resources available on our planet. Richard Schlegel summed up this point made by Georgescu-Roegen in the following terms:

> The neglect of the entropy law leads to a grave oversight in the judgment of the overall economic potentialities of the earth. . . . The supply of earth's molecular resources puts a limitation on the total number of human lives that are possible during the entire span of our species (12).

Yet, even the limitations of "planet earth" are not absolute. Rapid advance in science and technology might eventually bring about space travel and the colonization of space itself. Completely new sources of energy might be discovered which could make our present calculations of potential scarcities obsolete. Complete automation of productive and distributive processes might lead to a reduction of demand for labor, both physical and mental, and to alleviation of scarcity in human productive factors. Yet, as already stated, the relative abundance of these external factors will lead to the relative scarcity of internal human factors of time, capacity and internal energy for enjoyment of the fruits of labor.

David Ricardo and Thomas Malthus, who have earned for economics the

name "dismal science," were predicting inevitable doom due to the increasing scarcity of subsistence in the face of a rapidly growing population. Both assumed a relatively fixed technology and diminishing returns to land. Ricardo predicted a process of economic stagnation which would inevitably lead to a "stationary state" at a standard of living close to the subsistence level. Such an economy would be also caught in the "malthusian trap" with "positive checks" keeping population from further expansion. For these writers scarcity was the inevitable lot of mankind and abundance an unattainable myth.

IV

THOUGH ALL ECONOMISTS AGREE that scarcity is at the heart of economics, there is strong disagreement as to the implications of this scarcity on a global and national scale as well as the methods for handling it. As to the implications of scarcity for the future of mankind, economists are divided into two camps: pessimists and optimists (13). This division is actually much broader and involves scholars in the social and physical sciences. According to the sociologist Amitai Etzioni:

> Predictions for the future among intellectuals have swung in the recent past from an optimistic view of man's capabilities and a continuing abundance of material goods to a fatalistic pessimism regarding man's inability to respond adequately to current and imminent crises—the population explosion, limited food and resource supplies, environmental pollution, to name a few (14).

Within the economics profession, cleavage between these opposite views is probably even sharper:

> Technological optimists see only rising life expectancies, more comfortable lives, the advance of human knowledge, improved wheat strains. Malthusians see only rising population, destruction of the land, extinct species, urban deterioration, and increasing gaps between the rich and the poor. They would say that Malthus was correct in his own time and today. . . (15).

In general, most scholars recognize that at any point of time, under given technological state of the arts, there exist real limits to the production of economic goods imposed by 1) space for living and working; 2) availability

of raw materials and energy; and 3) space for the production of food and other necessities of life. Though, in the short run, these limits are real, concrete and finite, they are not absolute. Similarly, the limits within these areas are also imposed by human institutions, such as private property in predominantly market economies, privileged status in command-type economies, and so on. They might create man-made monopolies and relative scarcity apart from natural scarcity. An example of an institutional arrangement of limiting opportunity function is the U.S. government's ownership of helium deposits to reserve helium for defense purposes. This is a case of institutional man-made monopoly which can be removed by a development of a new technology for producing synthetic helium.

In the long run, however, the changes in scientific knowledge and technology can expand society's opportunity functions, again, within certain limits. So can the new institutional arrangements which reduce or eliminate the monopolistic power of certain groups which impose artificial or contrived scarcity. Yet, such an expansion of opportunity functions is possible only in the presence of strong preferences of decision makers in control of adequate power to expand these natural or man-made boundaries. And though all scholars acknowledge the existence of these natural and man-made limitations and scarcities flowing from them, they disagree on the capacity of man to transcend these limits by means of technological advance and by perfecting human institutions.

One may legitimately ask why the same objective situation of scarcity is viewed so differently by scholars? Perhaps their views are greatly affected by basic assumptions about the nature of science and technology, the capability of humans and human institutions to apply science and technology to overcome scarcity and the ultimate limits of potential resources capable of sustaining life and economic advance.

The optimists always assume that scientific and technological advance has no potential limits and can go on indefinitely providing an offset to diminishing returns resulting from scarcity. But for pessimists, even science and technology will eventually yield diminishing returns and cease to provide the offset which, in their view, has only postponed Malthusian and Ricardian spectres. In the view of optimists, a human being "is a very special creature whose unique brain gives him not only the capability but the right to exploit . . . all other creatures and all resources the world has to offer" (16), whose ingenuity, understanding and systematic investigation "are turning the tables on nature, making her subservient to man" (17). All this is denied by the

pessimists who "assume that man is one species with all other species embedded in the intricate web of natural processes that sustain all forms of life," who tends to destroy "the natural sustaining web, about which he understands very little (18). While optimists assume that human beings can generate social change and that "mankind's social, economic, political, and technical institutions operate flexibly" to respond to the needs of man, pessimists view "human institutions as ponderous and short-sighted, adaptive only after very long delays, and likely to attack complex issues with simplistic and self-centered solutions" (19). Moreover, pessimists claim that "much of human technology and 'progress' has been attained only at the expense of natural beauty, human dignity, and social integrity" and believe that technology which has caused so many problems "should not be looked at as the source of solution of these same problems in the future." Optimists consider this view "pessimistic," while Malthusians call it "humble" (20).

V

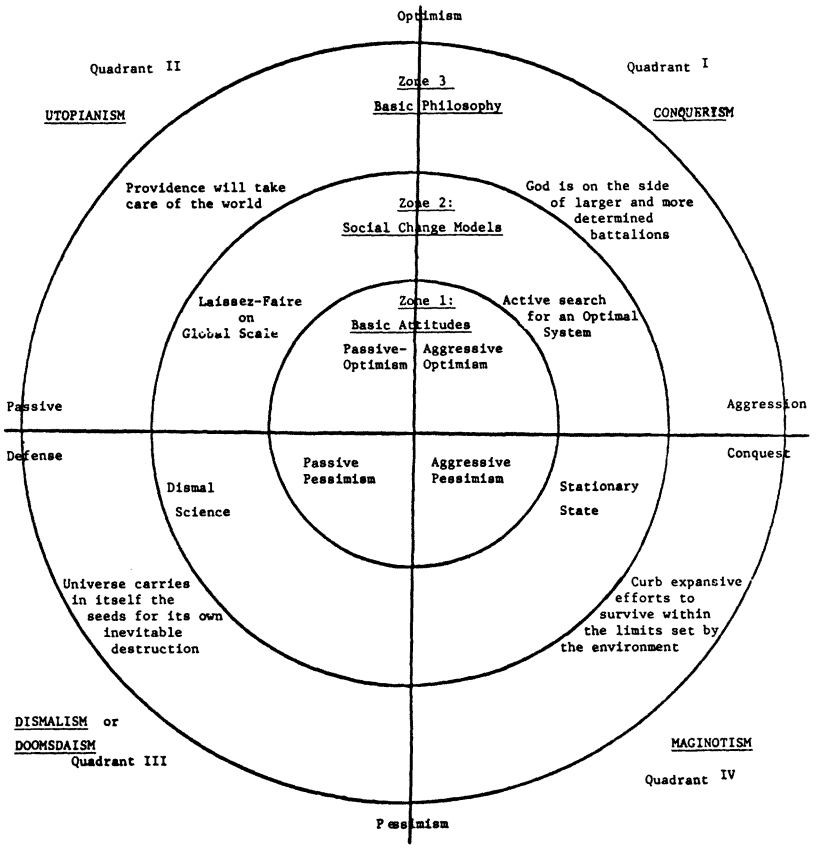
ACCORDING TO WILFRED MALENBAUM, there are two ways to meet scarcity on the global level: 1) "Adjust to current world scarcities and to limits imposed by Planet Earth's fixed endowments or non-renewable resources: learn to live with less." 2) "Adjust to current scarcities and threats of limits by resuming economic expansion so that output continues to increase more rapidly than population" (21). The choice between these two alternatives greatly depends on scholars' perception of the problem and on their psychological attitudes. These challenge-response attitudes of scholars as well as decision-makers in control of power can be classified into four "ideal types" in the Weberian sense (22). Typical ones can be placed on two scales: passive-active attitudes horizontally and optimistic-pessimistic vertically. A combination of these scales leads to the four-quandrant scheme of challenge-response attitudes of scholars and decision-makers, presented in Figure I (23).

The active-optimistic response to challenge shown in quadrant I is called here *Conquerism*. The decision maker views life as a sequence of problems which he attempts to solve actively and creatively. Typically, he searches for new ways of meeting challenges rather than solving problems within the existing state of the arts. He does not accept his opportunity function as a set of fixed parameters but rather as a set of variables which can be changed to make his preference functions effective.

The passive-optimistic challenge-response attitude is named *Utopianism* and placed in quadrant II. Such an attitude is based on the acceptance of "laissez-

Figure I

The Four-Quandrant Scheme of Challenge-Response Attitude of Decision-Making Units and Scholars Building the Models



faire" philosophy on a global scale. It is based on a belief in the "invisible hand" which will somehow take care of our problems and on the conviction that interference with the existing "natural order" can only be harmful.

The term *Doomsdaism,* depicting a passive-pessimistic response to challenge, is placed in quadrant III. Such an attitude has at its foundation a strong belief that human society and the whole universe are doomed and that all human efforts to improve conditions and to prevent inevitable catastrophe are exercises in futility.

Quadrant IV represents an aggressive-pessimistic response to challenge. It is called here *Maginotism* because this attitude was typical of French military leadership after World War I, which thought that the "impregnable" Maginot Line could prevent a German attack. The "limiters," expressing this negative-aggressive attitude, attempt to solve the problems of global scarcities by accepting the limits imposed by their opportunity function and restricting their preference functions to its confines. Typically, they attempt to solve the difficult problems of an uncertain future by restricting efforts and activities which involve risk instead of searching for new vistas to meet the challenge and finding new methods for handling the problems.

Refraining from decisions and actions in the face of pressing problems of growing scarcity can greatly influence the course of economic development. *Doomsdaism*—the pessimistic-passive response to challenge—might lead to a "self-fullfilling prophecy," while *Utopianism*—the passive-optimistic attitude—might result in overlooking certain potentially catastrophic developments which could be ameliorated or even avoided by enlightened and determined action.

Active responses to challenge, whether optimistic or pessimistic, have a potentially greater impact on economic development. In the world of rapidly accelerating scientific and technological advance, the *Conquerist* attitude, which searches aggressively for new, imaginative and even revolutionary avenues for solving our problems, offers certain advantages over all other attitudes. While passive responses to challenge lead man to surrender his determination to shape his own destiny, the *Maginotist* attitude leads to a concentration of efforts on preventing the worst possible outcomes and thereby distracts attention from exploiting more favorable opportunities which could otherwise be attainable if more imaginative approaches were used.

In terms of choices between the two ways to meet the challenges of scarcity on the global level formulated by Malenbaum, *Maginotism* leads to the first alternative: "Learning to live with less," a type of choice which assumes "not

a shortage of material quantity, but a shortage of human quality." The second alternative, associated with *Conquerism,* "assumes not the abundance of quantities of things, but the conviction that on this earth there can be continuous growth in the quality of people" (24). This course, in Malenbaum's terms, "reflects the conviction that man has the power to assure continuous improvement in the quality of life" (25). The comparison of implications for economic development on the global level of these two alternatives can be carried in terms of mankind's preference and opportunity functions. In most general terms, the opportunity function circumscribes the area of possible attainments with an available amount of power, while the preference function expresses desirable aspirations, goals or the desired outcome of efforts. Historically, relative scarcity has always persisted, since the production of economic goods has never been capable of satisfying all human wants. Yet scarcity has had the strongest impact on the economic development of mankind whenever it represented a "bottleneck" or an obstacle to further development. Such a bottleneck can emerge either on the opportunity or the preference side or simultaneously on both (26). How such obstacles to further development are removed, greatly depends on the fundamental attitudes of decision makers who control power.

VI

FOR THE PURPOSE of this analysis it is assumed that no human-made change can be achieved without the presence of two necessary conditions. One necessary condition is control of power, the other, determination or will to use it. Only both taken together can cause change and, therefore, their coincidence is sufficient condition for change. The lack of change or equilibrium was defined by Boulding as a condition maintained when "no one who has power to change . . . has the will and no one who has the will has the power" (27).

In a modern, highly-organized society, economic, social and political power flows from economic, social and political organization. It determines the boundaries of opportunity function. The will or determination to use power to attain a given goal is a component part of the preference function. It is triggered by discontent caused by the recognition and cathection of the gap between the level of aspiration and the level of possible attainment. The central theorem of the theory of discontent is that discontent varies directly with the level of aspiration and inversely with the level of attainment. If

strong discontent leads to the determination to use power to close the discontent gap, and adequate power is used to do it, sufficient condition for change is attained. The discontent theory and the power and will hypothesis of social change can throw some light on how scarcity affects the interaction of preference and opportunity functions and its impact on economic development on a global level (28).

At any point of time, what is or is not a resouce is determined by the state of the arts, or technology in the broader sense, including organizational and administrative knowledge and skills. If under a given technology, scarcity of resources develops (not a contrived scarcity due to the exercise of monopolistic power) primarily because of diminishing return to this technology or the pressure of a rapidly expanding population, this scarcity-caused bottleneck can be met in two ways described by Malenbaum. If the *Conquerist* attitude prevails among those in control of power, the challenge of a narrow opportunity function constrained by a fixed technology will be removed by strong efforts to develop a more advanced technology which will expand the frontiers of old opportunity. New technology will produce new resources necessary for further economic advance.

Historically, such transitions from one technology or "mode of production" to use Marx's term, to a more advanced one have occurred on a grand scale. For example, the pressure of population on subsistence has led to a transition from the stage of gathering food, hunting and fishing to the development of agriculture, and later to a transition from a predominantly agricultural technology to a predominantly industrial one. Still, history has also recorded cases in which societies have failed to push upward their opportunity function and develop a new technology to accommodate their increasing numbers. Some gatherers of food and some hunters attempted to adjust to scarcities imposed by a given technology, became stagnant and were unable to survive. Several old civilizations probably perished in this manner. A relatively recent example of this phenomenon are the Indians of the North American prairies who, probably for cultural reasons, refused to develop agriculture which would enable them to multiply in numbers and settle down on the land, and were eventually overrun by a superior number of settlers using an advanced technology.

Such mode of behavior explains only relatively limited historical incidents. Preference for better technology and higher levels of material well being is not activated only in response to "bottlenecks" on the side of resources generated by a given state of the arts. Frequently, advances on the opportunity

side lead to a more than proportional rise in the level of aspirations contained in the preference function. This phenomenon can be explained by the concept of elasticity of discontent defined as a ratio of the rate of change in the level of aspiration to the rate of change in the level of attainment (31). If the level of aspiration rises at the same rate as the level of attainment, the elasticity of discontent is equal to one. A high elasticity of discontent would mean that wants will expand faster than their satisfaction and that discontent will increase as actual conditions improve. The revolution of rising expectations has its roots in this type of attitude. The pressure of a population explosion reinforced by the revolution of rising expectations increases relative scarcity. Moreover, scarcity can be partially contrived by the determination of those in control of essential supplies to exercise their monopoly power.

VII

SINCE THE POPULATION EXPLOSION, the revolution of rising expectations, a high elasticity of discontent and the exercise of monopoly power are all flowing from the preference side, one can agree with Malenbaum's contention that "man and his institutions are at the root of contemporary shortage crises" and that "man's limitations, not the restricted confines of the earth, will perpetuate scarcities" (30). In view of this, the *Conquerist* attitude must be greatly tempered by the possibility of disasters due to man's limitations on the level of knowledge, aspirations and determination to use available power. Regnant scarcity on a global scale, a vital "bottleneck," is not on the resource side, but on the side of human capabilities and viability of human institutions. Extreme *Conquerism,* narrowly understood, could lead to the fulfillment of doomsday prophecies as effectively as the unenlightened and defeatist attitudes of *Maginotism.*

Our future is uncertain and unpredictable. According to Etzioni, "among the various predictions, the only knowable aspect of the future is that it will be different from whatever is expected" (31). He believes that understanding the implications of Abraham Maslow's hierarchy of needs might suggest some hopeful avenue out of the human dilemma of pressing scarcity which might eventually lead to conflicts and even the destruction of the human race.

Maslow talks about *hierarchy* of needs. Yet modern science cannot handle scientifically objective needs because they flow from human nature and human nature, in turn, cannot be understood without knowledge of the purpose of life. Economists define their models in terms of subjective wants, without denying, however, that wants are related to needs, though in a very complex way, and that wants also can be organized hierarchically like needs. It is possible, therefore, to divide human wants, like needs, into lower or material and higher, non-material or spiritual. Maslow holds "that man's immutable

needs for love, dignity and self-actualization separate him from the rest of the animal world, though he shares many basic animal needs which must be satisfied first" (32). On the subjective side the same principle is probably applicable to human wants.

A basic characteristic of lower wants is that their satisfaction is subject to scarcity and to diminishing returns. If one person gets more of a material good, the other must necessarily get less. Non-material values such as knowledge, faith, self-realization and others are neither subject to diminishing returns nor diminish in quantity when shared with others. Potentially they are infinitely expandable and are not subject to scarcity in the sense that material goods are. Since scarcity leads to competition and conflict, a rapid expansion of lower wants will intensify international conflicts and might eventually lead to wars of mutual annihilation. Maslow's theory suggests a switching of wants from a lower to a higher order. "Dealing with things you can have and others will not lack," wrote Etzioni, "is a psychological prerequisite for genuine, lasting peace" (33).

There are two limitations to Etzioni's scheme based on Maslow's theory of needs. First, it is very difficult to imagine the world population, two thirds of which is still living in poverty, to switch its efforts from the pursuit of material wellbeing to spiritual values. Secondly, it is not clear at what point of material satisfaction mankind will make the switch to higher wants. In Etzioni's own words: "Maslow himself did not specify whether he expected the active quest for higher fulfillment to be triggered as soon as the lower needs were adequately met or only after these needs had been fully satiated, even gorged" (34).

If relative wants are infinitely expandable and if man "is acquisitive by nature and has insatiable desires for material goods and services," Maslow's thesis might not be applicable and will remain just another utopian dream (35).

VIII

ON THE NATIONAL LEVEL a similar analysis of scarcities on preference and opportunity sides can be applied to two important crises: The Great Depression of the 1930s and Stagflation of the 1970s. During the former, resources on the opportunity side were abundant, yet potential capacity was not used and unemployment on a grand scale caused extensive deprivation of a large segment of the population. The economic system did not produce an effective demand adequate to sustain full employment. The bottleneck was on the side of human understanding. Decision makers in control of power were unable to understand the problem in its totality. Their response to scarcity was retrenchment, cutting down expenditures by individuals, businesses and gov-

ernment, recalling loans, and restricting credit by banks, which only further reduced demand and aggravated the situation. It was a typical case of "fallacy of composition," whereby decision makers, acting logically from an individual point of view, were damaging the economic system as a whole and by doing so aggravating their own economic difficulties. This phenomenon was partially caused by the prevailing attitude of *Maginotism* which led to a self-defeating vicious downward spiral in economic activities. Scarcity during this period was neither natural nor contrived on the supply side.

Our present crisis, aptly named "stagflation" or an inflationary recession, differs in many respects from the Great Depression. Our present scarcities on the supply side are not due to the limits reached by natural resources. In Malenbaum's terms, the scarcity of food, energy and materials "are shortages made by actions of man, not by limits of natural resources" (36). These scarcities on the supply or opportunity side are contrived. They are created by the exercise of monopolistic power. They are purely man-made. On both the national and international levels, these monopolies restrict supplies and contribute to inflation.

On the domestic level, the most powerful factor contributing to inflation is the expansion of the nation's income-expenditure flow at a much higher rate than the expansion of its production of goods and services in real terms. No economy can continually expand its income-expenditure flow faster than its production of economic goods and services without creating a general rise in prices which penalizes everyone, especially those with a lower level of income. While those who have ample bargaining power can extort from the economy increases in their income beyond their increases in productivity and can thus stay ahead of inflation, those devoid of this bargaining power lag behind and lose part of their real income. Such inflation might accelerate and become self-reinforcing.

The vicious self-reinforcing spiral of inflation might severely damage the economic system as a whole and cause again immense sufferings. This is also a good example of "fallacy of composition" in which the attainment of an individual's short-run advantage can lead to severe damage to the system as a whole, and through it, to all individuals within the economy. The scarcity or bottleneck is again on the human side. The possibility that contrived scarcities might lead to widespread unemployment, which might start acting in a mutually self-reinforcing fashion with inflation, is a frightening one and could lead to a dangerous economic crisis in all market economies.

Since this paper is a deliberate exercise in global, grand scale theorizing, and therefore of necessity is "vague and impressionistic" in Baumol's terms, no damage can be done if the writer attempts to add some of his own value judgments of what ought to be done to meet the impending crisis. Since the

crisis is primarily caused by the fallibility of man, his lack of capacity to perceive the totality of the problem, his addiction to the pursuit of short run advantages at the expense of long run benefits of a more enlightened behavior, and the shortcomings of human institutions which reflect and frequently exaggerate the shortcomings of individuals of which it is composed, the admonitions of the writer are going to be along these lines.

On the level of knowledge men controlling power need a holistic view of the economy which implies the ability to see things in global and historical perspective. This will, at least, make them aware of the logical trap of the fallacy of composition. On the level of emotions, the short-run satisfaction of material wants should be brought in balance with the long-run view of human existence and the survival of human societies and the race as a whole. Finally, on the level of volition, the concept of external freedom, defined as the right to do whatever one pleases as long as others are not hurt, should be supplanted by the true meaning of freedom—internal freedom,—consisting of the control of man over his appetites and passions and voluntary subjection to the highest values. Human progress along these lines will lead to the gradual improvement of human institutions and to better cooperation among men, organizations and nations. Hopefully, all of this will ultimately result in a gradual removal of the most important scarcities on the human side, which now hamper the economic development of mankind.

1. William J. Baumol, *Economic Dynamics*, 2nd ed. (New York: Macmillan Co., 1959), p. 8. Baumol has admonished the economics profession not to imitate the works of Karl Marx and Joseph Schumpeter because they are "vague and impressionistic." (*Economic Dynamics*, 3rd ed., *ibid.*, 1970, p. 351). However, Nicholas Georgescu-Roegen tells the economics profession that theories ignoring structural changes in an economic system frequently lose their predictive power and that economists should produce "vague and impressionistic studies of the kind brought forward by Marx, Schumpeter, and several other less well-known economists (less well-known through no fault of their own)." (see his "Methods of Economic Science," *Journal of Economic Issues*, Vol. 13, No. 2 (June, 1979), p. 326). This article is written in the spirit of Georgescu-Roegen's admonition.

2. Charles P. Kindleberger and Bruce Herrick, *Economic Development*, 3rd ed. (New York: McGraw-Hill Book Company, 1977), p. 45.

3. Quoted by Marshall David Sahlin in *Social Stratification in Polynesia*, (Seattle, Wash.: Univ. of Washington Press), 1958, p. 125.

4. Henry William Spiegel, *The Growth of Economic Thought* (Durham, N.C.: Duke Univ. Press, 1971), p. vii.

5. *Ibid.*, p. 259.

6. John Maynard Keynes, *Essays in Persuasion* (New York: Norton Library, 1963), pp. 365–66.

7. Kenneth E. Boulding, *Economics as a Science* (New York: McGraw-Hill Book Company, 1970), p. 141.

8. Robert Theobald, *The Rich and the Poor: A Study of the Economics of Rising Expectations* (New York: Potter, 1960).

9. Boulding, *op. cit.*, p. 142.

10. *Ibid.*, pp. 142–43.

11. John Kenneth Galbraith, *The Affluent Society* (Boston, Mass.: Houghton Mifflin Co., 1958), p. 153.

12. Richard Schlegel, *"The Entropy Law and the Economic Progress* by Nicholas Georgescu-Roegen," *Journal of Economic Issues,* Vol. 7 No. 3 (September 1973), book review, pp. 477–78.

13. This cleavage is clearly revealed in Donella H. Meadows *et al., The Limits to Growth* (New York: Universe Book, 1972) and *Models of Doom: A Critique of the Limits to Growth,* H. S. D. Cole *et al.*, eds. (New York: Universe Book, 1973).

14. Amitai Etzioni, "A Creative Adaptation to a World of Rising Shortages," *Annals of the American Academy of Political and Social Sciences,* 420 (July 1975), p. 98.

15. *Models of Doom: op. cit.*, p. 240.

16. *Ibid.*, p. 239.

17. H. J. Barnet and C. Morse, *Scarcity and Growth* (Baltimore: John Hopkins, Univ. Press, 1963), quoted in *Models of Doom,* p. 239.

18. *Ibid.*, p. 239.

19. *Ibid.*

20. *Ibid.*

21. Wilfred Malenbaum, "Scarcity: Prerequisite to Abundance," *Annals of the American Academy of Political and Social Sciences,* 420 (July 1975), p. 72.

22. Max Weber, *The Theory of Social and Economic Organization,* Henderson & Parsons, trans. (New York: Oxford Univ. Press, 1947), p. 14.

23. This model is reproduced here for the convenience of readers and is taken from Oleg Zinam, "Zero Population Growth, Optimum Population Growth, Optimum Population and Quality of Life," *International Review of Modern Sociology,* Vol. 6, No. 2 (Autumn 1976), pp. 338–39.

24. Malenbaum, *op. cit.*, p. 74.

25. *Ibid.*, p. 72.

26. Oleg Zinam, "Interaction of Preference and Opportunity Functions and Long Range Economic Development," doctoral dissertation, University of Cincinnati, 1963, p. 364.

27. Kenneth E. Boulding, *The Skills of the Economist* (Columbus, O.: Howard Allen, Inc., 1958), p. 14.

28. For a detailed treatment of discontent and the power-will hypothesis and their relation to economic development consult Oleg Zinam, "Theory of Discontent: Heart of Theory of Economic Development," *Rivista Internazionale di Scienze Economiche e Commerciali,* November 1971, and "Socioeconomic Change and Discontent: A Search for a Broader Paradigm in Economics," *Eastern Economic Journal,* October 1974, and "Interaction of Preference and Opportunity Functions and Long Range Economic Development," *op. cit.*

29. Oleg Zinam, "A Note on Elasticity of Discontent," *Rivista Internazionale di Scienze Economiche e Commerciali,* January 1970, p. 75.

30. Malenbaum, *op. cit.*, p. 82.

31. Etzioni, *op. cit.*, p. 98.

32. *Ibid.*, p. 98.

33. *Ibid.*, p. 103.

34. *Ibid.*

35. *Ibid.*

36. Malenbaum, p. 75.