

# NATURE, TECHNOLOGY, AND POLITICS IN A GLOBAL CONTEXT

*by Victor Ferkiss*

Humanity today faces a myriad of problems, each one of which in itself is difficult to solve—disparities of wealth, environmental degradation, scarcities of available resources, the threat of war, to mention only the most dramatic, obvious, and pressing. Yet underlying all of these particular problems and rendering their “solution” difficult if not perhaps, under present conditions, at least impossible is a central problem. There is no agency or mechanism with the ultimate power necessary to solve global problems on a global basis and no agreed upon global standard for evaluating solutions to such problems.

## THE NATURE OF PROBLEMS

If one is to use the language of problem solving as a way of conceptualizing human action, certain logical consequences follow. Problems do not exist in the abstract. Nor are they presented as such in nature. Nature consists or at least manifests itself in sequences of events, which are linked in what we moderns call processes. Meadows replace lakes, volcanoes erupt, big fish eat little fish. These are not problems as such. They become problems only when there are observers of these events who are affected by them and who are capable of passing judgments upon their varied outcomes. The replacement of lakes by meadows is not a problem set by nature. It is not even a problem to the fish or birds or insects affected by such a change; although it affects them, they are—we presume at least—not conscious of the change as a problem. Volcanoes are a problem only to human beings affected by their eruptions and—since humans can as yet do nothing to prevent such eruptions—perhaps not even to them. Little fish instinctively strive to avoid being eaten by big fish, but the interspecies struggle for survival is not a problem for the fish as such. Even were the little fish conscious of their situation, they could do nothing to repeal the laws of nature which make it necessary.

Victor Ferkiss is professor of government, Georgetown University, Washington, D.C. 20057.

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For a problem to exist several elements are necessary. There must be a situation—a relationship of forces—which can lead to more than one outcome in the future. Someone must be aware of the situation and the possible future developments which can result from it. That postulated someone must have a standard for judging which of the possible outcomes he prefers. Finally he must have some means of affecting the outcome so as to be able to make it conform more closely to what he wishes the future to become.

Problems can exist at several levels. At the personal level an individual may be conscious of being unhappy in a particular job. He or she may be able to decide that the preferred future is to obtain another job. The individual may then take action to obtain another job. At a national level a high amount of unemployment may be viewed as a problem since it or its consequences are deemed to contravene certain values of the political system. The national political system may take economic and legal actions to reduce unemployment. For a problem to exist, I must reiterate, there must be not only a problematic situation but also a standard of valuation for possible outcomes and a mechanism (related clusters of actions) for affecting outcomes. Mere consciousness that an unpleasant situation exists is not, strictly speaking, a problem.

It is in this theoretical context that the “problem” of nature and technology as they affect humanity as a global entity must be addressed. There is no question but that there is an increasing consciousness among human beings that the future of the human race as a whole—and perhaps even the biological habitability of the planet earth itself—is now “problematic.” But a true problem will not—cannot—exist for humanity unless a working consensus can be created as to which future outcomes are preferred and until some sort of action mechanisms are created to influence these outcomes. The immediate problems which humanity faces are in the realm of creating a value consensus—an ethical standard—for judging outcomes and of creating a mechanism for achieving them. Therefore our problems are essentially ethical and political.

Ethical and political problems are of course rarely entirely separate. We are inclined in the contemporary world to dissociate the two and to view them as separate realms, with ethics thought of as entering into politics as the basis for motivations of political actors, as an input into the political process, the outcome of which in turn is the result of ethical (and nonethical) pressures.<sup>1</sup> Yet politics is not simply the result of ethical pressures; it also conditions ethics. As Aristotle recognized in the dawn of political philosophy, standards of justice differ from polis to polis. It is difficult to distinguish the natural from the conventional, and therefore, to some extent, politics is prior to ethics in

creating—or at least choosing among—ethical norms.<sup>2</sup> Creating a world ethic and a world politics will necessarily go hand in hand. However flawed one may judge the modern nation-state system and its ideological underpinnings to be, it cannot be forgotten that the values of nationalism did not simply create nations but were also created by them. In the case of the United States, people learned to think of themselves as Americans rather than as citizens of Massachusetts or Virginia in part as the result of the successful struggle to create a nation out of a federal union, a struggle in which the Civil War was a temporary if perhaps necessary setback. It has long been a tenet of Marxism that people become conscious of the class struggle, become revolutionaries, in the course of waging the revolution, not simply through a knowledge of theory separated from or prior to practice.

If indeed there are global issues which present potential global problems, our first task is to convert these issues into real problems by creating an international—indeed a transnational, a global—value standard for evaluating possible futures and a political mechanism for creating such futures. If politics is the authoritative allocation of values, as a leading contemporary political scientist has written, then there must be a political system commensurate in scope with the area in which values are to be allocated.<sup>3</sup> Our present difficulty in dealing with—indeed focusing on—global issues results from trying to do so in a situation of diverse world views and fragmented, competing political units. Our values and value-allocating mechanisms must become as global as our concerns.

Before trying to spell out what this means more specifically, we must be clear about the vantage point from which we address our concerns. No individual or group of individuals can totally abstract themselves from their background, history and interests. Any view of reality in a relativistic universe must be a partial view and thus in one sense a biased one. Attempts to overcome ethno- or historicocentricity can be valuable in forcing the reexamination of one's own perceptions and premises. But, while it is possibly arrogant to speak as if one's own views were necessarily correct, it is equally arrogant or condescending to attempt to speak for others. Furthermore, if everyone tries to address a problem not in terms of his or her own perceptions or desires but in terms of the supposed perceptions or desires of others, communication is not necessarily enhanced.<sup>4</sup> On the contrary it may be impeded, with resulting conflict, as when a couple seeks to make plans to go to the mountains or seashore for a vacation based on an assumption about what the other person desires, often leading to an outcome wished by neither.

One can best arrive at compromises when necessary if everyone is an earnest advocate of his or her own personal views and perceptions

rather than seeking a premature consensus. This consideration is especially important in dealing with the problems of nature, technology, and politics in a global context since there is no question but that concern about environmental issues and the purported negative effects of technological change is more widely felt among the inhabitants of richer, "developed" nations than among the people of the poorer ones, while at the same time the newer nations of the world are perhaps—due in part to a phenomenon of delayed national development—even more "nationalistic" than the older ones. It may be true that no man is a just judge in his own case and only a fool has himself for a lawyer, but it is equally true that no one can speak for the inner perceptions and desires of those in whose shoes one has not walked. Everyone dealing with the global future must act as if his or her basic premises are objectively valid even when willing to entertain the possibility that they are not; otherwise discussion becomes polite rather than illuminating, and circular rather than useful.

What are the basic premises about the condition of global humanity upon which the framing of the global problem of its relationships to nature and technology must rest?

The planet earth is a system within which human survival and the quality of human life is dependent on a balance between natural resources and constraints on the one hand and human activity on the other. This system is, with specifiable and largely theoretical exceptions, a closed system. Ultimately what affects the balance in one area affects the global balance and vice versa.

#### THE LIMITS OF SYSTEMS THEORY

While this premise is essentially true, it is subject to qualifications of significant theoretical and great practical importance. Systems theory provides important insights and perspectives for illuminating many of our current global concerns, but often too much is claimed for it.<sup>5</sup> First, the underlying postulate of equilibrium upon which it implicitly—or sometimes explicitly—rests is of questionable usefulness. There are few final states of equilibrium or balance in the natural universe. The earth was as much in a state of "balance" before life existed on it as it is now, and it will be in a state of "balance" even if nuclear war should destroy all life. One may superimpose philosophical or theological criteria upon nature, but nature is always in balance in that everything is always where it is supposed to be, doing what it is supposed to be doing. Subsystems may break apart, but larger systems endure at every level, accommodating the "parts" of the broken subsystems. An explosion does not violate the laws of nature any more than repose does. The solar system is in balance from a human

perspective, but from a cosmic one it is only a matter of time before the sun explodes and destroys life on the planets. The solar system is itself part of the Milky Way which is rushing off into space "somewhere." Indeed the whole universe we can perceive is apparently in a state of movement deriving from a primal "big bang" of billions of years ago. How can we speak of equilibrium being natural when the universe as a whole is in apparent disequilibrium?

What applies to natural systems applies to human social systems as well: the "balance of power," the "two-party system," the "international system" are all only names we give to very short-term relationships in a world in constant flux. Nothing is more natural than imbalance.

It is less of an oversimplification, but an oversimplification nonetheless, to speak of the earth or other systems as being "closed" as many ecologists do. The very concept of a system of course implies a certain amount of closure. If events external to a system affected elements "within" it as much as those elements themselves did, they would have to be included within the specification of the system. The difference between "open systems" and nonsystems is one of degree rather than of kind. Systems which cannot maintain their boundaries—whether for internal or external reasons—collapse as systems. If an airplane hits a house the homeostatic mechanisms of the air-conditioning system collapse. If human beings die, then by some as yet essentially mysterious process the elements of the human biological system are released to become again parts of the larger systems of nature. Extensive smuggling can destroy a national economic system. Yet all systems, save perhaps the universe itself, are open to elements from outside. Some of these exogenous elements are often overlooked because their regular input into the system is assumed in defining it. Human beings must obtain air from outside to breathe in order to survive and pass off wastes to the outside lest they die, for instance.

Similarly the global ecological system of the planet earth depends on receiving energy from the sun on a regular basis as well as being able to reflect some of the sun's rays. Changes in the amount of radiation received can trigger rearrangements of the earthly ecological balance, as in periods of climatic change. Current concern over whether human activity is increasing atmospheric pollution (or perhaps changing the reflective capacities of the oceans through oil spills, etc.) and might trigger a new ice age or whether carbon dioxide released from fossil fuels in amounts affecting atmospheric temperatures might lead to a "greenhouse" effect shifting the temperate zone north and melting the polar ice caps reflects the fact that the earth is an open system, the boundary conditions of which are now subject to human modification. Likewise real potentiality seems to exist for al-

tering the resources available for human consumption by bringing solar energy into the earth's system in a different and more concentrated form through solar collectors in space or by making new mineral resources available by mining the moon or nearby asteroids.<sup>6</sup>

What is true of the earth as an ecological system is true of human social systems as well. It can be argued that virtually no national political system has ever been closed and that exogenous variables such as imperialism (or neoimperialism) or the demonstration effect of activities in other societies have had more to do with human social development throughout history—but especially in recent centuries—than have events within national political systems.<sup>7</sup>

But the question of the openness of systems has another, more subtle aspect. If one defines a system as the regular process of interaction among relevant parts, the nature of the system and the character of the actual substantive balance of the system can be changed by "events" within the system which alter the nature or power of the component parts. These changes, though substantively internal, can be viewed in a logical sense as outside factors. If cells suddenly become cancerous, the balance of the human biological system is upset.<sup>8</sup> If a new messianic religion arises among a people, an existing political order may be threatened. If scientific and technological discoveries give new significance to a previously unused resource, the physical and economic balance of a system will change.

Finally not only is the concept of "balance" within a system somewhat simplistic and the notion that systems are closed an exaggeration but the idea that what happens in one part of a system affects the system as a whole—a basic postulate of systems theory—is itself not necessarily meaningful, even if true. Everything that happens in nature may affect everything else, but not everything is affected equally, one might say, paraphrasing the famous slogan of the Establishment in George Orwell's classic *Animal Farm*. We assume interdependence too easily, even within subsystems. In the United States during the New Deal era, federal control over the growing of food which would not be sold in interstate commerce was justified by the U.S. Supreme Court as a valid exercise of the commerce power because consumption of home-grown food would affect the price of agricultural products generally.<sup>9</sup>

The logic of this position is obvious, but whether drawing such connections is empirically justified to any significant degree in particular situations is quite another matter. The chains of interconnected causality which determine the future are often broken or distorted by events. Many things that we do have little impact because the force of our actions is annulled or dissipated. Well-meaning citizens of the developed world who forego beef once a week in order to make

grain cheaper for the ill-fed in India often fail to recognize the complex interrelationship between supply and demand and alternative uses of resources which governs the world food market and which may make their actions meaningless or, if they do have an effect, produce a result contrary to their aims. (If Americans in the early days of the automobile had held off buying the Model-T Ford, that would have made it more rather than less expensive, and similar mechanisms may operate in the case of food.)<sup>10</sup> Every action does not necessarily have a consequence. Well-tutored students sometimes fail. Love is sometimes repaid by hate. In nature there are materials which do not conduct heat or electricity, thus rendering inputs of energy ineffective. Other materials may “ground” electrical energy and dissipate its effect. Thus we have short circuits in machines which lead to fires and automobiles which fail to start. Pots are designed to keep heat in, just as prisons are designed to frustrate inmates’ attempts at escape. Communication is disrupted by “noise,” in the basic sense of information theorists as well as ordinary usage. If I cast a pebble into a lake, it is true in a certain sense—as proverbs would have it—that its ripples will reach the farthest shore. But if there are motorboats about or a storm rising my pebble makes no real difference. Actions within systems in the real world are sometimes simply “lost,” as far as results go. To say that all actions within a system affect the totality of the system is true, but it is often a meaningless truism, just as is the statement that systems are in balance. Everything has whatever effect it has, by definition. But what follows from this knowledge that the universe is as it is?

The foregoing discussion is not intended as a lengthy philosophical quibble. It has considerable practical ethical and political import, for, insofar as the qualifications which have been suggested as being necessary to systems theory are valid, systems theory loses much if perhaps not all of its utility as a scientific basis for a global ethic of the environment, or anything else.<sup>11</sup> It becomes a series of platitudes of highly problematic operational significance, akin to saying that life is good, or God is love, or justice is preferable to injustice. If balance always exists (in some sense), if systems are never really closed over time and in a larger perspective, and if the effects of our actions upon the future of the balance of systems is as highly dissipated or blocked as has been argued, then one cannot derive from systems theory any practical guides to human conduct by arguing that *X* or *Y* is good or evil because it is or is not conducive to maintaining balance, preserving the “integrity” of a system, or because our actions have consequences for others to whom we should manifest benevolence.

There is of course a school of thought in ecophilosophy which holds, in the strictest sense, that nature in itself provides a standard of

values. The proponents of this view distinguish their position as “deep” as opposed to “shallow” ecology.<sup>12</sup> Such a position is not only explicitly antihumanist but also necessarily antireligious and specifically anti-Christian. Religious humanism in a Christian context takes as its *fons et origo* the belief that when God manifested himself to humanity, he did it in the person of a human being rather than a snail darter. But if the foregoing arguments about balance and the nature of systems are accepted, the argument between nature worshippers and humanists becomes moot. If nature provides no intelligible standards of right and wrong, any ethical standards must be imposed from without, and to accuse humanists of hubris in making man the measure of all things is to accuse them of usurping an empty throne.

The preceding argument is of course an extreme statement of the case. Although it somewhat modifies the position I took elsewhere, it is not meant to imply that we can recklessly do as we wish as individuals or nations.<sup>13</sup> Relative balance (or stability) is still a virtue. There are limits to what can be done because systems do exist and do maintain themselves in the short run at least. We must take into account the possible consequences of our actions upon others (and natural “things” are among these morally significant others). The world is not absolutely random or absurd either descriptively or normatively, and the conservative “postulate of ignorance” is not being unequivocally asserted.<sup>14</sup> But there are limits to our knowledge as well as to our power.

My contention is rather that balance and consequentiality are very general principles, like those corollary to traditional concepts of justice and charity, and that they are not self-explanatory or easily applied. The human search for a world based on justice and love for others has gone on haltingly throughout history because of our difficulty in determining what justice and charity call for in particular situations, a difficulty conditioned both by our own egoism and by our lack of knowledge about consequences. Systems theory provides no magic formula—no neat scientifically based ethical system—to overcome the struggles among individual wills and limited perceptions which have made the human search for an ethical society difficult under earlier rubrics.

#### THE END OF ETHICAL ABSOLUTES

Our slowness—and indeed unwillingness—to face this difficulty stems in large measure from the historical circumstances within which the contemporary discussion of global environmental and technological problems arose. Despite continuing disputes about the practical application of the basic precepts of love and justice certain kinds of outcomes of decisions have generally been regarded by normal,



nonpsychopathic human beings as absolutely intolerable ethically: wholesale massacres (especially of the innocent), widespread famine and pestilence, the destruction of the cultural heritage of civilization, total and arbitrary tyranny, to suggest but a few. The imperative of avoiding such catastrophes could unite persons of goodwill who might otherwise quarrel over the nature of political freedom, economic equality, or cultural norms. When the problem of the global environment burst upon general consciousness (in the Western world at least) in the early seventies it was in a context of various “doomsday” scenarios.<sup>15</sup> “Can the World be Saved?” Walter Cronkite asked Americans over CBS-TV on a regular basis, for instance.

But while argument still continues over the “limits to growth” thesis, it is increasingly a “mopping up” operation intellectually. A consensus seems to be arising that—barring an all-out nuclear war between the major superpowers—the biosphere of the planet earth as well as most of its inhabitants and their societies will be around for many centuries to come.<sup>16</sup> Pollution remains a serious global problem, but, even though changes in global temperatures may take place, there will be air to breathe and the oceans will continue to roll. Certain resources will be scarce, but we will not be reduced to stone-age levels as a species, even if some gasoline-hungry Americans feel that this is what is happening. Many human beings will go hungry—as many always have gone hungry—but the race as a whole will not be starved into extinction. Political and social structures may deteriorate, but life—some may be tempted to say, “Alas!”—will go on. Control of technology will present problems, but absolute rule of human beings by machines appears unlikely. The threats to human survival and well-being on a global basis are no longer widely regarded as absolute. Doomsday has been relativized.

This relativization of the global threat, while it is no cause for complacency (indeed it permits humans to hope and work in a way the conviction of imminent doom did not), radically alters the ethical picture. Absolute disaster, brought about in some way by the destruction of the “balance of nature” and/or the “disruption” of the ecosystem through the overuse or misuse of technology, did make possible implicit agreement on the ethical necessity of avoiding such disaster, however the substantive problems were diagnosed and however they were to be solved. A “lifeboat ethic,” which postulates the possibility of the lifeboat being swamped and all drowning, at least leads logically to a clear imperative—however harsh—about how many people can be kept aboard.<sup>17</sup> But if one postulates instead that the lifeboat will not sink but that many of those aboard will get their feet terribly wet and feel very crowded, we are “in a new ball game” ethically. If the question is no longer one of whether the human race as such survives but

rather one of who survives and how well and under what circumstances, appeals to imperatives of global survival lose their cogency. We have to worry no longer about the maintenance of the system—however loosely conceived—but about the nature of the economic and social and political relationships within it.<sup>18</sup>

What we now face once again are the traditional problems of justice and charity, albeit in a new context and with new factors involved and carrying new urgencies: questions of who gets how much of which values under what conditions, questions of relative priorities for distribution and action, questions which are subject to all the traditional difficulties of identifying with the perceptions and needs of others. The questions of relative well-being which had been put aside temporarily in the concern over global survival as such now reemerge (not that they were ever ignored, save in the most rationalistic and abstract formulations of the doomsday prophets.) No longer can a cosmic imperative of species or planetary survival dictate our actions. We are back in the realm not of mystique but of politics (to recall Charles Peguy's contrast), of deciding who gets what, when, where, and how. The avoidance of dystopia always carried with it some of the same imperatives and assumptions such as the traditional formulations of the creation of utopia. The most fundamental of these, the belief in a conflictless society, is now again lost. While we can no longer speak of global survival *per se*, we have reached a new plane in the upward spiral of human self-understanding in recognizing the extent to which activities on a global scale affect each of us and the degree to which what we each do in some measure affects the fortunes of others.

#### TECHNOLOGY AS A GLOBAL ISSUE

So far my discussion has focused primarily upon nature, upon the extent to which human activity affects the global ecosystem and the possible consequences for our species of these effects. What about technology? How does it affect the human future in a global context?

At the outset we must recognize that technology is a universal human phenomenon. No human society is without it. There may not be, strictly speaking, a line from the stone-age tools (or weapons) of protohumans to the space capsule, but both are steps in a common human enterprise. Technology is of course fundamentally involved in the relationship between human beings and nature. It affects the "balance"—or balances—between humanity and nature, global and local. We are all familiar with discussions about resource depletion, pollution, and the effects of nuclear power and nuclear radiation, but it should never be forgotten that—save for nuclear issues—such questions are not new to humankind.<sup>19</sup> The Greek agricultural system involved the use of goats which effectively denuded Greece of vegeta-

tion. In recent centuries the Chinese and Indians destroyed their forests, thereby bringing about erosion and floods. The American Indians were hardly the ecological saints they are sometimes portrayed to be and were apparently ravaging the buffalo herds even before they obtained—directly and indirectly—horses and firearms from white men.<sup>20</sup> Elizabethan London was a filthy city of polluted air, and the demands of British naval and maritime activity nearly stripped Great Britain of most of her forests. What is new is simply the huge scale, the global character, and perhaps the irreversibility of certain effects of human technologically mediated activity upon the “balance” of nature.

But technology is important not simply in terms of its effects on global humanity/nature relationships. Technology conditions the relationships among men and women (and between them). Some technologies make the rich richer and the poor poorer, others—still probably a minority despite the efforts of proponents of alternative technology—have different effects. Some aid men, some women; some the hitherto rich, some the hitherto poor. Some technologies—and note how I have quietly but necessarily disaggregated the term “technology” into the plural form—lead to centralization of communications and control structures, while others can lead to the availability of a wider range not only of information but also of viewpoints.<sup>21</sup>

In what ways does technology have a global impact upon human society? One way is of course the already noted aggregated impact of technology and its by-products upon the global ecosystem. Also technology makes the world one system in that what takes place in one part of the planet has an impact—sometimes a direct and immediate impact—elsewhere.<sup>22</sup> Satellite communications make possible the instantaneous transmission of images and ideas throughout the planet; intercontinental ballistic missiles—as debate over Salt II underlines—make possible the destruction of virtually any part of the globe from any other part.

This creation of a global system, in which parts interact on a planetary scale, does not of course mean that a global community has been created. If it means anything, the concept of community implies shared values and goals. Mere interaction does not create these, or else a riot would have to be considered a community.

There is a third way in which technology is global: Due to mechanisms of diffusion, different societies tend to adopt the same technologies. This is a relatively modern phenomenon. In the past, while technology per se was a universal human activity, different societies created and used different technologies, depending on their cultures, histories, and the kinds of physical environment to which

they had to adapt.<sup>23</sup> Today the obvious efficacy for certain purposes of the technologies of the industrial West has caused them to spread—or to be spread, often through economic or political coercion—throughout the world, even into areas where they were not germane to the cultures and needs of the recipient societies. Cognizance of this fact is one of the motivations behind the “appropriate technology” movement, especially as the concept is applied to technological development in the so-called Third World.<sup>24</sup> Technology is thus global in its effects upon human societies as well as upon the biosphere, although in different social matrices the same technology may have different effects.

But while technology follows the laws of nature in a general sense (no perpetual motion machine has yet been invented), it is more subject to human control than is nature. The natural context of human social life can be affected and in a sense “insulted” by human activity, but essentially it is a given. Technology is not. Despite the claims of technological determinists, technology only opens doors; it does not compel human beings to enter. Technology is capable of being controlled by human societies.<sup>25</sup> This is true despite the fact that modern Western society until a few decades ago acted as if technology was autonomous, thus rendering it so by default, or allowed its development and introduction and use to be controlled by the so-called invisible hand of the free market system, which, though a human choice or cluster of human choices, has had virtually the same effect. Insofar as the effects of technology are global, they are intrinsically at least capable of being controlled globally.<sup>26</sup>

#### POLITICS AS STRUCTURE AND PROCESS

So far I have discussed nature and technology. But what of our third term, politics? Politics, we have noted, is the way in which human beings authoritatively allocate their values. By definition the outcome of the political process—whatever it may be—represents the decision which a given society has made about the preferred outcome of an available social choice. This is true, it must be stressed, regardless of how unstructured the outcome of the process may be and even if it is seemingly contentless. If the state of Oregon decides to decriminalize marijuana usage, that is as much a political decision as would be the decision to make its use illegal and to set up an elaborate system of categories of offenses and penalties relating to its use. But it also would have been a political decision not to have made its use criminal in the first place. If a society fails to regulate the relationships between humans and nature or between humans and technology, this is just as much a political outcome as any system of environmental controls or technology assessment.

Confusion on this issue is especially strong—and relevant—in discussions of global politics. To understand its origins and impact we must step back a moment into a philosophical context. Traditional Western philosophy from the Greeks and Romans down through the Scholastics and into modern times made a sharp distinction between things and actions, between structures and processes. Things as found in nature were hard such as stones or apparently sharply defined such as men and animals. These things engaged in relations with one another through actions, but these actions left the things essentially unchanged. The great philosophical achievement of the late nineteenth and early twentieth centuries was to break down the sharpness of these distinctions. With the rise of process philosophy in fields as varied as science and theology it began to be recognized that things are themselves essentially systems of action.<sup>27</sup> Some, like stones, are relatively stable and unchanging, even though they are subject to physiochemical processes of alteration and decay. Human beings—it is now almost intellectual second nature for us to recognize—are biological and psychological systems involved in a constant process of change in response to changing environments, that is, a process of interaction with other “things” which affect them and which they simultaneously affect.

But our imagery of politics and government derives from the era of classical physics and the machines which its technology spawned. We think of combinations of moving parts—rigid in themselves—working on their environments in terms of ordered patterns, often as the result of predirection. Our view of the political world is at once mechanistic and rationalistic. We fail to recognize that all structures are simply processes frozen in time. We speak of the “separation of powers” in the American governmental system, for instance, as if the various branches of our federal government were parts of a machine interacting with one another, although most political scientists have been telling us otherwise for generations. We still fail to recognize that the American political process consists of the activities carried on—vastly to oversimplify at the outset—by a myriad of living human beings: the President and his large staff, congressmen and their staffs, judges and their clerks, and a vast and complex bureaucracy. All of these people are influenced by the press, by pressure groups, by their friends and relatives, and by all the stimuli and information they receive from the outside. Their activity, which often resembles less that of a classical machine in a factory than a dance or the milling around of ants in a disturbed anthill, constitutes the process of government, what many political scientists call the political system.<sup>28</sup>

But the difference between structures and processes is not simply a temporal one, with structures being processes looked at in very slow

motion. As noted earlier, systems do exist in at least the sense that, while all things are related, some things are more related than others and tend to be related according to certain patterns. Interaction among elements of a system is not random. Thus in the human body there are certain recurrent physiological processes and certain relatively stable bone structures, and boundary maintenance is preserved to some extent as long as life lasts. Similarly in governments certain people interact more intimately and regularly than do others—this is why it is possible to speak of the senate or the foreign service—and they interact in accordance with patterns, some of which are sufficiently regular in nature to be called laws in either a scientific or a legal sense.

The difference between the global political system and national political systems is therefore paradoxically at once one of kind and of degree. This paradox has led to the spilling of a great deal of ink by theorists of international politics. Those who see the “structures” called nation-states as having very strong systems of boundary maintenance talk about international politics as a process in which the only actors of consequence are nation-states. Those who concentrate on the permeability of the boundaries of the nation-state subsystems to elements entering from the larger world system (including by definition forces from within other nation-state subsystems) talk of transnational politics, denying the exclusive and sometimes even the paramount role of nation-states as actors in the global political process.<sup>29</sup> The difference in fact between national political systems and the global political system is a difference of degree rather than of kind—the former are more “structured” than is the latter—but at some point differences in degree can be spoken of as differences in kind according to the same logic which tells us that differences in quantity become in the real world differences in quality. At some point a rise in the temperature of the water in our tub causes us to deem it hot rather than lukewarm and to react accordingly.

What light does this excursion into theory shed on the current global predicament of mankind? The problem, as I have argued, is that it is increasingly apparent that the effects of humanity upon the biosphere and of technology upon humanity are global both in scope and in nature. If we as a species wish to be able to control these interactions, it is argued or assumed, we must have a “mechanism” of control commensurate in scope with the activity we seek to influence. System-wide problems demand system-wide solutions. How can we create the means for dealing with such global problems save through the creation of mechanisms which operate on a global basis, we feel compelled to ask.

But the question, while no less compelling, undergoes a subtle but important change in meaning if we recognize the hidden assumptions

about politics—willed human choice of social outcomes—which underlie it. The model of government which many who raise the question have implicitly in mind is a false and archaic one. There is assumed to be an area of jurisdiction in which matters of social choice arise, say, the United States trying to deal with the problem of the alleged necessary choice between inflation and unemployment. Then it is assumed that there exists in this area of jurisdiction a mechanism—an organ, a definable group of people with definable powers who can make an authoritative choice binding upon actors within the jurisdiction. If this is the model one has of government at the national level it is quite obvious that such a social problem-solving device does not now exist at the international, global level. If one assumes that such a form of government is necessary to “solve” problems at the global level, then obviously we have far to go in creating such a political structure.

But if one regards the model of domestic government presented above as a vast oversimplification of the political process as it exists within nation-states, then, even though the global political process leaves much to be desired, one may find that such a process does exist and can be used to address global problems even if it is not yet capable of definitely resolving them. By our earlier definition, decision-making processes do exist even in the absence of well-defined “structures,” even when decisions may be partial, amorphous, passive, or sometimes negative. If our concern is with the issues themselves, rather than with structures for their own sake, it is possible to look at the global political process to see how it can and does deal with global issues and how it can be affected or strengthened to deal with them in a manner we as individuals or groups might find more desirable.

#### THE SEARCH FOR GLOBAL ISSUES

In order to accomplish this task we must take the overall generalities which abound in the literature and discussion about the relationship among humanity, nature, and technology and disaggregate the general problems into more particular ones. The first question we must raise deals with the extent to which such problems are truly global rather than primarily local in nature, recalling that everything affects everything else in some sense but some things affect some things more than others. Which aspects of the problems of air and water pollution or resource consumption must be approached on a global basis to be soluble? To what extent do particular technologies which affect humanity or the humanity/nature relationship have to be assessed or controlled on a global basis?

Harlan Cleveland has attempted this kind of disaggregation in a suggestive if not necessarily definitive or final manner. He speaks first

of all of "inherently global environments, in which the issues that arise are simply unmanageable except in a global context."<sup>30</sup> He cites as examples weather reporting, forecasting, and large-scale modification; traffic through and pollution of the oceans and atmosphere; protection of the ozone layer; and, in general, uses of the oceans and outer space. Other matters, he holds, are of "global concern," for example, soils and fresh water systems. Others still, he argues, are of "global interest," such as poverty and population. One may disagree with how thinkers such as Cleveland categorize problems concerning the humanity/nature/technology relationship, but the basic approach is valid and important. Not everything which happens throughout the world is of equal importance for purposes of global management. Some things must be handled globally; others can be handled locally. Which are which is a matter of empirical determination.

Cleveland's categorization of population is a case in point. While the global population must be kept in balance with resources available globally—in a moving, not necessarily an absolutely static "no-growth" equilibrium—this does not mean that population density or birth rates must be the same in every nation. Some nations may continue to increase their populations for a time even while others remain static or even decline. Overall balance need not mean uniformity. The same is true to some extent of pollution. Some forms of pollution ultimately lead to global imbalances. But not every nation or every region or city must have the same standards. This is in accordance with what might be called the "Jack Sprat" principle, in which Jack ate the fat and his wife the lean and together they kept the plate clean.<sup>31</sup> Differences can sometimes be complementary.

Just as there is a real question about which problems must be dealt with on a global level, so there is question of the extent to which a global consensus on values is necessary in order to deal with global problems. Is acceptance of a global environmental ethic a prerequisite for dealing with the balance of humanity and nature? Is a globally accepted definition of the nature of the good society necessary if human beings are to ensure that humankind does not become the victim of its own technological progress?<sup>32</sup> It can be argued that both of these questions can be answered in the negative. All human actions have motivations, it is true, but common action can arise from differing sets of personal or ideological motivations.

Opposition to a particular war can stem from humanitarian or religious convictions, from fear of one's own death or that of a loved one, from fear of cultural or economic destruction, or even from fear that war will increase the power of certain elements in society. Differing motivations can lead to common action. Any examination of the process of legislation on the domestic level discloses that final outcomes



are often the result of differing or conflicting motivations or even perceptions of the situation. Differences in motivation and outlook can affect what an outcome of joint activity will be in various ways, some of them quite subtle; but definable outcomes take place nevertheless. The various international bodies which right now are dealing with regional or global problems are staffed by people of differing and sometimes conflicting world views. Uniformity of perspective is not necessary for problems to be dealt with on a day-to-day basis.<sup>33</sup>

### STRUCTURES FOR GLOBAL ACTION

Assuming that we are able to define some problems as inherently global and to find the lowest common denominator of value agreement necessary to act upon them, what are the practical difficulties which must be overcome? Basically they are distributional in character. If the Jack Sprat principle is valid, who decides who gets the fat and who gets the lean? Not all differences over the distribution of favorable outcomes in the world can be automatically solved in as synergistic a fashion as the story of this happy couple suggests.

Now that most thinkers about the "global problematique," to use Aurelio Peccei's phrase, have abandoned a doomsday approach, they increasingly recognize that the problem of the relationship of nature and humanity is essentially distributional (who gets what benefits and suffers what disabilities) and that any international political process must come to grips with problems of justice and equity.<sup>34</sup> If a certain level of pollution is compatible with the continued balance of the biosphere, who shall suffer it—the developed countries or the developing? This issue illustrates the complexity of the problem since many nations are willing, even eager, to accept higher levels of local pollution in order to maximize economic growth.<sup>35</sup> If consumption of certain scarce resources must be curtailed on the global average, whose consumption shall be allowed to increase and whose must decrease? If uniform rates of population growth are not a feasible goal in the near future, why not allow free immigration from the faster to the slower growing regions? If the use of some technologies should not be universalized because of ecological or social consequences, who shall decide which technologies are appropriate for whom? Even if we accept the basic postulate that global balance and survival can result from the interaction of local imbalances and differences, how can this balance on a global basis be achieved through political decision making?

There are no neat answers to any of these questions, and those who define answers as necessarily complete and rational will find many of the proffered answers no answers at all. But whether we call our

answers solutions or merely outcomes is beside the point since it can be argued that neat solutions are not found in either nature or domestic politics and should not be expected in global politics either.

But if neat solutions are not to be found, certain principles which will necessarily underlie any arrangement of acceptable outcomes can be enunciated. Basically what we must and happily seem to be moving toward is a two-tiered world culturally, politically, and physically. This is to say that a global community of ideas about global problems is being achieved even though differing ideas about local problems continue to be expressed and even to flourish. There is a broad consensus arising throughout the world that certain things are desirable for humanity as a whole. The World Order Models Project lists these as peace, economic well-being, social justice, and ecological balance; although few may have heard of this particular formulation, it echoes a growing world ethic. These principles are of course not self-defining or self-implementing; they stand as a prolegomenon to any future world order, much as the preamble in the American constitution stands in relation to the American constitutional system. That preamble speaks of general goals—forming a more perfect union, establishing justice, ensuring domestic tranquillity, providing for the common defense, and so on. In itself it confers no powers on any agency of government. But at the same time it informs and inspires the actual structure of the law and politics of the United States. An emerging global consensus is beginning to perform the same functions for a still slowly emerging global community. Many of the elements of the consensus may sound platitudinous, but it is well to reflect that they would not have sounded so a generation or two ago. Just as our ancestors accepted levels and forms of cruelty toward men, women, children, and animals that moderns almost universally regard as outside the pale of permissible conduct, or allowed degrees of poverty and hardship we find abhorrent today in all Western societies, so until recently war and poverty and injustice and tyranny were taken for granted as part of the human condition. They are so no longer.

Such agreement upon basic global values, however, need not mean agreement or uniformity of cultural values at the local tier. Different nations and peoples will continue to adhere to different value systems and to interpret basic global values differently.<sup>36</sup> Just as there will be distributional problems with reference to resources and technology, there will be problems as to the extent to which the emerging global community can tolerate local divergences which, even if they do not interfere with global balance as such, threaten the sense of basic justice on which the *de facto* global community rests. A thin line will exist between persuasion and coercion (economic and otherwise) of those nations which officially foster attitudes inconsistent with global ba-

lance, such as encouragement of unrestricted population growth or use of scarce resources, or wanton destruction of animal species or wilderness. To what extent will nations be allowed to violate the human rights of their own citizens, for instance? We have already seen this problem arise in the contemporary world in the Soviet Union, Uganda, Nicaragua, and elsewhere. But we also have seen, it must be stressed, how an informal political process more significant than any official declarations by international bodies addresses itself slowly and haltingly toward moving local policies in the direction of minimal global standards.

Just as there will and must be a two-tiered cultural system throughout the world, which will combine a growing sense of community at the global level with perhaps growing diversity at the local level (it is no accident that ethnic particularism is rising at the same time that the nation-state system is in decline), so there will be a two-tiered global economic and political system. The discussion of Cleveland and others of three levels of "globality" in world problems suggests obvious analogues to the concept of federalism, especially as practiced in the United States. In federal systems it is assumed that everything is related to and has an impact upon everything else within the national community but that some impacts are more massive and direct and require control at higher levels. Some matters typically are of exclusive federal jurisdiction; some matters, while still of obvious concern to the whole system, are areas of overlapping jurisdiction between central and local authorities; and still others are, for both practical administrative and normative political reasons, left to local control.

But the analogy need not and should not be carried too far in a rationalistic and mechanistic fashion, as was typically done by proponents of world federalism in decades past. What is needed, and what is emerging, is not a world governmental structure based on the federal principle, with all sorts of gimmicks patterned on the Lockean world view underlying the American constitution. What is needed and is emerging is rather a world political process based on the federal analogy. It is not a question of "world government" arising through a charter which, after formal deliberation, assigns "rights" and "powers" among constituent elements. What is emerging is a global political practice which informally and *de facto* assigns different powers and privileges to different actors in different contexts in the process of adapting to *de facto* problems. The terminology of Cleveland and his associates is again useful here. In speaking of an emerging world economic order, they speak not in terms of a charter but of a "planetary bargain" which sets forth the terms under which haggling over the distribution of desired outcomes will take place in a "'planetary bazaar' where negotiators are constantly engaged in paral-

lel negotiations about strategically related but tactically separate matters."<sup>37</sup>

This is not to suggest that a free market in the sense of Adam Smith, complete with an invisible hand and Bernard Mandeville's notion of "private vice, public virtue," can solve the global problems arising from the interaction of humanity, technology, and nature. Many of our problems actually stem from the way the economic market system has worked historically, both domestically and internationally. But it should be recalled that the market system was always an abstraction and an ideal which rarely existed in practice, and then only under unusual and restricted conditions created by political coercion.<sup>38</sup> The present world order was not created by the free bargaining of equals but by the coercive mechanisms of the worldwide imperialist system created by industrial capitalism, which is the historical if not the intrinsically necessary or exclusive creator of so many of our ecological and technological problems.<sup>39</sup>

The new process of bargaining must take place within the framework of a prior "bargain," which sets forth limits and goals and cannot, like liberal capitalism, be permitted to threaten the existence of the civil society within which it operates.<sup>40</sup> I have already sketched some of these limits—the global goals set forth by the World Order Models Project or their equivalent form, as previously noted, the analogue to the preamble of the American constitution. The existing nation-state system and the principle of "sovereignty" provide an analogue with the existence of the states of the American union. The American political process is not identical with the American constitutional structure but operates within its framework, with the participants in the process being individuals and corporations and pressure groups and political parties. So also the global political process will involve individuals and communities and multinational corporations and international pressure groups and ideologies. Just as there are limits to the techniques of action and rationales for action that any national political system, such as the American, can allow without willing its own destruction, so there will be limits to acceptable behavior in the global political system. Just as the American system was designed to meet the needs of a continental republic with perceived overall national interests though composed of divergent and conflicting local interests, so the global system will meet the basic needs which call it into existence by providing a political process congruent with the ecological and technological problems which face humanity as a whole despite the very real special interests of nations, regions, communities, and classes.

Will this global system ever solve the problems of the world? This is doubtful. Has the American political process solved the problems of

the American republic? Not really. It has simply enabled Americans to live with the elements of their problems until new problems arose. Even the Civil War did not solve the problems of sectionalism or those caused by slavery; it simply transformed them. But this is only to be expected. All equilibria are, in the last analysis, moving equilibria. Nations, like individuals, do not keep their balance by quiescence, like stones lying on the ground, but by moving like walkers, sometimes tightrope walkers.

What is true of nations is true of planetary society as well. The only outcomes of the global political process which should be ruled out completely are those which would cause us to lose our balance and fall off the tightrope into either the destruction of the carrying capacity of the biosphere or the loss of human autonomy and identity to the machines we have created. Both are possibilities which must be guarded against—even by those who believe that a beneficent Creator has provided an invisible net of providence to save us in the end—but both seem still unlikely.

There is no ultimate solution to the problems posed by the need to maintain a viable ecological balance between humanity and nature. There are rather various possible balances, some more desirable on physical and ethical grounds than others. There are no solutions to the problems posed by technology as such, only ways of choosing among different technologies at different times on the basis of their appropriateness in terms of varied and changing self-images of live human beings. Life is not a set of problems to be solved; it is a voyage.

#### NOTES

1. This is of course not the only way of looking at the possible relationship of ethics and politics. One could ask the question as did the great nineteenth-century liberal Catholic thinker, Lord Acton: "Are politics an attempt to realize ideals, or an endeavor to get advantages, within the limits of ethics?" (as quoted by Gertrude Himmelfarb, "The American Revolution in the Political Theory of Lord Acton," *Journal of Modern History* 21 [1940]: 312).

2. Aristotle *Ethics* 5. 7.

3. David Easton, *The Political System* (New York: Alfred A. Knopf, 1953), p. 146.

4. Christians are perhaps especially confused on this score with many in developed countries trying to act as spokesmen for the world's poor rather than developing their own insights. For some useful insights into this problem from a theological point of view see Bruce C. Birch and Larry L. Rasmussen, *The Predicament of the Prosperous* (Philadelphia: Westminster Press, 1978).

5. For a typical systems approach see Ervin Laszlo, *The Systems View of the World* (New York: George Braziller, Inc., 1972). For a useful critique of systems theory see the chapter "Social Cybernetics: Subjugation by Metaphor?" in Manfred Stanley's *The Technological Conscience: Survival and Dignity in an Age of Expertise* (New York: Free Press, 1979), pp. 136-84.

6. See as an introduction Gerald O'Neill's *The High Frontier* (New York: William Morrow & Co., 1977).

7. The literature on imperialism or contemporary interdependence is too voluminous to be cited, but see Charlotte Waterlow, *Superpowers and Victims: The Outlook for*

*World Community* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1974). On the role of "reference societies" in national political development see Reinhard Bendix, *Kings or Peoples* (Berkeley: University of California Press, 1978). On the importance of exogenous variables generally see Robert A. Nisbet, *The Social Bond* (New York: Alfred A. Knopf, 1970), pp. 316-43.

8. Cancer of course may be triggered by exogenous carcinogens, but their effect is so impossible to predict in terms of individual cells that one can say from the point of view of the human physiological system that the response of cancerous growth is an unpredictable internal event.

9. *Wickard v. Filburn*, 317 U.S. 111 (1942).

10. See Charles B. Schuman, "Food Aid and the Free Market," in *Food Policy: The Responsibility of the United States in the Life and Death Choices*, ed. Peter G. Brown and Henry B. Shue (New York: Free Press, 1977), pp. 145-63.

11. For a suggestive attempt to create an environmental/energy ethic see Howard T. Odum, *Environment, Power, and Society* (New York: Wiley-Interscience, 1971).

12. See Bill Devall, "The Deep Ecology Movement," *Natural Resources Journal* 20 (1980): 299-322.

13. Most notably in my *The Future of Technological Civilization* (New York: George Braziller, Inc., 1974).

14. For an interesting attempt to reconcile an apparently meaningless world with traditional theology see Raymond J. Nogar, *Lord of the Absurd* (New York: Herder & Herder, 1966). See also David L. Hall's "Irony and Anarchy: The Utopian Sensibility," *Alternative Futures: The Journal of Utopian Studies* 2 (Spring 1979): 3-24, and his *The Uncertain Phoenix: Adventures toward a Post-Cultural Sensibility* (New York: Fordham University Press, in press). For a moderate statement of the postulate of ignorance see Peter L. Berger, *Pyramids of Sacrifice: Political Ethics and Social Change* (Garden City, N.Y.: Anchor Books, 1976), p. xiii.

15. See my "The Pessimistic View of the Future," in *Handbook of Futures Research*, ed. Jib Fowles (Westport, Conn.: Greenwood Press, 1978), pp. 479-96.

16. This is increasingly the obvious underlying premise of even the products of the Club of Rome. Note the differences in tone between Donella H. Meadows et al., *The Limits to Growth* (New York: Universe Books, 1971), and such later works as Mihaljo Mesarovic and Eduard Pestel, *Mankind at the Turning Point: The Second Report to the Club of Rome* (New York: E. P. Dutton & Co., 1974); Jan Tinbergen, comp., *Rio: Reshaping the International Order* (New York: E. P. Dutton & Co., 1976); and Ervin Laszlo, *Goals for Mankind: A Report to the Club of Rome on the New Horizons of Global Community* (New York: E. P. Dutton & Co., 1977).

17. See, e.g., Garrett Hardin, *Exploring New Ethics for Survival* (New York: Viking Press, 1972). Much of Paul Ehrlich's normative statement is cast in the same vein. For a dissent from this position see Daniel Callahan, *The Tyranny of Survival* (New York: Macmillan Co., 1973).

18. For examples of discussions of ecological problems as continuing issues of international politics see Harold and Margaret Sprout, *Toward a Politics of the Planet Earth* (New York: Van Nostrand Reinhold, 1971), and Dennis Pirages, *Global Ecopolitics* (North Scituate, Mass.: Duxbury Press, 1978).

19. For a historical study concentrating on attitudes toward nature see Clarence J. Gracken, *Traces on the Rhodian Shore* (Berkeley: University of California Press, 1967).

20. It has been argued, however, that Indians became actually hostile toward wildlife because they felt it was somehow responsible for the coming of the white man. See Calvin Martin, "The War between Indians and Animals," *Natural History* 87 (June 1978): 92-96.

21. On the effects of technology see my *Technological Man: The Myth and the Reality* (New York: George Braziller, Inc., 1969) and "Symposium on Bureaucracy, Centralization and Decentralization," in *Technology, Power and Social Change*, ed. Charles A. Thrall and Jerold M. Starr (Lexington, Mass.: D. C. Heath, 1972), pp. 29-48.

22. See my "Freedom in a Planetary Society," *Humanitas* 104 (1978): 5-16.

23. A current school of ecophilosophy aims at living life styles exclusively dependent on local possibilities, which they call reinhabitation. See Gary Snyder, *The Old Ways* (San Francisco: City Lights Books, 1977).

24. On alternative technology see of course E. F. Schumacher, *Small Is Beautiful* (New York: Harper & Row, 1973). For an extended discussion of problems of technology transfer from a similar viewpoint see Denis Goulet, *The Uncertain Promise* (New York: IDOC/North America, 1977).

25. A classic if somewhat simplistic statement of this viewpoint is Emmanuel Messtene's *Technological Change* (Cambridge, Mass.: Harvard University Press, 1970). For an opposing viewpoint see Langdon Winner's *Autonomous Technology* (Cambridge, Mass.: M.I.T. Press, 1977). See also my "Man's Tools and Man's Choices," *American Political Science Review* 67 (1973): 973-80.

26. On the global effects of technology and the global problems of control see *Alternatives: A Journal of World Policy* 5 (1979): 277-427 (special issue on "Perversion of Science and Technology").

27. For an introduction to this development in theology see Ewert H. Cousins, ed., *Process Theology* (New York: Newman Press, 1971).

28. For a classic statement see Easton (n. 3 above).

29. See David Mitrany, *A Working Peace System*, 4th ed. (London: National Peace Council, 1946); Seyom Brown, *New Forces in World Politics* (Washington: Brookings Institution, 1974); *International Organization* 25 (Summer 1971) (special issue on "Transnational Processes and International Organization").

30. Harlan Cleveland, "Do Global Technologies Require Global Politics?" *Technology in Society* 1 (1979): 22.

31. See my *Future of Technological Civilization* (n. 13 above).

32. For an attempt to discover and synthesize the goals of different groups see Laszlo (n. 16 above). But see also Gustavo Lagos and Horacio H. Godoy, *Revolution of Being: A Latin American View of the Future* (New York: Free Press, 1977).

33. A useful and suggestive study of the views of leading members of the international scientific community active in working on global problems is found in Ernest B. Haas, Mary Pat Williams, and Don Babai, *Scientists and World Order: The Uses of Technical Knowledge in International Organizations* (Berkeley: University of California Press, 1978).

34. See Aurelio Peccei's *The Chasm Ahead* (New York: Macmillan Co., 1969).

35. On this issue see my "The Developed Nations in an Independent World," in *Earthcare: Global Protection of Natural Areas*, ed. Edmund A. Schofield (Boulder, Colo.: Westview Press, 1978), pp. 623-34.

36. See Ali A. Mazrui, *A World Federation of Cultures: An African Perspective* (New York: Free Press, 1976).

37. Cleveland (n. 30 above), pp. 23-24.

38. See Karl Polanyi, *The Great Transformation* (Boston: Beacon Press, 1967).

39. See Michael Harrington, *The Vast Majority* (New York: Simon & Schuster, 1977), pp. 102-51.

40. See Talcott Parsons, *The Structure of Social Action* (Glencoe, Ill.: Free Press, 1949), pp. 715-17.