The human species is on an unsustainable course. The four major biosystems on which humans depend have been in serious trouble for decades (Postel 1994). On average the topsoils on the world croplands are thinning and declining in quality (Brown et al. 1990; Dregne 1989; Oldeman, et al. 1991; Rozanov et al. 1990). The quality of the world’s grasslands is declining and millions of acres are turning to deserts or wastelands annually. The world’s forests are declining and tracts that are managed for high productivity have problems of monoculture vulnerability. The world’s fisheries seem to be in difficulty, for the world fish catch has remained fairly stable for a number of years even though the fishing effort has increased with more intensive technologies and the growth of on-land fish farming. Thirteen of the world’s seventeen major fisheries are in serious decline (Mathews 1994; see also Swardson 1994). In addition, pollution problems are increasing even though regulations have lowered the concentration of some pollutants in some parts of the world. Two pollution problems currently exciting world concern are global warming and ozone depletion with potentially awful consequences for ecosystems and humans worldwide. Another concern is the depletion of relatively accessible energy and mineral resources.
The litany of problems grows each day, but so do efforts to address these problems. As a result there is much debate about many environmental issues, including whether the current rates of environmental degradation and rates of use of nonrenewable resources will have adverse consequences for future generations. Differing conclusions on these issues result in further debates over how radical should the changes be for addressing these problems. The dominant view is that environmental problems are very serious, and, therefore, strong measures for protecting the environment and developing more sustainable life-styles are justified. Nevertheless, the more optimistic minority view cannot be dismissed. It argues that resources are abundant and human inventiveness and adaptiveness along with market pressures for conservation and efficiency will bring about sustainable development without requiring drastic changes in institutions and life-styles. It can boast that many dire predictions in the past have failed to materialize. Past estimates of resource reserves have usually been revised upward and human beings find ways to solve or manage environmental problems when they have to. On the other hand, this view seems to require excessive faith in technology, believing that it will always come to the rescue in the eleventh hour. Many sought-after inventions, however, have not been achieved, such as relatively cheap desalination or a cure for cancer, and there is some evidence that the returns to investments in research and development and the benefits to society from new technologies have declined significantly over the past sixty years (Giarini and Louberge 1978; Ophuls and Boyan 1992).

This chapter does not take sides in this debate but examines the probable social changes that would result from both the growth and the limits versions of the future. However, because much more is known about the impacts of economic growth on society than the impacts of scarcity, this chapter will emphasize the impacts of scarcity. It first develops a general theory of social change in nation-states involving the growth dynamic and then contrasts this theory to one involving no growth or an extended period of scarcity. Scarcity is herein defined as a decline (or no growth) in the average material standard of living (per capita material production and consumption).

This chapter builds on and extends two of my earlier papers: "The Sociology of Nation States: Dimensions, Indicators, and Theory" (1973) and "Consequences of Increasing Scarcity on Affluent Countries" (1983). The first develops a general theory of social change for nation-states
drawn from the sociological literature. It identifies how prominent macrosociological variables interrelate with one another, but it does not deal with scarcity. This theory and most of the interrelationships of its variables undergirds the analysis provided here. The second identifies the impacts of both socioeconomic development and scarcity on the extent of equality, democracy, conflict, legitimacy, disturbances, repression, and centralization. The identified impacts have subsequently received additional empirical support and thus provide the starting point for this chapter. Here these impacts are much more fully explained, the analysis of societal responses is revised and greatly expanded, and the social and political changes that may be necessary to shift to sustainable societies are identified.

**A General Theory of Social Change in Nation-States**

Basic to macrosociological theory (generally the unit of analysis in macrosociology is the nation-state) are fifteen dimensions and their subdimensions: five factors in the production function, three dimensions of structure, five processes, population size, and the environment. These factors do not include all the factors in the theory of change of nation-states developed in an earlier work (Finsterbusch 1973), but they include all the most basic ones and the ones that are the most relevant for tracing the impacts of scarcity.

The five factors in the production function are capital, labor, knowledge/technology, resources, and organization. These vary both in quantity and quality. Higher quantities and quality of the five factors make the system (whether a nation-state or an organization) more productive (other things being equal). As used here the organization factor is broad and can include the quality of the institutional framework governing productive activities and the quality of the organizational rules and management practices of the productive organizations. The three structural dimensions are vertical differentiation, horizontal differentiation, and centralization/decentralization. Vertical differentiation is labeled stratification by sociologists and involves inequalities in income, wealth, power, opportunities, social status, rights, and privileges. Horizontal differentiation involves skills, roles, and group identities. A high degree of differentiation in skills and roles marks an advanced division of labor and high societal complexity, which are associated with socioeconomic development. High differentiation in
group identities is associated with low societal integration. The third dimension of structure, centralization, deals with the system or geographic level at which activities are coordinated and controlled. This should not be confused with the vertical differentiation of power, because centralized control could be exercised in a participatory democratic structure.

The five processes utilized in our theory are integration, interaction, repression, social control and regulation, and productive labor. Integration can be viewed structurally as the height of group boundaries (or the obstacles to interaction), but more generally it is understood as the degree to which the system components work together in producing collective outputs and system survival. Interaction is measured in both quantity and quality. The quality dimension is normally measured on a cooperation/conflict scale. Repression and social control are alternative methods for discouraging harmful or damaging behavior and for encouraging positive behavior. Productive labor involves both paid and unpaid activities that produce valued goods and services. Population is membership size. Finally, the environment for the nation-state consists of the other nation-states and the system of international institutions. The major dimension in this factor is the degree of threat or danger posed by other nations to the subject nation.

To simplify the above theoretical framework, the fifteen factors can be grouped into three categories: socioeconomic development factors, progressive factors, and contextual factors. Socioeconomic development contains eight of the above factors: the five factors of production (capital, labor, knowledge and technology, resources, and organization), the differentiation of skills and roles, interaction across collective units, and productive labor. The progressive factor contains five of the above factors: the equality dimensions, decentralization, integration (including high legitimacy, low differentiation of identities, and low disturbances), social control in high compliance to collective rules, and low repression. This factor is progressive because it embodies the principles of equality, democracy, the rule of law, normative rather than coercive integration, decisions being proximate to rather than distant from the people, group tolerance, and legitimacy. These are the major categories for the impact analysis of the consequences of scarcity on nation-states and will be the focus of this chapter. The contextual factor includes population and the environment (for some purposes, area could be included), which feed into the issue of scarcity.
Theories of social change have focused on socioeconomic development, for this is the major source of change in the past four hundred years. At the heart of socioeconomic development are the five factors of production: capital, labor, knowledge/technology, resources, and organization, and the many variables that generate them, such as education, research and development, the division of labor, appropriate values, communications, dense networks, high interactions and exchanges, laws for contracts and property rights and their enforcement, and so on. As the five factors and their associated variables improve and increase, they increase production but also tend to improve and increase one another and thus further increase production. Thus, the socioeconomic development factor is a self-causing and maintaining factor in that it is caused by the variables within it and their causal interactions. Once it builds up some momentum the nation-state "takes off to self sustained growth" (Rostow 1960) until external forces (such as environmental and resource limits) or system disintegration stop it.

There have been endless debates over which variable or variables are the most important to igniting and stimulating this self-causing factor. Marx and many other sociologists have credited technology as the prime mover, while Weber gave more credit to rational legal organization, values that encouraged savings and investments, and the work ethic. More recently social capital is being emphasized. Coleman (1988, 1990), Putnam (1993, 1994), and Drucker (1993) emphasize the role of knowledge and knowledge workers. It is not necessary to settle this debate because it is sufficient for our purposes to recognize the contribution of all these variables to socioeconomic development.

In this chapter we examine the impacts of economic growth (a major component of the socioeconomic development) and scarcity on the progressive factor, drawing upon the social science literature. Our finding is that economic growth enhances the progressive factor and scarcity weakens it. Scarcity tends to decrease equality, integration, normative social control, democracy, and system legitimacy, while increasing conflict, regulation, disturbances, repression, and centralization. What is uncertain, however, is how nation-states will respond to these negative impacts of scarcity. It is conceivable that society's response to scarcity will involve reforms that make it more progressive than ever. More ominous predictions, however, seem more likely.
Impacts of Economic Growth and Scarcity on Inequality

Under current conditions economic growth decreases inequality, and scarcity increases inequality. Economic growth may have had negative effects on equality up to the nineteenth century as most of the people remain at a subsistence level and the new wealth goes mainly to a small elite (Kuznets 1955). Even more recently it has increased inequality during the early stages of technological improvement and industrialization in agricultural societies (Kuznets 1963). As Kuznets points out, however, the fuller impact of economic growth is to increase equality, and much empirical evidence for the past half century demonstrates this (Ahluwalia 1974; Bollen and Jackman 1985; Blumberg 1980; Chan 1989; Gagliani 1987; Jackman 1975; Lecaillon et al. 1984; Lindert and Williamson 1985; Lipset 1978, 1994; Muller 1988; Myrdal 1956; Ophuls and Boyan 1992; Viditch 1980; Ward 1978; Weede 1993; Williamson 1990; Williamson and Lindert 1980). The main explanation why economic growth increases equality as expounded by Lenski (1966; Lenski, Lenski and Nolan 1991) is that economic growth greatly increases the need for knowledge. As a result, elites can command a much smaller percent of the useful knowledge needed to expand production and their wealth, so they must depend on an increasingly knowledgeable and sophisticated labor force. Knowledge requirements lead to the expansion of education (education can be considered a component of socioeconomic development), the middle class, and the professions. Elites highly reward these groups to motivate high performance and greatly increase production, and thereby their wealth. Even though their share of the production thereby decreases, their wealth grows faster than if they tried to retain a greater proportion of the gains in production but thereby slowed its growth.

In an expanding economy, an elite can make economic concessions in relative terms without necessarily suffering any loss in absolute terms. In fact, if the concessions are not too large, and the rate of the economy’s growth is great enough, relative losses can even be accompanied by substantial absolute gains. (Lenski 1966, 314)

Put in economic terms Lenski’s thesis is that economic development after some threshold of industrialization results in diminishing
and even negative returns to elites for their monopolizing the surplus. He also points out that educated workers are not as vulnerable to exploitation as unskilled workers who must compete with masses of other unskilled workers. Educated workers have a better bargaining position that translates into higher incomes. Finally, he discusses how economic growth facilitates the rise of democratic institutions and these in turn increase the political power of lower groups that usually translates into more favorable policies and economic benefits for them.

The above arguments point to elite concessions for their greater absolute benefit and lower groups wresting benefits from upper groups through democratic mechanisms. Another equalizing force is the diffusion of education (which makes society more productive and makes employers richer). When education is rare, returns to education are very high and incomes very unequal. When education is widespread, the middle class expands greatly and, as Lecaillon and others (1984) argue, there is increased competition among qualified applicants, which reduces the relative incomes of the high-skilled occupations (unless they organize to reduce competition). Another equalizing force that is related to the diffusion of education is the upgrading of the occupational structure so that it no longer is a bottom heavy pyramid but bulges in the middle (Lipset 1978).

The above discussion looks at inequality in changes in the production system. Economic growth also increases equality in changes in the consumption system (Blumberg 1980; Firebaugh and Beck 1994; Lipset 1978). The consumption gap among classes declines as the lower class gets medical care, electricity, indoor plumbing, refrigerators, telephones, television, and possibly even cars. The rich have more and higher quality goods but their life-styles do not differ so markedly as elites and peasants in less developed countries.

Another argument that identifies economic growth with greater equality is provided by Ophuls and Boyan (1992). They observe that the normal condition for human societies is scarcity and this condition makes governments necessary for keeping the peace by regulating property to prevent the war of each against all over scarce goods. In keeping the peace "civilized polities have always institutionalized a large measure of inequality, oppression, and conflict" (189). Exceptions to this rule can occur in times of relative abundance as in the past several centuries, which have "made our societies and our civilization what they are today—relatively open, egalitarian, libertarian, and conflict-free" (190). They predict, therefore, that a return to the
more normal conditions of scarcity would replace democracy, freedom, individualism, equality, and domestic peace with inequality, oppression, and conflict. In sum, economic growth increases equality and greatly improves the situation of lower groups under current conditions.

In contrast to the positive effects of economic growth, scarcity has negative effects. There is consensus among scholars that scarcity increases inequality (Blumberg 1980; Finsterbusch 1983; Gurr 1985; Lipset 1978; Ophuls and Boyan 1992; Viditch 1980). Five arguments support this proposition. First, because scarcity is the opposite of economic growth, it should have the opposite effects. Two impacts of scarcity are contained in this argument: scarcity eliminates jobs and income disproportionately for lower groups, and scarcity reduces the willingness of upper groups to support programs and policies that benefit the lower groups.

Economic growth expands jobs and opportunities. This generally allows lower groups choices between jobs and reduces the number who must accept truly exploitive wages. In contrast scarcity shrinks the job market, especially the marginal, unskilled jobs, and greatly increases the competition among the unskilled for the remaining jobs that tend to be offered at depressed wages. Economic growth also provides an expanding pie that can finance concessions of various kinds made to lower groups, including welfare for the needy and training for the unemployed. Scarcity, on the other hand, limits society’s ability to address the needs of the needy. In political terms this means that the demands of lower groups for better lives in times of scarcity cannot be satisfied without threatening the favorable circumstances of the upper groups. Because the upper groups have the political power, the demands and needs of the lower groups will not be met. Furthermore, the lack of assistance for the lower groups can be justified by claims that such policies would divert resources from those who would invest in economic growth and harm the lower groups more in the long run (the trickle-down theory). This argument seems to be contradicted by evidence that welfare policies have been instituted in times of hardship, but as Gurr (1985) points out, they were always premised on the depressed times being short-term. He argues that a relatively permanent scarcity would greatly limit welfare policies.

The second explanation for scarcity’s negative impact on equality is that scarcity translates into inflation, which more adversely impacts
lower groups (Blumberg 1980; Gurr 1985; Stretton 1976; Viditch 1980). They spend a greater percent of their income than do upper groups on consumer goods, which have high resource inputs and will inflate substantially with scarcity. Upper groups buy greater quantities of goods but less proportionally. They also spend more on quality, which increases the value of most goods without using much more resources. Quality goods need not inflate as much from resource scarcity as lower quality goods. Upper groups also buy bigger homes and estates, which will inflate with scarcity, but as owners they will benefit when these appreciate in value. On the other hand, the poor pay rent and will experience a marked decline in their standard of living even if they manage to stay employed.

The third explanation of why scarcity increases inequality is that upper groups can better protect themselves from the negative effects of scarcity (Gurr 1985; Ophuls and Boyan 1992; Streeton 1976). They organize faster and more effectively to advance and protect their interests (see Olson 1965, 1982). The managerial and professional classes and unionized labor have some control over the terms of their remuneration and keep them at the level of inflation, which increases inflation even more for the politically and economically weak.

The fourth explanation of why scarcity increases inequality is that as resources become more scarce they become more unevenly distributed. Midlarsky (1982) presents a sophisticated mathematical argument for increasing inequality with the degree of scarcity of a resource and finds actual distributions closely fitting his mathematical models. He then reports a high cross-national correlation between population increase (which increases scarcity relative to land) and inequality in post-World War II agricultural societies. Other studies show high rates of population growth being correlated with high inequality (see Bollen and Jackman 1985; Kuznets 1955; Simpson 1990; Williamson 1991). Finally, Midlarsky demonstrates scarcity is related to inequality, civil strife, and revolution in agrarian societies (see also Russett 1964; Tanter and Midlarsky 1967).

The fifth explanation of why scarcity increases inequality is that the controllers of resources, who are predominantly the rich, will gain in times of scarcity while the rest of the population suffers. Just as homeowners and renters profit from inflation and scarcity, so do those who control natural resources that are becoming scarce.
Impacts of Economic Growth and Scarcity on Integration

Economic growth increases integration and scarcity decreases it. Economic growth does not eliminate group identities and intergroup conflict, but it does mitigate the conflict between groups, reduces its violent expression, and channels it into legal political actions and compromisable demands (Finsterbusch 1983; Gurr 1985; Heilbroner 1992; Ophuls and Boyan 1992; Shefrin 1980; Stretton 1976). Ophuls and Boyan (1992) point out that economic growth leads to rising expectations so that each generation expects to become richer than its parents. “Thanks to this expectation of growth, the class conflict and social discontent typical of early nineteenth-century Europe were all but absent in America” (237). Throughout this century, growth continued to be a basis for political solidarity. It allows economic bargaining to replace conflict over political principle and the basic structure of society as illustrated by labor winning bargaining power and subsequent economic gains while dropping its demands for socialism. As long as everyone is improving economically, the demands for equality of income and wealth are weak, especially if upper groups can plausibly claim that the current unequal system is necessary for a productive economy. As Ophuls and Boyan observe, “American political history is but the record of a more or less amicable squabble over the division of the spoils of a growing economy” (238). Economic growth, therefore, tends to legitimate the system of inequality and dampen the conflict that inequality stimulates.

Shefrin (1980) similarly explains the connection between economic growth and low or mitigated conflict by describing how it supports what he calls consensus politics in America (nonpolarized, nonideological, and nonradical). Actual conflict is over limited demands by limited strategies and resulting in limited concessions. People do not demand basic change or deeply resent their subordinate position in the economic hierarchy, because economic growth makes them optimistic about their economic future and makes established means for personal betterment appear appropriate.

Economic growth strengthens integration not only by reducing conflict but also by giving people what they want, muting their protests, supporting a pragmatic bargaining style of politics, forestalling civil strife, and enhancing system legitimacy. Ophuls and Boyan (1992)
point out that economic growth provides the basis for pragmatic politics, which controls social conflict, diverting it from basic issues to economic bargaining, which is a matter of a little more or a little less. Because economic growth means that even losers win something and because the bargaining is continuous, even losers support the system because they hope to win more next time. Another way that growth enhances integration is by increasing legitimacy. As Lipset (1960) argues, economic development creates the perception of effectiveness and effectiveness is a major cause of system legitimacy.

The effects of scarcity are the opposite. There is widespread agreement that scarcity is likely to reduce integration even though there is not much empirical evidence to draw upon. Scarcity decreases integration by increasing competition, conflict, and disturbances, and decreasing regime effectiveness and system legitimacy. These impacts in turn tend to increase repression and undermine or weaken democracy (Boulding 1973; Finsterbusch 1983; Gurr 1985; Heilbroner 1992; Lipset 1978, 1994; Ophuls and Boyan 1992; Shefrin 1980; Stretton 1976). Five explanations have been advanced in support of this proposition. First, scarcity negates the positive functions of economic growth for integration. Many analysts argue that scarcity will intensify class conflict (Blumberg 1980; Boulding 1973; Gurr 1985; Heilbroner 1992; Ophuls and Boyan 1992; Shefrin 1980). Boulding’s exposition of this point is particularly stark.

In the stationary state, there is no escape from the rigors of scarcity. If one person or group becomes richer, then the rest of society must become poorer. Unfortunately, this increases the payoffs for successful exploitation—that is, the use of organized threat in order to redistribute income. In progressive societies exploitation pays badly; for almost everybody, increasing their productivity pays better. . . . In the stationary state, unfortunately, investment in exploitation may pay better than investment in progress. Stationary states, therefore, are frequently mafia-type societies in which the government is primarily an instrument for redistributing income toward the powerful and away from the weak. (1973, 95)

Shefrin (1980, 3) expresses this theme thus: “In the absence of growth . . . more income or opportunity for disadvantaged classes necessarily involves attacks upon the possessions and privileges of the economic elite. The stratification system itself must then become the visible reason for relative deprivation and the visible obstacle to advancement.”
Scarcity provides conditions that do not lend themselves to pragmatic compromising politics, and issues of basic structure reemerge in the political arena. The expanding pie allowed new demands to be at least partially satisfied without sacrifice by the more powerful. It allowed the government to support business interests at the same time that it provided welfare and defense. A shrinking pie means that more severe choices between these policies have to be made, and, therefore, basic principles come into conflict. Furthermore, environmental policies are matters of principle and are not legitimately framed in economic terms. How much is a life worth? How much increase in future cancers can be justified by costs in millions of dollars? How much employment should be sacrificed for an endangered species? These are not good issues for the bargaining table.

Another problem with a shrinking pie is that the conflict between classes and groups becomes a zero sum game in which someone must lose if someone else gains. When the contest results in big winners and little winners, as with the distribution of the expanding pie, the conflict is not as intense as when it results in winners and losers or big losers and little losers. Scarcity also increases resentment. Most Americans do not complain about the obscene wealth of others when they can have their own piece of the American dream. With scarcity, however, the profligate consumption of the wealthy is likely perceived as using up limited resources and leaving less for others. Rationing or some other type of resource-use planning may be advocated and clashes over principles becomes likely. Furthermore, scarcity removes the justification for inequality, which is that the inequality is needed to produce economic growth. If economic growth is not possible owing to environmental limits, this argument loses force, gross inequality becomes less tolerable, and conflict increases.

The second explanation of why scarcity decreases integration is derived from deprivation theory as developed by Gurr (1970, 1985). Unless scarcity arrives very slowly to allow for gradual adjustments, scarcity will cause strong feelings of deprivation as reality falls far short of expectations. The deprivation-induced anger and collective action may at first be deflected away from political institutions toward competitors or opponents or into self-destructive and antisocial behavior.

One would anticipate intensified labor-management conflict and an increase in hostility toward minorities and politically-unpopular groups. The racist policies of the rightist National Front in Britain are
a case in point, and by this interpretation their policies are a form of scapegoating. One might also expect an increase in anomic individual behavior among the most deprived. A horrific model is provided by the black underclass in the United States, a group which has responded to institutionalized poverty during the last two decades with high and rising rates of interpersonal violence, substance abuse, and predatory crime. (1985, 61)

In the long run, however, the anger will be directed toward the polity, the powerful, and the system of inequality, and more radical demands and forms of political action will become more legitimate and prevalent.

The third explanation of why scarcity decreases integration is derived from Tilly's (1978) mobilization theory of collective action as reported by Gurr (1985). In times of economic decline, competition increases and groups that organize to protect or advance their special interests will do far better than individuals or weakly organized groups. Those who act first will gain the most benefits, because scarcity will rapidly deplete the government's ability to confer benefits. Furthermore, governments will increasingly respond to challengers with repression, for it is less costly in the short term than concessions. Collective action, therefore, will become more costly, but the costs of inaction are likely to increase even faster. Scarcity, therefore, spurs interest-group organization and the intensification of conflict among groups. Tilly also uses the cost-benefit logic to argue that scarcity fosters conditions that greatly favor revolutionary conflict, particularly the withering of support for the government and the shifting of the previously uncommitted to support the challengers.

The fourth explanation of why scarcity decreases integration focuses on the legitimacy problems of governments in times of economic decline. The importance of economic growth for legitimacy is a favorite theme of Lipset (1960, 1978, 1994). "Legitimacy is best gained by prolonged effectiveness, effectiveness being the actual performance of the government and the extent to which it satisfies the basic needs of most of the population and key power groups" (1994, 8). Unpopular governments can often stay in power in times of economic growth, but economic failure will likely facilitate a breakdown. Established democracies generally have a reservoir of popular support and may survive economic decline for a while. Over time, however, scarcity erodes legitimacy, making even democracies vulnerable to authoritarian movements as in the 1930s.
Another link between scarcity and eroding legitimacy is the type of government policies that scarcity requires. They will require sacrifice. People will have to bear costs and consume less to protect the environment and adjust to scarcity, and these will be unpopular policies as evidenced by the public’s rejection in 1978 of President Carter’s five-cent-a-gallon gasoline tax. A likely scenario is that the government will institute many relatively painless policies, which will not deal adequately with the problem and allow the crisis to get worse and more costly to deal with. Its failure will decrease legitimacy.

Our attention has been mainly on the developed democracies. When we consider the Third World, the scarcity-induced declines in integration can lead to government collapse and anarchy. Kaplan (1994) provides vivid images of current anarchic situations in West Africa that make societal breakdown seem a very plausible impact of scarcity in societies with weak institutions.

West Africa is becoming the symbol of worldwide demographic, environmental, and societal stress, in which criminal anarchy emerges as the real “strategic” danger. Disease, overpopulation, unprovoked crime, scarcity of resources, refugee migrations, the increasing erosion of nation-states and international borders, and the empowerment of private armies, security firms, and international drug cartels are now most tellingly demonstrated through a West African prism. (1994, 46)

He describes countries where the government cannot provide law and order over most of the country and not even in many parts of the capital at night. He cites a State Department report that describes a major African country as “becoming increasingly ungovernable.” His study echoes what Rashmi Mayur wrote a decade earlier (1985) about the devastating results of the population explosion in the urban areas of India, which included the real possibility in the near future of “mass starvation, widespread misery, and breakdown of the local and even global social fabric” (27) and “social, political, and institutional collapse” (28).

The fifth explanation of why scarcity decreases integration is that it aggravates all fissures in society. The shrinking pie intensifies the class struggle as discussed earlier, but Blumberg (1980, 220) adds that scarcity “will almost inevitably increase the overall level of social nastiness” and aggravate all fissures and cleavages, “creating social
Conflict amid a general scramble for self-aggrandizement.” He goes on to describe how racial, gender, educational, generational, and regional conflicts are likely to intensify in the United States.

**Impact of Economic Growth and Scarcity on Democracy**

Economic growth strengthens democracy and scarcity threatens it. The positive effects of economic growth on democracy has been a major theme in Lipset’s work (Lipset 1960, 1978, 1994; Lipset, Seong, and Torres 1993; Diamond, Linz, and Lipset 1990), and it has strong empirical support (Cutright 1963; Diamond 1992; Bollen 1979; Bollen and Jackman 1985a; Flanigan and Fogelman 1971; Inkeles 1991; Neubauer 1967; Olsen 1968). The explanation, in part, is due to the positive effects of economic growth on equality and integration, which both strengthen democracy. It also expands the middle class, the educated, and the percent of the population that have a stake in the system and would be adversely affected by political instability. With the class pyramid bulging at the middle instead of polarized between a small elite and the poor masses, power holders have much less to fear from losing the reigns of government in an election, for the change in policies would not be very radical. “A large middle class tempers conflict by rewarding moderate and democratic parties and penalizing extremist groups” (Lipset 1960, 51). Economic growth and the expansion of education also increase intermediary organizations and tolerance toward those with different views, both of which are essential to the effective functioning of democracy. Finally, economic growth reduces the intensity of conflict as pointed out above and accommodates the resolving of issues and handling of demands through democratic bargaining (see Kassiola 1990; Ophuls and Boyan 1992).

Many other effects of economic growth directly or indirectly strengthen democracy. Lipset explains some of these.

The general income level of a nation also affects its receptivity to democratic norms. If there is enough wealth in the country so that it does not make too much difference whether some redistribution takes place, it is easier to accept the idea that it does not matter greatly which side is in power. But if loss of office means serious losses for major power groups, they will seek to retain or secure office by any
means available. A certain amount of national wealth is likewise necessary to ensure a competent civil service. The poorer the country, the greater the emphasis on nepotism—support of kin and friends. And this in turn reduces the opportunity to develop the efficient bureaucracy which a modern democratic state requires. (1960, 52)

There is widespread agreement that scarcity is a threat to democracy. We give five explanations for this view. First, as with equality and integration, scarcity cancels the positive effects of economic growth. However, it does not necessarily produce the opposite effects. For example, it does not necessarily shrink the middle class. On the other hand, it could stimulate radicalism, which a large middle class tends to inhibit. Scarcity also increases inequality and decreases integration, which in turn threaten or weaken democracy. The aggravated conflict and loss of legitimacy that scarcity is likely to cause are particularly troublesome for the survival of democracy.

The second explanation of why scarcity weakens or threatens democracy is that it creates problems and crises that are hard for democracies to solve. Then when a democracy fails and the problems deepen, the public is tempted to jettison democracy for a more decisive, forceful, active, and authoritarian government. The strength of democracy is its responsiveness to the will of the people. This strength becomes a weakness in times of scarcity. Dealing with scarcity problems requires sacrifice, restraint, coercion against enjoyed but ecologically harmful behavior, and coercion enforcing ecologically helpful behavior. These requirements, however, are not popular. Politicians in democracies, therefore, usually do not pass the tough legislation that is needed. For example, the American response to the oil crisis in 1973 was to lower the speed limit to 55 MPH and urge the public to voluntarily lower the thermostat in winter. Later it gave tax deductions for some insulation costs and required better gas mileage for cars with a very leisurely implementation schedule. Great sacrifice, such as an increase of $1.50-per-gallon gasoline tax, was never even considered.

Democracy, laissez-faire, and minimal regulation have together helped create some of the problems of scarcity. The famous “tragedy of the commons,” or overexploitation of the environment, is the natural result of unregulated free choice. The democratic answer is mutual coercion mutually agreed upon, but it is hard to get that agreement. Ophuls and Boyan state the problem thus:
Under conditions of ecological scarcity, the individuals, possessing an inalienable right to pursue happiness as they define it and exercising their liberty in a basically laissez-faire system, will inevitably produce the ruin of the commons. Thus the individualistic basis of society, the concept of inalienable rights, the purely self-defined pursuit of happiness, liberty as maximum freedom of action, and the laissez-faire principle itself all become problematic. All require major modification or perhaps even abandonment if we wish to avert inexorable environmental degradation and eventual extinction as a civilization. Certainly, democracy as we know it cannot conceivably survive. (1992, 199–200)

The third explanation of why scarcity weakens democracy is that it generates many technical issues that lend themselves poorly to participatory decision-making procedures. Many important decisions with significant distributional side effects are best handled by experts without much public participation. We would expect, therefore, that some amount of democracy would be sacrificed to technocracy.

Ophuls and Boyan (1992) develop this line of argument at length. Assuming that democracies will call upon technological fixes to solve environmental problems with minimum material sacrifice, they observe:

Numerous other writers of varying persuasions see the same trend: more technology means greater complexity and greater need for knowledge and technical expertise; the average citizen will not be able to make a constructive contribution to decision making, so that “experts” and “authorities” will rule perforce; and because accidents cannot be permitted, much less individual behavior that deviates from technological imperatives, the grip of planning and social control will of necessity become a stranglehold. . . . For these problems will require us to depend on a special class of experts in charge of our survival and well-being: a “priesthood of responsible technologists.” (209)

In this way “democracy must give way to elite rule . . . [because] the more closely one’s situation resembles a perilous sea voyage, the stronger the rationale for placing power and authority in the hands of the few who know how to run the ship” (209). The resulting state will be “more authoritarian and less democratic” (215).

The fourth explanation of why scarcity weakens democracy is that it can cause fear and potentially even panic, which can undermine the confidence in democratic institutions required for them to function
without a strong show of force. This line of argument is more speculative than the others but still highly plausible. Heilbroner (1992) observes:

As the historian of ancient and modern democracies illustrate, the pressure of political movement in times of war, civil commotion, or general anxiety pushes in the direction of authority, not away from it. . . . The passage through the gauntlet ahead may be possible only under governments capable of rallying obedience far more effectively than would be possible in a democratic setting. If the issue for mankind is survival, such governments may be unavoidable, even necessary. (132–34)

The fifth explanation of why scarcity threatens democracy is that lower groups in times of scarcity are ineffective in getting their demands met by peaceful means, so some of them turn to more radical and even violent means. The state is likely to become more authoritarian and repressive to deal with the dynamics of the resulting civil conflict (Gurr 1985).

**Other Impacts of Economic Growth and Scarcity**

Just as economic growth has had nearly an infinite number of impacts over the past centuries, so will scarcity have a great range of impacts. These have not been discussed and empirically investigated as much as scarcity's impacts on equality, integration, and democracy, so we will not discuss them extensively here. A number of these have already been mentioned in connection with equality, integration, and democracy. Of special interest is Ophuls and Boyan's speculation that scarcity makes individualism, liberty, minimum restraints, laissez-faire, and inalienable rights of individuals dysfunctional. They will lose some legitimacy relative to competing values, so the practices associated with individualism could be curtailed.

One structural change that is often mentioned in connection with scarcity is centralization. Scarcity requires greater planning of the use and allocation of the limited resources, which requires some centralization of control as in time of war. Ophuls and Boyan (1992) hold out hopes that polities can be democratic and decentralized in the long run but not in the short run. "During the transition to any form of steady state one can envision, it would be imperative to minimize
pollution and use resources as efficiently as possible, and this probably would mean greater centralization and expert control in the short term” (213).

Another common speculation is that war and international conflict will increase greatly under scarcity. For example, Gurr summarizes the record on this impact thus:

Resource scarcity also has consequences for foreign policy, many of which are conflictual. Historically, warfare has been a common response to ecological constraints and economic decline. Colonial expansion and conquest of weak but resource-rich neighboring states provided many states with new sources of supply, economic opportunities for surplus population, and new markets. Carneiro (1970) proposes that resource scarcity and population pressure together were the primary engines of state formation and imperial expansion throughout history. Choucri and North (1975) have demonstrated [a] historical European association between population pressures, increased resources scarcity, and “lateral pressure” to expand territorially. (1985, 65)

Gurr’s exposition focuses on wars by the strong against the weak, but according to Heilbroner (1992) underdeveloped countries or terrorist groups might also war or terrorize rich countries, demanding a greater sharing of world wealth and resources. Nuclear weapons are spreading and nuclear blackmail could occur any day now. As national and subnational identities heighten, they make nonviolent resolution to conflicts less feasible.

If Heilbroner is right, the prospects are terrifying. Nuclear materials have become widely available through leaks from the former Soviet Union (Nelan 1994), and nuclear-bomb making is within the capabilities of many terrorist groups (Begley 1993; Lemonick 1994; Cetron and Davies 1994). Biologic and chemical weapons are even easier to acquire and their results can be far more destructive (Cetron and Davies 1994). Terrorist actions are predicted by experts to increase in number and in destruction even if economic growth continues (Cetron and Davies 1994). With increasing scarcity the developed world will be in great danger. Democracies may have to tread on civil rights and greatly increase police powers to deal with the danger of terrorism. This is likely to move America further toward authoritarianism.

Another dismal prognosis for the impacts of scarcity is societal regression to thoroughly corrupt governments, as “rent seeking” by
officials under conditions of scarcity becomes prolific and profitable. Though there is not strong evidence for this proposition, Lipset observes that "corruption . . . is inherent in systems built on poverty" (1994, 3) and Klitgaard (1988, 1991) demonstrates that this is the case. What is uncertain, however, is how likely it is for modern nonnepotistic bureaucracies to regress significantly.

Somewhat arbitrarily we end our review of scarcity's impacts at this point. Overwhelmingly, the literature discusses only impacts that are negative from a progressive point of view. Some comments are optimistic, but they must be regarded as wishes, because they are not supported by analyses that show that they are likely outcomes of scarcity. In sum, we have not come across any good news about the impacts of scarcity.

**Societal Response to Scarcity**

It goes without saying that predictions about how society will respond to relatively long-term scarcity are speculative. They are contingent upon many factors, including the nature and extent of the crisis, public readiness for change, degree of government autonomy from control by the economic elite, and the idiosyncracies of the leader(s). Accordingly, we offer the following comments as an initial exploration of the topic for democratic capitalist societies.

We focus on three principal sets of actors as central to the societal response: individuals, business firms, and the government. Their actions will be carried out in perceptions, values, and options. It is important to assess, therefore, the influences on perceptions and values on the one hand, and the constraints and forces that determine options on the other hand. Information and ideas as mediated by the media, opinion leaders, universities, and the scientific community affect perceptions, while the media, educational and religious institutions, and opinion leaders affect values.

The first societal response that we predict is the increased production and diffusion of information on environmental issues with the result that environmental issues will be perceived as getting worse and requiring more collective action. Currently, the media present much information on the deterioration of the environment, the depletion of resources, pollution, ecosystem limits, environmental dangers, and health effects. The media is probably responding to the public's interest in these issues. Surveys of public attitudes toward protecting the
environment continue to find strong support (Abramson and Inglehart 1995; Dunlap 1993; Inglehart 1990, 1995; Inglehart and Abramson 1994; Portney 1992). Social scientists were surprised that the environmental movement did not rapidly rise and then rapidly decline in salience. This is the normal pattern for national-issue concerns. Instead, it has remained strong for twenty-five years.

It appears that environmental issues have passed a threshold from being the concern of peripheral groups to being the concern of both peripheral groups and core institutions. At universities, courses, programs, and research on environmental concerns are multiplying as are conferences, journals, articles, and books on these topics. Environmental nonprofit organizations have become strong and have real power in Washington (Brulle 1995; Harper 1996). A growing number of businesses are making good profits on pollution control, waste disposal, and other environmental services, so there is a small but growing pro-environment business interest lobbying on Capitol Hill. Environmental legislation and agency attention to environmental problems have become major concerns at the federal level. All these changes make it safe to predict that information gathering and dissemination on the environment should increase, especially because information gathering faces few obstacles.

The second societal response that we predict is technological innovation to reduce the costs of depleting resources and to protect the environment. Businesses will respond to rising costs of resources by using resource-saving technologies and practices. Market forces should spur the development of new conserving technologies. Other innovations will be directed at protecting the environment in ways that do not threaten current life-styles. Many of the innovations will be stimulated by subsidies or by regulations concerning pollution, recycling, conservation, and hazardous substances. Regulations that are politically feasible are likely to have relatively low costs to industry or be widely perceived as important enough to pass over industry resistance. Regulations often are necessary to make it worthwhile for industry to develop new technologies and practices for protecting the environment or more efficiently use and reuse resources. Another source for new technologies is the academic research community, which is subsidized by government and foundation contracts and grants. As awareness of the crisis increases, it is likely that subsidies for research on relevant environmental issues would increase substantially.
The third response that we predict is a range of minor behavior changes by individuals. Increasingly, the public wants to do something to help solve the problems. They participate in recycling programs, buy "save-the-bay" license plates, and contribute in other relatively costless ways.

The crucial question is whether the above responses will be sufficient to improve the environment and set society on the course of sustainable development. One group of scientists, led by Julian Simon, judges environmental problems as less severe than the view developed here and has immense faith in the inventiveness and adaptiveness of human beings. These scientists think that such actions would go a long way toward solving any problems that do exist. Perhaps a few new governmental policies that are not too disruptive to the economy might be helpful, but no dramatic changes would be needed. They argue that environmental problems are often exaggerated by environmentalists and that there is much scientific uncertainty about their extent and potential impacts. They are sanguine on energy availability because fossil-fuels could provide for the world's energy needs far into the next century and nuclear fusion could provide all the energy that will be needed when fossil fuel production declines. (Davidson, the director of the Princeton Plasma Physics Laboratory, predicts that "an electricity-producing fusion demonstration reactor [will be] operating by 2025—or sooner if America so chooses" [1994]). Though this view is plausible (fueled by reports of four- and five-passenger prototype cars that get 70–120 miles per gallon being tested by European and Japanese auto companies [Mathews 1991, 311]), it is highly speculative and does not convince most people that the environment is not in crisis.

Some analysts view the environmental crisis as far more severe than the above optimists, but prescribe actions for dealing with it that are not too disruptive to the economy and demand only modest behavioral changes from the public. Gore's recommendations in *The Earth in Balance* (1992) are called a "Global Marshall Plan" to indicate how daring it is, but it relies heavily on market adjustments, voluntary actions, and nonradical changes in government policies to remove subsidies for environmentally destructive actions and to provide more incentives for environmentally helpful actions. It also emphasizes information gathering and learning. His program is ambitious and unacceptable to the controllers of Washington today, but does not step hard on anyone's toes. It avoids the really painful actions that will be
necessary (except for population control in the Third World). In like manner Brown, Flavin, and Postel (1991) are cautious in their suggestions for saving the planet. Nevertheless, both books are rich in helpful policies and actions for addressing environmental problems.

Other scientists who make up a much larger group do not think as the optimists that new technologies and minor behavior changes will overcome environmental scarcity nor do they think as Gore and Brown/Flavin/Postel that an ambitious government environmental program that avoids significant costs can do the job. These scientists conclude that more significant changes are needed. Following in this line of thinking, the crucial question is, What additional responses are likely or even feasible? Will people make significant changes in their life-style? Will businesses risk some profits to protect the environment? Will governments pass tough environmental legislation? The dominant answer provided by these analysts to all three questions is “No!” (Gurr 1985; Heilbroner 1992; Ophuls and Boyan 1992; Shefrin 1980; Streeton 1976).

This pessimistic view is based on three arguments: the public-goods/free-rider problem, the business of business is profits, and special interests have the power to resist tough new policies. The public-goods argument is that it is not in the rational self-interest of individuals or nations to voluntarily sacrifice for the good of the environment or for the conserving of nonrenewable resources, because they will lose out to others who continue to exploit the environment or use the scarce resources. People will not voluntarily reduce their travel miles by automobile to preserve petroleum; they must be encouraged to do so by high gasoline taxes or forced to do so by gasoline rationing. Nations will not voluntarily reduce their use of fossil fuel to slow down global warming unless other nations do the same, because they would pay heavy costs without getting any more benefits than those who paid no costs.

The argument that the business of business is profits asserts that solutions to environmental problems will not come from businesses unless government policies change their incentives. On their own they will conserve to save money and invent technologies that help them do more with less, but they will not stop doing harmful things from which they benefit nor will they do rightful things that cost them. They must be made to do these things by government policies, but, according to the third argument, they will prevent the passage of such policies (Schnaiberg and Gould 1994). Most commentators, therefore, are pessimistic about the government's ability to take the necessary actions. They believe, therefore, that environmental problems will
worsen until an acute crisis forces a change in direction. At that point
democratic societies are predicted to become much more authoritar­
ian. In the remainder of this section, therefore, we will present the
arguments from several commentators that current democratic polities
will fail to deal adequately with environmental scarcity problems and
their failure will likely lead to authoritarian systems.

Heilbroner argues that democracies in the developed world and
all but "iron governments" in the underdeveloped world will fail. For
the latter he argues that "the torrent of human growth imposes intol­
erable social strains on the economically backward regions" leading to
high unemployment, widespread poverty, and urban disorganization.
Such societies probably will be ruled either "by dictatorial govern­
ments serving the interests of a small economic and military upper
class" or by a socialist "government with dedicated leadership, a well­
organized and extensive party structure, and an absence of inhibitions
with respect to the exercise of power" (1992, 37, 39).

His analysis of the prospects for the developed countries is less
gruesome but runs in the same iron government direction. They will
require "the most active use of political power" (124) to respond to
threats from the underdeveloped world and to deal with the environ­
mental problems.

Gurr (1985) travels a somewhat different path but reaches the same
conclusion. He posits that the governments of developed countries
will try to stimulate economic growth, but in a scarcity-induced de­
cline they will fail and precipitate a legitimacy crisis. Thereupon, the
politically advantaged groups will "assume increasingly autocratic and
repressive control which will protect both their economic policies and
positions from democratic challenges" (1985, 65).

Should these governments seek instead to adapt to ecological
constraints by reducing consumption, they are likely to be defeated at
the polls as the historical record shows. Only in an acute crisis are
policies of restraint feasible and at that point they will be very painful
and "probably will have sharply inequalitarian effects, and may require
autocratic political solutions" (1985, 68). Thus, the outcome of envi­
ronmental crisis, he predicts, is authoritarianism. His argument merits
close attention.

In the worst case of escalating crisis, democratic governments which
have lost credibility because of their inability to stimulate promised
economic growth will face growing pressures from powerful groups
seeking to protect themselves from hardship and will be challenged
simultaneously by protestors and rebels who are increasingly willing to use violent means. It is also likely—in fact, is presently the case in most advanced industrial societies—that governments will be fiscally constrained in attempts to buffer the impact of economic change. These are not circumstances conducive to programmatic political and social reform. The more immediate consequence is paralysis of democratic decision making. . . . In such situations governments lurch along from crisis to crisis while bureaucracy acts as caretaker.

Periods of prolonged crisis often are followed by fundamental change in political institutions, sometimes but not always accomplished by revolutionary means. The path most often taken in the contemporary histories of democratic and quasi-democratic capitalist societies is toward the establishment of authoritarian governments which abandon democratic practices and pretenses in order to resolve the crisis and reestablish a stable social order. (1985, 69)

Shefrin traces yet another path to the same authoritarian end. The title of his book is The Future of U.S. Politics in an Age of Economic Limits (1980). He begins with a view of the U.S. government being overwhelmed with demands by many special interest groups. Because the gains for the special interests are at the expense of the general good, he sees the political system as the new commons that is being overexploited. Furthermore, the entrenched pattern of incrementalism and delay in American government does not solve problems but only defers them. Meanwhile, policy failures increase because the increasing complexity of problems leads to unanticipated outcomes. The press of elections makes the U.S. polity very present oriented and ineffective on long-range issues. Finally, corporate power prevents effective environmental regulations. All these features make the U.S. government unsuited for dealing with environmental issues, which get much worse with delay. Hence, the system is likely to fail and become delegitimized. In all probability the growing problem of limits spells the end of consensus politics. At worst it means system collapse. In either case greater authoritarianism is likely.

Ophuls and Boyan (1992) present the most extensive analysis of the likely American response to scarcity, and their conclusions are pessimistic. Their thesis is that “ecological scarcity undercuts the basic laissez-faire, individualistic premises of the American political economy so that current institutions are incapable of meeting the challenges of scarcity” (217). A major problem is that potential solutions will be successfully opposed by powerful interests.
Ophuls and Boyan identify three characteristics of the American polity that have prevented and will prevent it from acting effectively on the problem of scarcity: (1) process politics, (2) incremental decision making, and (3) power fragmentation and administrative inadequacy. They contrast process politics, where outcomes are accepted if they result from legitimate procedures, with systems politics, where means are subordinated to ends. The environment does not have a chance in process politics, because the public wants growth for its jobs, opportunities, and lower prices and sides with for-profit interests against sound environmental policies. Incremental decision making supports short-term self-interest and produces the tragedy of the commons. It has led to the current environmental mess. The fragmentation of government and the numerous checks and balances that create long delays and weaken regulations make needed political action practically impossible. Meanwhile, the problems are growing so fast and are so complex that they create policy overload for the inadequate bureaucracy. Thus they conclude that the American polity has failed to act effectively and cannot. It must be radically changed and the change that they expect is greater authoritarianism.

In my earlier article exploring the consequences of scarcity, I came to conclusions like those presented above but predicted that democracies would institute the changes necessary to transform into a sustainable society and remain democratic if four conditions existed. The first two conditions are fairly high levels of equality and integration at the time of the crisis.

Interest groups are likely to sacrifice for the common good and work together in addressing the crisis when groups are not very unequal or opposed to each other and when the political system is seen as serving all the people rather than only a segment. In other words, if injustice, inequality, and intergroup hostilities are high to start with, the crisis could pull the country apart. (Finsterbusch 1983, 68)

The other two conditions for successful adaptation by a democracy are the right kind of crisis and a charismatic leader. In a gradual crisis the tendency of democracies to be indecisive, inactive, and focused on the short term will make them likely to fail. Only in an urgent crisis are democracies likely to shift from their pattern of incrementalism, temporarily consolidate political power, and act decisively. . . . Finally, the survival of democracy may hinge on the degree of charisma
of the chief of state in the time of crisis. He will have to call for self-sacrifice and acceptance of major changes. Unless belief in him is strong, his program may not succeed or discontent may be explosively high. (Finsterbusch 1983, 69)

To the above four conditions for the survival of democratic institutions in long-term scarcity should be added a degree of government autonomy from special interests. It has to have room to operate free of the constraints of powerful groups to implement a program that serves the public interest and is perceived as just and therefore accepted as legitimate. In times of crisis, such as wartime, people are willing to sacrifice, but only if the burdens are shared fairly. If powerful special interests, especially the rich and the large corporations, protect themselves and bias the program, it will generate resentment and civil strife.

In sum, the societal response to scarcity will include research on the issues, technological innovations, and minor behavioral changes. These responses are likely because they will face little opposition. I also predict (in line with most commentators) that these responses will fail to adequately deal with environmentally induced scarcity with the result that democracies will drift into severe crises and the resulting political struggles will probably, but not inevitably, end in authoritarianism.

Social and Political Changes Required for a Sustainable Democratic Society

The literature on sustainability includes thousands of ideas about changes that would make societies more sustainable. Most of these are technical changes and conserving behavior. Space does not allow me to review them here. Rather I limit my remarks to some radical changes in the political economy of the United States that, in my judgment, might be needed to attain a sustainable democratic society. I recognize that many of these ideas are not likely to be implemented unless society is forced into them by an acute environmental crisis. In this section, however, I am not constrained by realism. The previous section presented what was expected; the present section presents what is recommended.

The first requirement for a sustainable democracy is to increase the ability of government to macromanage the economy to the extent
that it needs to be macromanaged. For this purpose I recommend a planning agency. It would be a fourth branch of government designed along the lines described by Pirages and Ehrlich (1974) (which builds on Tugwell's [1970] proposal for a new constitution) or the version of this planning branch presented by Milbrath (1989). It would be charged with the tasks of

1. "formulation and regular revision of five-, ten-, and fifty-year plans for America's future" (Pirages and Ehrlich 1974, 174),
2. providing the research necessary for creating these plans,
3. recommending "legislation directly to Congress to implement new macroconstraints" (175), and
4. reporting "to the people annually on the state of the nation" (175).

At first it might contain
1. an Office of Environmental Protection for environmental planning and recommending environmental legislation,
2. an Office of Natural Resources for evaluating resource reserves and future needs and developing resource utilization plans including resource-depletion quotas,
3. an Office of Social Ecology for planning the social aspect of the transition to the sustainable society,
4. an Office of Economic Priorities for performing the duties of the Council of Economic Advisers and propose legislation for redirecting the economy to sustainability, and
5. an Office of Technology Assessment for evaluating major new technologies and designing research and development priorities.

The major social-design problem for this new branch of government is how to keep it independent from special-interest politics. Both Pirages and Ehrlich and Milbrath provide a number of suggestions for achieving this independence. Their most important recommendations are a constitutional mandate to make it an independent fourth branch of government and putting its governance in the hands of a distinguished board of directors. The directors would be prominent and broadly knowledgeable scientists, appointed by the president, confirmed by the Senate, serving for ten- or twelve-year staggered terms, and removable by impeachment only.

Our proposal for a fourth branch of government for planning sustainable policies would increase the centralization of society. Much of the sustainable society literature, however, presents a far more decentralized sustainable society than we do. Though we agree with
the values that guide their vision, we believe that the crisis must be
dealt with at the macro level first because of the way that power is
structured both in nations and the world. Perhaps after national and
global reforms are instituted, localism could flourish.

The second requirement for a sustainable democracy is for the
power of major corporations to be brought under some measure of
public control. They present the greatest threat to pluralist democracy
today and effect the greatest special-interest bias in the government.
Presently, they possess unaccountable power. The reform that we rec­
ommend is the federal chartering of all corporations that do interstate
business and exceed some minimal size. In the beginning of the days
of corporations, they were chartered by the states and had to report
each year on how they served the public good to get their charter
renewed. Then Delaware relaxed the chartering and renewal process
to the point of providing no oversight and giving the corporations
carte blanche. As a result so many corporations incorporated in Dela­
ware that it did not need to have a personal income tax for a long time
and it still does not have a sales tax. Very quickly New Jersey followed
suit and also won handsomely in the corporation sweepstakes. Other
states had to become similarly lax or lose out in the competition be­
tween states to recruit and retain businesses. The resulting unaccount­
ability of corporations can be reversed by federal chartering and making
charters contingent upon their demonstration of service to the public.
In this way environmental impacts, plant closings, safety records, treat­
ment of workers, and so forth could be monitored and the corpora­
tions disciplined more effectively than at present.

Another recommendation directed at the corporations is that cor­
porations larger than some minimum size and conducting interstate
business would pay government taxes in stock shares instead of money.
This would cause a gradual dilution of its stock until the government
owns 50 percent of its shares. Then what is good for General Motors
would be good for the United States. The board of directors would be
restructured to contain representatives of the government, communi­
ties containing its facilities, and other interests. In this way values
other than profits would have to be honored, though profits would
still be their main goal.

The above recommendations have addressed the capacity and
fairness of the political economy but have not included reforms that
directly deal with environmental problems. The major recommenda­
tions for this have been developed by Daly (1977) and are included
here (and in nearly everyone’s list of proposals for sustainability). They are:

1. setting of minimum and maximum limits on income and a maximum on wealth to discourage excessive consumption and mitigate inequality,

2. transferable birth licenses allocated 2.1 per woman by the government and marketable to achieve zero population growth, and

3. depletion quotas for all nonrenewable resources, set by the government to regulate the annual consumption of each resource, and auctioned to resource buyers. The quotas would slow depletion and lead to higher prices, which would encourage efficiencies and innovations.

All three procedures provide macroconstraints but do not interfere in the microprocesses that are governed by free markets and individual choices within those constraints.

Because the major natural resource in a country is its land, our final recommendation is a national land-use plan that would synchronize with state land-use plans. Real estate interests would provide formidable opposition to this policy to protect their financial interest in using or selling land for the highest price. Nevertheless, it is necessary to preserve agricultural lands, forests, and complex ecosystems and to deal with a wide range of environmental problems. Zoning is necessary in urban areas and now is necessary in other areas for many of the same principles. A current land-use trend that the plan would try to contain is the increasing dispersion of population to low-density housing, which causes high energy and transportation consumption, infrastructure inefficiencies, and greater ecosystem disruption.

The above seven recommendations are radical by current standards of political change. They could not be enacted except in an acute environmental crisis. Many other changes would also be needed for sustainability, including a major realignment of the culture and value system from an emphasis on material consumption and individualism to an emphasis on environmental vitality, inner development, and connections with others (see Brown 1980, Milbrath 1989). We do not, however, specify further the changes required to attain the sustainable society, because the problem is not a dearth of knowledge about what needs to be done, but the current lack of support for the needed changes.