The Politics of Scarcity

Having explored the general nature and meaning of ecological scarcity, we shall now delve into its political consequences. This chapter examines the basic political dynamics of ecological scarcity; Chapters 5 and 6 assess the specific challenge to the American market system; and Chapter 7 extends the analysis of the preceding three chapters, showing that it applies in all important respects to the rest of the world.

The Political Evils of Scarcity

It was suggested in the Introduction that scarcity is the source of original political sin: Resources that are scantier than human wants have to be allocated by governments, for naked conflict would result otherwise. In the words of the philosopher Thomas Hobbes in *Leviathan* (1651, p. 107), human life in an anarchic “state of nature” is “solitary, poor, nasty, brutish, and short.” To prevent the perpetual struggle for power in a war of all against all, there must be a civil authority capable of keeping the peace by regulating property and other scarce goods. Scarcity thus makes politics inescapable.

Presumably, the establishment of a truly just civil authority would eliminate all the political problems that arise from scarcity. With all assured of a fair share of goods, social harmony would replace strife, and people would enjoy long and happy lives of peaceful cooperation. Unfortunately, this has never happened. Although they have certainly mitigated some of the worst aspects of the anarchic state of nature (especially the total insecurity that prevails in a war of all against all), civilized polities have always institutionalized a large measure of inequality, oppression, and conflict. Thus, in addition to being the source of original political sin, scarcity is also the root of political evil.
The reason is quite simple. For most of recorded history, societies have existed at the ecological margin or very close to it. An equal division of income and wealth, therefore, would condemn all to a life of shared poverty. Not unnaturally, the tendency has been for political institutions to further impoverish the masses by a fractional amount in order to create the surplus that enables a small elite to enjoy more than its share of the fruits of civilized life. Indeed, until recently energy has been so scarce that serfdom and slavery have been the norm—justifiably so, says Aristotle in his Politics, for otherwise genuine civilization would be impossible. Except for a few relatively brief periods when for some reason the burden of scarcity was temporarily lifted, inequality, oppression, and conflict have been very prominent features of political life, merely waxing and waning slightly in response to the character of the rulers and other ephemeral factors.

Our own era has been the longest and certainly the most important exception. During roughly the last 450 years, the carrying capacity of the globe (and especially of the highly developed nations) has been markedly expanded, and several centuries of relative abundance have completely transformed the face of the earth and made our societies and our civilization what they are today—relatively open, egalitarian, libertarian, and conflict-free.

**The Great Frontier**

The causes of the four-century-long economic boom we have enjoyed are readily apparent: the European discovery and exploitation of the New World, Oceania, and other founts of virgin resources (for example, Persian Gulf oil); the take-off and rapid-growth phases of science-based, energy-intensive technology; and the existence of vast reservoirs of "free" ecological goods such as air and water to absorb the consequences of our exploiting the new resources with the new technology. However, the first cause is clearly the most important.

Before the discovery of the New World, the population of Europe pressed hard on its means of subsistence, and as a result, European societies were politically, economically, and socially closed. But with the opening up of a "Great Frontier" in the New World, Europe suddenly faced a seemingly limitless panorama of ecological riches. The land available for cultivation was suddenly multiplied about five times; vast stands of high-grade timber, a scarce commodity in Europe, stretched as far as the eye could see; gold and silver were there for the taking, and rich lodes of other metals lay ready for exploitation; the introduction of the potato and other new food crops from the New World boosted European agricultural production so sharply that the population doubled between 1750 and 1850. This bonanza of found wealth lifted the yoke of ecological scarcity and, coincidentally, created all the peculiar institutions and values characteristic of modern civilization—democracy, freedom, and individualism.*

Indeed, the existence of such ecological abundance is an indispensable premise of the libertarian doctrines of John Locke and Adam Smith, the two thinkers whose works epitomize the modern bourgeois views of political economy on which all the institutions of open societies are based. For example, Locke (1690, paras. 27–29) justifies the institution of property by saying that it derives from the mixture of a man's labor with the original commons of nature. But he continually emphasizes that for one man to make part of what is the common heritage of mankind his own property does not work to the disadvantage of other men. Why? Because "there was still enough and as good left; and more than the yet unpovdered could use" (para. 33). His argument on property by appropriation is shot through with references to the wilderness of the New World, which only needed to be occupied and cultivated to be turned into property for any man who desired it. Locke's justification of original property and the natural right of a man to appropriate it from nature thus rests on comracoian assumptions. There is always more left; society can therefore be libertarian.

The economics of Adam Smith rests on a similar vision of ecological abundance. In fact, Smith is even more optimistic than Locke, for he stresses that the opportunity to become a man of property (and therefore to enjoy the benefits of liberty) now lies more in trade and industry than in agriculture, which is potentially limited by the availability of arable land. Indeed, says Smith, under prevailing conditions, simply striking off all the mercantilist shackles on economic development and permitting a free-for-all, laissez-faire system of wealth-getting to operate instead would generate "opulence," which would in turn liberate men from the social and political restrictions of feudalism. Smith's *The Wealth of Nations* (1776) is therefore a manifesto for the attainment of political liberty through the economic exploitation of the found wealth of the Great Frontier.

The liberal ideas of Locke and Smith have not gone unchallenged, but with very few exceptions, liberals, conservatives, socialists, communists, and other modern ideologists have taken abundance for granted...
and assumed the necessity of further growth. They have disagreed only about how to produce enough wealth to satisfy the demands of hedonistic, materialistic “economic” men and about what constitutes a just division of the spoils. Karl Marx was even more utopian than either Locke or Smith, for he envisioned the eventual abolition of scarcity. He merely insisted that, on grounds of social justice, the march of progress be centrally directed by the state in the interest of those whose labor actually produced the goods.

But the boom is now over. The found wealth of the Great Frontier has been all but exhausted. And technology is no real substitute, for it is merely a means of manipulating what is already there rather than a way of creating genuinely new resources on the scale of the Great Frontier. (Moreover, as we saw in Part I, technology is encountering limits of its own.) Thus a scarcity at least as intense as that prevailing in the premodern era, however different it may be in important respects, is about to replace abundance, and this will necessarily undercut the material conditions that have created and sustained current ideas, institutions, and practices. Once relative abundance and wealth of opportunity are no longer available to mitigate the harsh political dynamics of scarcity, the pressures favoring greater inequality, oppression, and conflict will build up, so that the return of scarcity portends the revival of age-old political evils, for our descendants if not for ourselves. In short, the golden age of individualism, liberty, and democracy (as those terms are currently understood) is all but over. In many important respects, we shall be obliged to return to something resembling the premodern, closed polity. This conclusion will be reinforced by a more detailed exploration of the political problem of controlling the competitive overexploitation of resources that has produced the ecological crisis.

The Tragedy of the Commons

It has been recognized since ancient times that resources held in common tend to be abused. As Aristotle said, “What is common to the greatest number gets the least amount of care” (Barker 1962, p. 44). However, the dynamic underlying such abuse was first suggested by a little-known Malthusian of the early nineteenth century, William Forster Lloyd (cited in Hardin 1969, p. 29), who wondered why the cattle on a common pasture were “so puny and stunted” and the common itself “bare-worn.” He found that such an outcome was almost inevitable.

People seeking gain naturally want to increase the size of their herds. Because the commons is finite, the day must come when the total number of cattle reaches the carrying capacity; the addition of more cattle will cause the pasture to deteriorate and eventually destroy the resource on which the herders depend. Yet even though this is the case, it is still in the rational self-interest of each herder to keep adding animals to his herd. Each reasons that his personal gain from adding animals outweighs his proportionate share of the damage done to the commons, for the damage is done to the commons as a whole and so is partitioned among all the users. Worse, even if he is inclined to self-restraint, an individual herder justifiably fears that others may not be. They will increase their herds and gain thereby while he does not, in spite of his having to suffer equally from the resulting damage. Competitive overexploitation of the commons is the inevitable result.

The same dynamic of competitive overexploitation applies to any “common-pool resource,” the economist’s term for resources held or used in common.” A classic illustration is the oil pool. Unless one person or organization controls the rights to exploit an oil pool or the owners of the rights agree on a scheme of rational exploitation, it is in the interest of each user to extract oil from the common pool as fast as he or she possibly can; in fact, failure to do so exposes the individual owner to the risk that others will not leave him or her a fair share. Thus, in the early boom days of the American oil industry, drillers competed with each other to sink as many wells as possible on their properties. The resulting economic and political chaos was remedied by the establishment of state control boards that surveyed the pools and then allotted each owner a quota of production for each acre of oil-bearing land. Oil was thereby transformed from a common pool resource to private property, and exploitation proceeded thereafter in a largely rational and conflict-free manner.

The dynamic of the commons is particularly stank in the case of oil, for one person’s gains are another’s losses. But even resources that could be exploited cooperatively to give a sustained yield in perpetuity are subject to the same dynamic. Fisheries are a prime example. At first there was abundance enough for all to exploit the resource freely. Conflicts occurred, but their impact was local. Fishing a little farther away or

* We are grateful to Margaret McKeen for suggesting the term common-pool resource for the term common-property resource used in the previous edition of this book. She argues that “if resources become property only when human beings attach rights and duties to them, then the problematic resources are non-property, not property.” She also points out that the “tragedy of the commons”—that is, tragic overuse—occurs only when human beings do not figure out a way to attach rights and duties to these resources in order to solve the problems of subtractibility or rivalry.
improving techniques were alternatives to fighting over the limited resources in any particular area. In time, however, even the vastness of the ocean began to be more or less fully exploited, and people reacted just as they did in the early days of the oil business, overexploiting and destroying fisheries. In response, coastal nations have privatized parts of the fishing commons by declaring complete economic sovereignty over the oceans within 200 miles offshore, so that all the benefits of the nearby fishery would flow to their nationals. One potential benefit of such “privatization” is that it then becomes possible, within these zones, for collective units such as fishing co-ops, to ban access and to internalize the important externalities. But fishing “wars” and other political conflicts over marine resources remain common in the open ocean. There, fishing operations have increased in scale and technical virtuosity, just as early oil drillers sank dozens of wells on a tiny piece of land. Technological progress in the fishing industry has produced gigantic floating factories, which use drift nets and other ultramodern techniques to catch fish and can or freeze them on the spot, thus eliminating the time that must be spent returning to port in traditional fishing. The result, not surprisingly, has been relentless competitive overexploitation and an alarming general decline in fish stocks.

Pollution also exemplifies the self-destructive logic of the commons, for it simply reverses the dynamic of competitive overexploitation without altering its nature: The cost to me of controlling my emissions is so much larger than my proportionate share of the environmental damage those emissions cause that it will always be rational for me to pollute if I can get away with it. In short, it profits me to harm the public. (It does not pay me to benefit the public either; see Box 19.)


† Japanese fishing boats cover more than 500 square miles of Pacific Ocean waters with over 2 million miles of drift nets. The nets sweep up everything that swims into them, depleting the stock of desired species and causing the death or injury of 70% of the catch, including sea mammals, which are unwanted. Korea and Taiwan also drift net in other areas of the Pacific. The United Nations General Assembly in 1989 called for a moratorium on high-seas drifting by 1992, but unfortunately, the resolution allows nations to exempt themselves if they practice unspecified marine conservation measures. Japan, after first announcing that it would exempt itself, recently indicated that it would comply with the moratorium.

Unfortunately, virtually all ecological resources—airsheds, watersheds, the land, the oceans, the atmosphere, biological cycles, the biosphere itself—are common-pool resources. For example, the smoke from factories or the exhaust gases from automobiles cannot be confined so that their noxious effects harm only those who produce them. They harm all in the common airshed. Even most resources that seem to be private property are in fact part of the ecological commons. The logging company that cuts down a whole stand of trees in order to maximize its profits contributes to flooding, siltation, and the decline of water quality in that watershed. And if enough loggers cut down enough trees, even climate may be altered, as has occurred many times in the past. Now that the carrying capacity of the biosphere has been approached, if not exceeded, we are in serious danger of destroying all ecological resources by competitive overexploitation. Thus the metaphor of the commons is not merely an assertion of humanity’s ultimate dependence on the ecological life-support systems of the planet; it is also an accurate description of the current human predicament.

In short, resources that once were so abundant that they were freely available to all have now become ecologically scarce. Unless they are somehow regulated and protected in the common interest, the inevitable outcome will be the mutual ecological ruin that the human ecologist Garrett Hardin (1968) has called “the tragedy of the commons.” We need to apply much more widely the same kind of social rules and political controls that have traditionally governed the use of grazing lands and other commons in the past (although these controls have not always been sufficiently strong to avert partial or even total destruction of a resource).

**A Hobbesian Solution?**

Beyond telling us that the answer to the tragedy is “mutual coercion, mutually agreed upon by the majority of the people affected”—by which he means social restraint, not naked force—Hardin avoids political prescription. However, he does suggest that unrestrained exercise of our liberties does not bring us real freedom; “Individuals locked into the logic of the commons are free only to bring on universal ruin; once they see the necessity of mutual coercion, they become free to pursue other goals.” By recognizing the necessity to abandon many natural freedoms we now believe we possess, we avoid tragedy and “preserve and nurture other and more precious freedoms.” There are obvious dangers in a regime of “mutual coercion,” but without restraints on individuals, the collective selfishness and irresponsibility generated by the logic of the commons will destroy the spaceship, so that any sacrifice of freedom by
The Public-Goods Problem

The public-goods problem is the obverse of the commons problem. Just as there is the rational individual gain by harming fellow members of the common, he loses by benefiting them with a public or collective good. At best, he gets only a small return on his investment; at worst, he is economically punished. For example, the good husbandman cannot survive in a market economy if he maintains his soil while his neighbors mine theirs for maximum yields; sooner or later he must either abandon farming or become a subsistence farmer outside the market. He cannot afford to benefit posterity except at great personal sacrifice. Similarly, although a socially responsible plant owner might wish to control the pollution emanating from her plant, if she does it at her own expense whatever her competitors do, then the plant owner is at a competitive disadvantage. Thus the tragedy of the commons in which the culprit gets all the benefits from transgressing the limits of the common but succeeds in relaying most of the costs to others, is turned around. Those who try to benefit the common good soon discover that, while they pay all the costs, the other members of the community reap virtually all of the benefits.

Of course, a producer could try to persuade consumers to pay premium prices for his products as a reward for his virtue. But he would be unlikely to find many buyers for products that, however "virtuous," were no better than the cheaper ones of his competitors. Another conceivable solution would be for the manufacturer who intended to control pollution to take up a collection from all those affected. After all, if his or her pollution is harmful to them, they should be willing to pay something to reduce or eliminate it. However, even if the considerable practical difficulties of organizing such a scheme were overcome, it would almost certainly fail, for people are unlikely to contribute voluntarily to pollution reduction or to the production of any other kind of public goods in optimal amounts. The reason is simple: It is entirely rational for individuals to try to make others pay most of all of the costs of a public good that benefits everyone equally, thus the good is never available in optimal quantity under market conditions. For example, no government can subsist on voluntary tax payments. If external defense, internal order, rules for economic competition, public health, education, and other public goods are to be produced in quantities that are rationally desirable for the society, then taxes must be compulsory on all its members. Similarly, if ecological public goods such as clean air and water and pleasant landscapes are to be provided in reasonable magnitudes, it will be only as a result of collective decisions. Thus, just as for the tragedy of the commons, the answer to the public-goods problem is authoritative political action.

due to the crew members is clearly the lesser evil. After all, says Hardin, "injustice is preferable to total ruin," so that "an alternative to the commons need not be perfectly just to be preferable" (Hardin 1968, pp. 1247–1248).

Hardin’s implicit political theory is in all important respects identical to that of Thomas Hobbes in Leviathan (1651). Hardin’s “logic of the commons” is simply a special version of the general political dynamic of Hobbes’s “state of nature.” Hobbes says that where men desire goods scarcer than their wants, they are likely to fall to fighting. Each knows individually that all would be better off if they abstained from fighting and found some way of equitably sharing the desired goods. However, they also realize that they cannot alter the dynamics of the situation by their own behavior. In the absence of a civil authority to keep the peace, personal pacifism merely makes them easy prey to others. Unless all can be persuaded or forced to lay down their arms simultaneously, nothing can prevent the war of all against all. The crucial problem in the state of nature is thus to make it safe for men to be reasonable, rather than merely “rational,” so that they can share peacefully what the environment has to offer. Hobbes’s solution was the erection, by a majority, of a sovereign power that would constrain all men to be reasonable and peaceful—that is, Hardin’s “mutual coercion, mutually agreed upon by the majority of the people affected.”

In the tragedy of the commons, the dilemma is not so stark as it is in the state of nature (political order is not at stake), but it is in many ways much more insidious, for even without evil propensities on the part of any person or group, the tragedy will occur. In the case of the village...
common, the actors can hardly avoid noticing the causal relationship between their acts and the deterioration of the commons, but in most cases of competitive overexploitation, individuals are not even aware of the damage that their acts are causing, and even if they are aware, their own responsibility seems infinitesimally dilute. Thus, to bring about this tragedy of the commons it is not necessary that people be bad, only that they not be actively good—that is, not altruistic enough to limit their own behavior when their fellows will not regularly perform acts of public generosity. That people are in fact not this altruistic is confirmed daily by behavior we all see around us (and see Schelling 1971).

A perfect illustration of the insidiousness of the tragedy of the commons in operation is the situation of the inhabitants of Los Angeles vis-à-vis the automobile:

Every person who lives in this basin knows that for twenty-five years he has been living through a disaster. We have all watched it happen, have participated in it with full knowledge as men and women once went knowingly and willingly into the “dark Satanic mills.” The smog is the result of ten million individual pursuits of private gratification. But there is absolutely nothing that any individual can do to stop its spread. Each Angeleno is totally powerless to end what he hates. An individual act of renunciation is now nearly impossible, and, in any case, would be meaningless unless everyone else did the same thing. But he has no way of getting everyone else to do it. He does not even have any way to talk about such a course. He does not know how or where he would do it or what language he would use. (Carney 1972, pp. 28-29)."

The essence of the tragedy of the commons is that one’s own contribution to the problem (assuming that one is even aware of it) seems infinitesimally small, while the disadvantages of self-denial loom very large; self-restraint therefore appears to be both unprofitable and ultimately futile unless one can be certain of universal concurrence. Thus we are being destroyed ecologically not so much by the evil acts of selfish people as by the everyday acts of ordinary people whose behavior is dominated, usually unconsciously, by the remorseless self-destructive logic of the commons.

The tragedy of the commons also exemplifies the political problem that agitated the eighteenth-century French political philosopher Jean-Jacques Rousseau, who made a crucial distinction between the “general will” and the “will of all.” The former is what reasonable people, leaving aside their self-interest and having the community’s interests at heart, would regard as the right and proper course of action. The latter is the mere addition of the particular wills of the individuals forming the polity, based not on a conception of the common good but only on what serves their own self-interest. The tragedy of the commons is simply a particularly vicious instance of the way in which the “will of all” falls short of the true common interest. In essence, Rousseau’s answer to this crucial problem in The Social Contract is not much different from Hobbes’s: Man must be “forced to be free”—that is, protected from the consequences of his own selfishness and short-sightedness by being made obedient to the common good or “general will,” which represents his real self-interest. Rousseau thus wants political institutions that will make people virtuous.

Therefore appears that if under conditions of ecological scarcity, individuals rationally pursue their material self-interest unrestrained by a common authority that upholds the common interest, the eventual result is bound to be common environmental ruin. In that case, we must have political institutions that preserve the ecological common good from destruction by unrestrained human acts. The problem that the environmental crisis forces us to confront is, in fact, at the core of political philosophy: how to protect or advance the interests of the collectivity when the individuals who make it up (or enough of them to create a problem) behave (or are compelled to behave) in a selfish, greedy, and quarrelsome fashion. The only solution is a sufficient measure of coercion (see Box 20). According to Hobbes, a certain minimum level of ecological order or peace must be established; according to Rousseau, a certain minimum level of ecological virtue must be imposed by our political institutions.

It hardly need be said that these conclusions about the tragedy of the commons radically challenge fundamental American and Western values. 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
Coercion

The word "coercion" has a nasty fascist ring to it. However, politics is a means of tuning and legitimating power, not dispensing with it. Any form of state power is coercive. A classic example is taxation, which is nowhere voluntary, for as the theory of public goods (see Box 19) tells us, the state would starve if it were. Assuming a reasonable degree of consensus and legitimacy, coercion means no more than a state-imposed structure of incentives and disincentives that is designed to advance the common interest. Even Locke's libertarian political theory does not proscribe coercion. If the common interest is threatened, the sovereign must do whatever is necessary to protect it. Nevertheless, unlike Hobbes, Locke does try to set up inviolable spheres of private rights that the sovereign may not invade, and he also demands that power be continually beholden to consent of the governed. The difference between Hobbes and Locke on the matter of coercion is one of degree, with Locke demanding more formal guarantees of limits on the sovereign's power than Hobbes believes are workable. In short, coercion is not some evil specter resurrected from an odious past. It is an inextricable part of politics, and the problem is how best to tame it and bend it to the common interest.

Some aspire to do away with power politics and state coercion entirely by making people so virtuous that they will automatically do

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.*

* As we know it today, our current political system is essentially static; the federal government is a bureaucratic and electoral behemoth, beholden to organized and monied interests, dedicated to the satisfaction of human appetite at the expense of nature. Such a "democracy" cannot survive. A genuine democracy that is fundamentally Jeffersonian and Thoreauvian in spirit and practice, however, can survive (see the discussion of these points in Chapter 8 and the Afterword).

what is in the common interest. In fact, this is precisely what Rousseau proposed: small, self-sufficient, frugal, intimate communities incalculating civic virtue so thoroughly, that citizens become the "general will" incarnate. However, this merely changes the locus of coercion from outside to inside—the job of law enforcement is handed over to the internal "police force" of the super ego—and many liberals (for example, Popper 1966) would argue that this kind of ideological or psychological coercion is far worse than overt controls on behavior. Nevertheless, political education cannot be done away with entirely, for without a reasonable degree of consensus and legitimacy, no regime can long endure. Thus it is again a question of balance. Hobbes and Rousseau, for example, would both agree that law enforcement and political education must be combined, however much they might disagree on what proportion of each is fitting.

Political coercion in some form is inevitable. Failing to confront openly the issues it raises is likely to have the same effect repression has on the individual psyche. The repressed force returns in an unhealthy form. By contrast, if we face up to coercion, full political awareness will dispel its seeming nastiness, and we shall be able to tame it and make it a pillar of the common interest. (The next box suggests a way of doing this by Leviathan, and Chapter 8 discusses the politics of a steady-state society in more general terms.)
the biosphere rather than mere loss of amenity is the issue, the extremity of Hobbes's analysis fits reality, and it becomes difficult to avoid his conclusions. Similarly, although Rousseau's ultimate aim was the creation of a democratic polity, he recognized that strong sovereign power (a "Legislator," in Rousseau's language) may be necessary in certain circumstances, especially if the bad habits of a politically "corrupt" people must be fundamentally reformed.

Altruism Is Not Enough

Some theorists hope or assert that attitudinal change will bring about major changes in individual behavior to save a democratic, laissez-faire system from ecological ruin. However, except in very small and tightly knit social groups, education or the inculcation of rigid social norms is not sure proof against the logic of the commons. Apparently, it is simply not true that, once they are aware of the general gravity of the situation, a large number of people will naturally moderate their demands on the environment. A number of studies have shown that even the individuals who are presumably the most knowledgeable and concerned about population growth evince little willingness to restrain their own reproductive behavior (Atush 1973; Barnett 1971; Eisner et al. 1970). How much can we expect of most ordinary citizens? The problem is that in order to forestall the logic of the commons, people in overwhelming numbers must be prepared to do positive good whether or not cooperation is universal. And in a political culture that conceives of the common interest as being no more than the sum of our individual interests, it seems unlikely that we can prudently count on much help from unsupported altruism (this is not to say that people cannot be educated to be ecologically more responsible than they are at present).

In any event, even the most altruistic individual cannot behave responsibly without full knowledge of the consequences of his or her acts—and such knowledge is not available. If even the experts fiercely debate the pros and cons of nuclear power or the effects of a particular chemical on the ozone layer, using highly abstract analytical techniques and complex computer programs that only the specialist can fully understand, how is the ordinary citizen to know what the facts are? An additional problem is time. High rates of change and exponential growth are accompanied by a serious lag in public understanding. For example, it seems to take two to four generations for the ideas at the frontier of science to filter down to even the informed public. We have still not completely digested Darwin, much less Einstein and quantum mechanics. How reasonable is it to expect from the public at large a sophisticated ecological understanding any time soon, especially when the academic, business, professional, and political elites who constitute the so-called attentive and informed public show little sign of having understood, much less embraced, the ecological world view? (As noted in the foreword, children do seem to embrace an ecological world view when it is taught to them. This is an encouraging development, but it is not yet known how many curriculums include ecology or how many children will retain their world view as adults.)

Others pin their hopes for a solution not on individual conscience but on the development of a collective conscience in the form of a world view or religion that sees humanity as the partner of nature rather than its antagonist. This attitude will undoubtedly be essential for our survival in the long term, because without basic popular support, even the most repressive regime could hardly hope to succeed in protecting the environment for long. However, mere changes in world view are not likely to be sufficient. Political and social arrangements that implement values are indispensable for turning ideals into actuality. For example, despite a basic world view profoundly respectful of nature, the Chinese have severely abused and degraded their environment throughout their very long history—more, ironically, than the premodern Europeans, who lacked a philosophy expressive of the same kind of natural harmony. Thus Chinese ideals were not proof against the urgency of human desires that drives the tragic logic of the commons.*

It appears, therefore, that individual conscience and the right kind of cultural attitudes are not by themselves sufficient to overcome the short-term considerations that lead people to degrade their environment. Real altruism and genuine concern for posterity may not be entirely absent,

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* Some (for example, Reich 1971) would protest that our age is different and that a genuinely new consciousness is emerging. This view cannot simply be brushed aside, for substantial changes in values are clearly occurring in some segments of American society, and out of this essentially religious ferment, great things may come. For example, the "back to the land" movement has been much ridiculed, but its symbolic reaffirmation of our ties to the earth has already had a far from negligible impact on the larger society. Nevertheless, that these new values will become universal in the future appears to be essentially a matter of faith at this point. Past hopes for the emergence of a "new man" have been rudely treated by history, so it is difficult to be optimistic.
but they are not present in sufficient strength to avert the tragedy. Only a government with the power to regulate individual behavior in the ecological common interest can deal effectively with the tragedy of the commons.

To recapitulate, the tragic logic of the commons is sustained by three premises: a limited commons, cattle that need ample grazing room to prevent the commons from becoming “bare-worn,” and rational, self-seeking herdspeople. If any one of these premises is removed, the tragedy is averted. As we have already seen, the Great Frontier in effect removed the first premise for nearly 400 years. It was precisely this that allowed John Locke, whose political argument is essentially the same as that of Hobbes in every particular except scarcity in the state of nature, to be basically libertarian, whereas Hobbes is basically authoritarian. Thanks to the Great Frontier, Locke and Smith found that there was so much abundance in the state of nature that a Hobbesian war of all against all was unlikely; every person could take away some kind of prize, and competition would be socially constructive rather than destructive, with the “invisible hand” producing the greatest good for the society as a whole. Thus government was required only to keep the game honest—a mere referee, needing only modest powers and minimal institutional machinery—and individuals could be left alone to pursue happiness as they defined it without hindrance by society or the state.

The frontier is gone now, and we have encountered the limits of the commons. However, the physical disappearance of the frontier was for a long time mitigated by technology, which allowed us to graze more cows on the same amount of pasture. Now we have reached the limits of technology: The cows are standing almost shoulder to shoulder, many are starving, and the manure is piling up faster than the commons can absorb it. All that remains is to alter the rational, self-seeking behavior of the individuals and groups that use the commons. This must be done by collective means, for the dynamic of the tragedy of the commons is so powerful that individuals are virtually powerless to extricate themselves unaided from its remorseless working. Our political institutions must indeed force us to be free.

Legislating Temperance

That we must give our political authorities great powers to regulate many of our daily actions is a profoundly distasteful thought. We tend to see political systems that do not bestow our kind of political and economic liberties as “totalitarian,” a word that brings to mind all the evil features of past dictatorships. But even Hobbes, no matter how firm his conviction in the necessity of absolutism, certainly did not have Stalin's or fascist tyranny in mind. Hobbes makes clear that order in the commonwealth is not the goal but is rather the means by which the fruits of civilization cannot be enjoyed. The sovereign power is to procure the “safety of the people... But by safety here is not meant a bare preservation but also all other contentments of life which every man by lawful industry, without danger or hurt to the commonwealth, shall acquire to himself” (Hobbes 1651, p. 262). And it is part of the task of the sovereign power to actively promote these “contentments of life” among its subjects. Furthermore, Hobbes will not countenance tyranny. The sovereign power must rule lawfully, give a full explanation of its acts to its subjects, and heed their legitimate desires. Through wise laws and education, the subjects will learn moral restraint. Also, the sovereign power is not to be a dictator regulating every action of the citizen; it does not “bind the people from all voluntary actions” but only guides them with laws that Hobbes likes to “hedges... set not to stop travelers, but to keep them in their ways” (p. 272). Thus many different styles of rule and of life are compatible with his basic analysis.

Similarly, Hardin makes it clear that the problem is to “legislate temperance,” not to institute iron discipline. He acknowledges that this may require the use of administrative law, with the consequent risk of abuse of power by the administrators. However, he believes that the application of his formula of “mutual coercion, mutually agreed upon by the majority of the people affected,” would be an adequate defense against bureaucratic tyranny, for we would be democratically owning ourselves to behave responsibly (Hardin 1968, p. 1247).

The question of political will is therefore crucial. Given a basic willingness to restrain individual self-seeking and legislate social temperance, social devices acceptable to reasonable persons and suited to a government of laws could readily be found to serve as the “hedges” that will keep us on the path of the steady state.* For example, law professor Christopher Stone (1974) proposes giving natural objects, such as trees,

* Merely increasing the power of the state is no solution. As will be shown in Chapter 7 (and contrary to the opinion of many), mere socialism is not a real solution to the tragedy of the commons. That is, giving the state ownership of the means of production is not very useful if the state is committed to economic expansion, for the same ecologically destructive dynamic operates within a socialist economic bureaucracy as in the capitalist marketplace (see Heilbroner 1974 on this point).
mountains, rivers, and lakes, legal rights (comparable to those now enjoyed by corporations) that could be enforced in court.

However, although the socioeconomic machinery needed to enforce a steady-state political economy need not involve dictatorial control over our everyday lives, it will indeed erode upon our freedom of action, for any social device that is effective as a hedge will necessarily prevent us from doing things we are now free to do or make us do things we now prefer not to do. It could hardly be otherwise: If we can safely squeeze more cattle onto the commons, then we headers must be satisfied either with the herds we now possess or, more likely, with the lesser number of cattle that the commons can tolerate ecologically over the long term. The solution to the tragedy of the commons in the present circumstances requires a willingness to accept less—perhaps much less—than we now get from the commons. No technical devices will save us. In order to be able mutually to agree on the restraints we wish to apply to ourselves, we must give up the exercise of rights we now enjoy and bind ourselves to perform public duties in the common interest. The only alternative to this kind of self-coercion is the coercion of nature—or perhaps that of an iron regime that will compel our consent to living with less.

Technology’s Faustian Bargain

Given this unpalatable conclusion, the seductive appeal of technological optimism is apparent: If adjusting human demands to the available ecological resources will entail a greater degree of political authority, then let us by all means press on with the attempt to surmount the limits to growth technologically. Thus, to the extent that technologists concede the necessity of a steady state, they aim at a “maximum-feasible” steady state of technological superabundance in which we will use our alleged mastery of inexhaustible energy resources to evade ecological constraints, instead of learning to live frugally on flow resources such as solar energy.* As we have seen, the barriers to success in such an enterprise are enormous, but for the sake of argument, let us put aside all questions of practicality and ask instead what would be the political consequences of implementing these kinds of technological solutions to ecological scarcity.

* In reality, a maximum-feasible steady state is a virtual contradiction in terms, for squeezing the maximum out of nature runs contrary to basic ecological principles. Only a life lived comfortably within the circle of natural interdependence merits the designation “steady state.” But the technological optimists customarily talk as though there were no possible model of the steady state other than the maximum-feasible one.

Alvin Weinberg, who was for many years director of the Atomic Energy Commission’s Oak Ridge National Laboratory, has been a leading spokesman for the technological fix, especially nuclear power. Indeed, he has castigated environmentalists for proposing “social fixes” to ecological problems; he argues that technological solutions are “more humane” because they do not “disrupt the economy and... cause the human suffering that such disruption would entail” (Weinberg 1972b). Yet Weinberg himself admits that the specific technological solution he proposes comes with a truly monstrous social fix firmly attached! Because nuclear wastes will have to be kept under virtually perpetual surveillance, and because nuclear technology places the most exacting demands on our engineering and management capabilities,

We nuclear people have made a Faustian bargain with society. On the one hand, we offer... an inexhaustible source of energy [the breeder reactor].... But the price that we demand of society for this magical energy is both a vigilance and a longevity of our social institutions that we are quite unaccustomed to [Weinberg 1972a, p. 33].

Part of this price is politically ominous:

In a sense, what started out as a technological fix for the energy-environment impasse—clean, inexhaustible, and fairly cheap nuclear power—involves social fixes as well: the creation of a permanent cadre or priesthood of responsible technologists who will guard the reactors and the wastes so as to assure their continued safety over millennia [Weinberg 1973, p. 431].

Expanding on the “priesthood” theme, Weinberg tells us that because “our commitment to nuclear energy is assumed to last in perpetuity,” we will need “a permanent cadre of experts that will retain its continuity over immensely long times [but this] hardly seems feasible if the cadre is a national body,” for “no government has lasted continuously for 1,000 years.” What kind of organization does possess the requisite continuity?

Only the Catholic Church has survived more or less continuously for 2,000 years or so... The Catholic Church is the best example of [the International Authority] I have in mind: a central authority that proclaims and to a degree enfos doctrine, maintains its own long-term social stability, and has connections to every country’s own Catholic Church [cited in Speth et al. 1974, emphasis added].

In proposing such a technological “priesthood,” Weinberg appears to be a true heir of the French utopian social philosopher Claude Henri
Saint-Simon (1760–1825), one of the earliest prophets of technocracy, who believed that it was humanity's mission to transcend nature with technology. Distressed by the disruptive social effects of technology within a bourgeois laissez-faire political economy, Saint-Simon aspired to create a stable, organic civilization such as that of the Middle Ages, but with science as its religion. To this end he proposed the creation, on the model of the Catholic Church, of a scientific priesthood that would both dispense political justice and promote the economic wealth of society. Saint-Simon stressed social planning, the necessity for authority based on scientific expertise, the subordination of the individual to the needs of society as determined by the experts, and the integration of society and technology—all themes that emerge in the writings of modern technological visionaries.

By whatever name it comes to be called, technocratic government is likely to be the price of Weinberg's Faustian bargain. It will not be formally voted in, of course, but will emerge in a series of small but fateful steps as we follow what seems to be the line of least resistance through our environmental problems. Indeed, critics were alarmed by the civil-rights implications of the safeguards proposed by the Atomic Energy Commission in its draft environmental-impact statement on plutonium recycling. These included the establishment of a federal police force for the protection of plutonium plants and shipments, the extension of current military security-clearance procedures to include all the civilians who might have access to plutonium, and generally increased police powers to cope with the security requirements of a plutonium-based power economy (Speth et al. 1974). The United States abandoned its breeder reactor program in 1984, but the fact remains that there may be no way to ensure the social stability—indeed, the near-perfect social institutions—necessary for an era of nuclear power except with an engineered society under the direction of a technocratic priesthood.

**A Pact with the Devil?**

It is not nuclear technology alone that offers a pact with a devil who will in the end claim our political souls. Few technological optimists are as candid as Weinberg about the political implications of the solutions they propose, but technocracy has been looming on the horizon for some time. Harrison Brown, a scientist who foresaw most of today's ecological concerns almost four decades ago, predicted that the instability of industrial society would become greater as development proceeded. This and other organizational requirements, he said, will make ever-greater social control necessary, so that “it is difficult to see how the achievement of stability and the maintenance of individual liberty can be made compatible” (Brown 1954, p. 255). Buckminster Fuller, one of the most visionary of the supertechnologists, states plainly that those who run “Spaceship Earth” cannot afford to make “concessions to the non-synergetic thinking (therefore the ignorantly conditioned reflexes) of the least well advised of the potential mass customers [that is, the average citizen]” (Fuller 1968, p. 367). 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 (Bell 1973; Chamberlin 1970; Heilbroner 1974).

Thus, the danger in the Faustian bargain lies in the mounting complexity of technology and with the staggering problems of managing the response to ecological scarcity, 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.”

**Democracy versus Elite Rule: The Issue of Competence**

One of the key philosophical supports of democracy is the assumption that people do not differ greatly in competence, for if they do, effective government may require the sacrifice of political equality and majority rule. Indeed, under certain circumstances democracy must give way to elite rule. As the eminent political scientist and democratic theorist Robert Dahl points out, in a political association whose members “differ crucially in their competence, such as a hospital or a passenger ship, a reasonable man will want the most competent people to have authority over the matters on which they are most competent” (Dahl 1970, p. 58, emphasis added). In other words, 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.

Ecological scarcity appears to have created precisely such a situation. Critical decisions must be made. Although it is true that most of them are “trans-scientific” in that they can only be made politically by prudent people, at least the basic scientific elements of the problems must be understood reasonably well before an informed political decision is possible. However, the average person has neither the time to inform himself or herself nor the requisite background for understanding such
complex technical problems. Moreover, many people are simply not intelligent enough or well enough educated to grasp the issues, much less the important features of the problems. Even highly attentive and competent specialists do not always understand the problems fully. Even when they do (or claim to), they can almost always be found on both sides of any major question of public policy. (The dispute over nuclear-reactor safety is a prime example, with Nobelists lining up both for and against nuclear power.) Thus, even assuming that the politicians and people understand the issue well enough to ask the right questions, which experts should they listen to? Can they understand what the experts are saying? If we grant that the majority of the people probably will not understand and are therefore not competent to decide such issues, is it very likely that the political leaders they select will themselves be competent enough to deal with these issues? And even if they are, how can these leaders make authoritative decisions that impose heavy present costs or that violate popular expectations for the sake of future advantages revealed to them only as special knowledge derived from complicated analysis, perhaps even as the Delphic pronouncements of a computer?

Such questions about the viability of democratic politics in a super-technological age propel us toward the political thought of Plato. In The Republic, the fountainhead of all Western political philosophy, Plato argued that the polity was like a ship sailing dangerous waters. It therefore needed to be commanded by the most competent pilots; to allow the crew, ignorant of the art of navigation, to participate in running the vessel would be to invite shipwreck. Thus the polity would have to be run by an elite class of guardians, who would themselves be guided by the cream of this elite, the philosopher-kings. As the quotation from Dahl suggests, to the extent that Plato's analogy of the ship of state approximates reality, his political prescriptions are difficult to evade. This is precisely why, from Aristotle on, those who have favored democratic rather than oligarchic politics have concerned themselves with keeping the political community small enough and simple enough so that elite rule would not be necessary for social survival. The emerging large, highly developed, complex technological civilization operating at or very near the ecological margin appears to fit Plato's premises more and more closely, foreshadowing the necessity of rule by a class of Platonic guardians, the "priesthood of responsible technologists" who alone know how to run the spaceship.

Such a development has always been implicit in technology, as the ideas of Saint-Simon suggest, but the need for it has become unmistakable in a crowded world living close to the ecological limits, for only through the most exquisite care can we avert the collapse of the technological Leviathan we are well on the way to creating. C. S. Lewis observed that "What we call Man's power over Nature turns out to be a power exercised by some men over other men with Nature as its instrument" (Lewis 1965, p. 69), and it appears that the greater the technological power, the more absolute the political power that must be yielded up to some people by the others. Thus we must ask ourselves whether continued technological growth will not merely serve to replace the so-called tyranny of nature with a potentially even more odious tyranny of people. Why indeed should we deliver ourselves over to a "priesthood of responsible technologists" who are merely technical experts and may well lack the excellence of character and deep philosophical understanding that Plato insists his guardians must possess in order to justify their rule? In fact, why accept the rule of even a genuinely Platonic elite possessed of both wisdom and expertise when all history teaches us that the abilities, foresight, and goodwill of mortal people are limited and imperfect? The technological response to ecological scarcity thus raises profound political issues, in particular one of the most ancient and difficult political dilemmas—quis custodiet ipsos custodes? "Who will watch the guardians themselves?"

Technology and the Path to a Brave New World

Modern humanity has used technology along with energy to try to transcend nature. We have seen that it cannot be done; nature is not to be transcended by a biological organism that depends on it. Worse, any attempt to do so will have momentous political and social consequences. Far from protecting us from painful and disruptive social changes, as the technological optimist would claim, continued technological growth is likely to force such changes on us. We are, in fact, in the process of making the Faustian bargain without ever having consciously decided to do so. As a result, we appear to be traveling down the road to total domination by technique and the machine, to the "Brave New World" that Aldous Huxley (1932) warned was the logical end point of a hedonistic, high-technology civilization.*

Technology may not be inherently evil, but it does have side effects, and it does exact a social price. Moreover, in the hands of less-than-per-

* All the techniques of social control and biological manipulation forecast in Huxley's dystopian novel are being invented today in our laboratories (Cohen 1973; Delgado 1969; Holden 1973; Kass 1971, 1972; Skinner 1971). And well before these developments occurred, Huxley (1958) was himself appalled to witness in his own lifetime much of what he had imagined as taking place six or seven hundred years in the future.
Taming Leviathan: Macro-constraints and Micro-freedoms

The only escape from the political dilemma of ecological scarcity—authoritative rule or ecological ruin—is indicated in the Epigraph: If people exercise sufficient self-control of their passions, the fetters of external authority become unnecessary. Unfortunately, political history suggests that the level of moral restraint and altruism to be expected from the members of large, complex, mass societies is limited at best. These virtues are even less likely to be found in industrial civilization, for its citizens have been brought up to believe that satisfying their hedonistic wants is not only legitimate but positively virtuous. Besides, in complicated and highly interdependent societies, even the most willing citizen would not know how to be ecologically virtuous without a large amount of central direction and coordination. In other words, unless we return to face-to-face, simple, decentralized, small-community living—which may be a desirable long-term goal (to Chapter 8 will argue) but is hardly a short-term possibility—we are stuck with the problem of making authority palatable and protecting ourselves from those who would abuse their ecological guardianship.

Traditional political theory has proposed many answers to this problem. However, one basic principle stands out: If self-restraint is inadequate, macro-constraints are vastly to be preferred to micro-constraints, for the psychological differences between them are crucial. That is, limitations on our freedom that are indirect, remote, and impersonal are more likely to substantiate the general public's belief that our freedom is preserved. Thus an effective way of making authority acceptable is to impose macro-constraints that encourage the behavior necessary to maintain a steady-state society but to leave individuals with a relative abundance of micro-freedoms that, when added up, give them an overall sense of freedom. How such a steady-state society might be "designed" will be discussed in Chapter 8.

Political dilemmas described above. 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, even if the long-term goal is a technologically simple, decentralized society favorable to a democratic politics.

Even beyond the transition period, whether a steady-state society can be democratic is at least questionable. A society cannot persist as a genuine democracy unless the people in their majority understand technology and ecology well enough to make responsible decisions. And
The Ecological Contract

The Great Frontier and the Industrial Revolution unleashed forces that eventually destroyed the medieval political synthesis, which was based generally on the Heaven-ordained hierarchy of the "great chain of being" and specifically on the "divine right of kings." Changing economic conditions gradually transferred de facto political power from monarchs, priests, and nobles to the enterprising middle classes. Although at first the bourgeoisie acquiesced in continued autocratic rule and aristocratic patronage, it eventually tired of supporting what it came to see as unproductive social parasites; it overthrew the ancien régime and embarked on democratic self-rule, the only form of government that could be intellectually and practically reconciled with its new sense of individualism. Such major transfers of power must be theoretically and morally legitimated, and the "social contract" theory of government was devised to fulfill this need.

In essence, the theory of the social contract says that individuals are not part of a preexisting hierarchy to which they must unquestioningly adapt but rather are free to decide how they wish to be ruled. It is thus primarily concerned with how free and equal individuals (starting from an anarchic "state of nature") can come together to erect political institutions that will preserve their individual rights to the fullest extent yet also promote the social harmony they need to enjoy these rights in peace. Ironically, the device of the social contract was used by Hobbes to provide secular support for monarchy, starting from the individualistic, hedonistic, and materialistic premises of the bourgeois world view. However, as it was later developed by Locke and Rousseau, the social contract became the foundation for popular sovereignty and liberal democracy (even Marxism has very deep roots in Rousseau's thought). The untrammeled individual was now king.

As a product of the Great Frontier, the theory of the social contract is fundamentally cornucopian: Nature's abundance being endless and inexhaustible, one has only to solve the problem of achieving social harmony through a just division of the spoils. Nature is thus external to politics. But these cornucopian premises have become as anomalous in an age of ecological scarcity as the divine right of kings was in the era of the Great Frontier and the Industrial Revolution. Ecology and politics are now inseparable; out of prudent self-restraint, if for no other reason, a valid political theory of the steady state will be obliged to give the same weight to ecological harmony as to social harmony. Thus, just as it was the task of the seventeenth- and eighteenth-century political philosophers to create the social-contract theory of government to take account of the new socioeconomic conditions and justify the political ascent of the bourgeois class, so it will be the duty of the next generation of philosophers to create an "ecological contract" theory promoting harmony not just among humans, but also between humanity and nature.

Although the technology of a frugal steady state should be more accessible to the average person's understanding than current technology is, the same may not be true of the ecological knowledge on which the steady-state society will have to be based. Intuition and common sense alone are of little help in understanding the counterintuitive complexity of the human ecosystem—and nowhere else can a little knowledge be so dangerous. Thus, although not intrinsically mysterious, ecology is esoteric in the sense that only those whose talents and training have equipped them to be the "specialists in the general" discussed in the introduction are likely to possess the kind of competence that would satisfy Dahl's "reasonable man." The ecologically complex steady-state society may therefore require, if not a class of ecological guardians, then at least a class of ecological mandarins who possess the esoteric knowledge needed to run it well. Whatever its level of material affluence, the steady-state society will not only be ostensibly more authoritarian and less democratic than the industrial societies of today (the necessity of coping with the tragedy of the commons would alone ensure that), but it may also be more oligarchic as well, with full participation in the political process restricted to those who possess the ecological and other competencies necessary to make prudent decisions.

* In Chapter 8, we present the conditions for an ecological democracy which could avoid these consequences.
Hard Political Realities and a New Paradigm

In summary, scarcity in general erodes the material basis for the relatively benign individualistic and democratic politics characteristic of the modern industrial era. Ecological scarcity in particular seems to engender overwhelming pressures toward political systems that are frankly authoritarian by current standards, for there seems to be no other way to check competitive overexploitation of resources and to ensure competent direction of a complex society's affairs in accordance with steady-state imperatives. Leviathan may be mitigated but not evaded (see Box 21).

Ecological scarcity thus forces us to confront once again, perhaps in a particularly acute form, the hard realities and cruel dilemmas of classical politics, from which four centuries of abnormal abundance have shielded us. As a result, we shall have to reexamine fundamental political questions in the light of ecology and construct a new steady-state paradigm of politics based on ecological premises instead of on the individualistic, hedonistic, materialistic, and anthropocentric premises of bourgeois "social contract" theory (see Box 22). The alternative is to let the shape of the steady-state paradigm be decided for us by accepting the outcome of current trends toward technocracy.

Given current political values, this may not seem like much of a choice. However, the one sure thing is that current values and institutions will not be able to endure unchanged. Moreover, as we shall see in Chapter 8, the latitude of choice is wider than might be suspected; indeed, the crisis of ecological scarcity might actually be turned into a grand opportunity to build a more humane and genuinely democratic post-industrial society. In the next two chapters, we shall explore specific features of the American political economy to determine how well it is likely to cope with the challenges of ecological scarcity.

The American Political Economy I:
Ecology Plus Economics Equals Politics

Having discussed the politics of scarcity in general, we now turn to the particulars of the American situation. As difficult as it sometimes is to keep economics and politics separate, especially in this country, we shall discuss the economic aspects of political economy in this chapter and take up the more political aspects in the next. However, both chapters share an approach different from that taken in by most critiques of the American system. We are not interested here in whether the system falls short of the democratic ideal of freedom, equality, and justice but only in whether it is likely to be able to surmount without fundamental change the challenge of ecological scarcity. To this question both chapters give essentially the same answer: Ecological scarcity undermines the basic laissez-faire, individualistic premises of the American political economy so that current institutions are incapable of meeting the challenges of scarcity. What is needed is a new paradigm of politics.

Market Failures and Social Costs

As noted in the Introduction, at least some critics of the limits-to-growth argument rely heavily on the market price mechanism to ensure a smooth, gradual transition to the steady state whenever it becomes necessary. They believe that as the costs of fuels and materials rise owing