

# MINE OR GARDEN? VALUES AND THE ENVIRONMENT—PROBABLE SOURCES OF CHANGE IN THE NEXT HUNDRED YEARS

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Recent realizations about the impact of humans upon their environment and the inevitability of the laws of thermodynamics have sparked widespread debate about possible, probable, and alternative futures open to the human species, American culture, and individuals now living.<sup>1</sup> As part of this debate this analysis will focus around the following questions: (1) Why change values that have contributed to the development of such a high American standard of living? (2) What is the role of culture in generating human futures? (3) What are some consequences for the environment of values that are prominent features of American sociocultural patterns? (4) In a period of rapid change, are there ascending values which appear to be more compatible with long-range environmental quality and human adaptation under desirable conditions than currently prominent American values? (5) What are the sources of these ascending values, and where are they most manifest? (6) Should humans redirect the “ecolutionary” process toward goals more likely to yield a long-term continuity of life?<sup>2</sup> (7) What can participants in the environmental movement do to enhance chances of attaining their goal of long-range environmental quality? (8) For the human species, American culture, and individuals now living, can humans generate images of desirable futures which are strong enough to motivate a critical mass of Americans to adjust life-styles so as to cooperate with ascending values more compatible with environmental quality? (9) How important are such im-

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ages of desirable futures to long-term successful human adaptation to environmental change? (10) Concretely, what can be done to promote ascendancy of an "ethic of preeminent environmental consciousness"?

The purpose of seeking answers to these questions is to stimulate and shape debate within the context of this conference on the ecosystem, energy, and values rather than to foreclose it with premature conclusions. Underlying the following discussion of these issues is the imagery of conflict between American culture organized as a "mining company" to extract maximum short-term gain from the environment (or "mine") and a reorganized culture which would function as a "gardener," whose principal obligation is to tend and nurture the environment (or "garden") upon which he and all subsequent generations inevitably depend.

#### THE CASE FOR VALUE CHANGE

The more vigorously and rapaciously humans modify their environment to meet immediate needs and wants, the more the very conditions for major cultural alteration become established. Principles of ecology and the laws of thermodynamics set limiting conditions on human choice. Between the present time and final completion of the process of entropy (the end of energy available for transformation), humans have an unknown but limited number of "degrees of freedom" regarding the use of energy and environmental resources.<sup>3</sup> To commit resources to specific, present objectives implies a pattern of commitment of future resources as well. For example, to use 80 percent of current federal energy-development funds to develop nuclear power makes it more likely that future funds will continue to be channeled to such development.<sup>4</sup> Or if a change in priority occurs due to unacceptable problems with nuclear power, further funds will be required to undo or compensate for the consequences of those problems.

The very success of American culture in providing short-term improvements in the quality of life might short-circuit the future of the "human experiment" quite prematurely to the inevitable completion of the second law of thermodynamics—no more available energy to be transformed. To avoid this it is necessary to understand and anticipate long-term consequences of short-term gains and to develop alternative images of desirable human futures sufficient to motivate the value transition under way in American culture. For example, some sociocultural patterns warranting examination of long-term consequences and contrast with alternatives include a growing dependence upon nuclear power, belief in unlimited resources, the expectation that there is a "technological fix" for all problems, resource

consumption for status demonstration purposes, "random" procreation and the absence of a national population policy, waste as a correlate of bureaucratic complexity, and widespread alienation and lack of acceptance of personal responsibility for the consequences of one's own actions, to mention just a sampling.

Among an increasing number of diversely experienced and motivated observers, there is a growing sense of limit to the degrees of freedom remaining to the human species and the future of American culture. In spite of this growing awareness, the vast majority of the world's inhabitants probably lack such a notion of limits, certainly conceptually, if not experientially. However, engineers and physicists have laid bare the meaning of net energy, the thermodynamic imperative, and the limitations to fossil-fuel subsidy. Ecologists and theoreticians of many disciplines have contributed valuable tools to understand the functioning of nature through cybernetics, the holocenotic principle, and general systems theory. Social scientists have exposed the patterns of growing impatience with gross inequalities among Third World and domestic poor. Microbiologists have demonstrated the rising curve of bacteria-strain resistance to the "overworked miracle," antibiotics. Under such conditions, the evolution of consciousness and conscience needs acceleration, and Van Rensselaer Potter's admonition becomes noteworthy: "Whether the survival of the human species in an acceptable form of civilization can be accomplished without revision of many ancient and diverse beliefs is purely conjectural, but it would be surprising if survival could be based on erroneous beliefs. It seems likely that survival is possible only when the system of beliefs is compatible with the world situation. In earlier times, the results of erroneous superstitions were local and the disasters were local. Now the whole world is influenced by events in any part of it. Change in outlook is needed, but will the change come in time?"<sup>5</sup>

Values as well as beliefs must be compatible with the world situation, and what is an "acceptable form of civilization" in the future may not look very desirable by today's standards. Hence, if humans can indeed take responsibility to be the "helmsmen" of their future, vigorous public debate is warranted regarding what conditions constitute a desirable or even acceptable set of futures for the human species, American culture, and individuals now alive.

#### THE ROLE OF CULTURE IN GENERATING HUMAN FUTURES

The future of culture and specifically American culture is important to both the future of the human species and the future quality of life of individuals now living. The probability of human futures is low-

ered when cultures upon which humans are dependent no longer are able to mediate with desirable consequences the relationship between the demands of the physical and social environment and the limits of human genetic adaptability. The demise of any technologically advanced culture means the probable loss of much knowledge that has served historically to motivate proper adaptation between humankind and nature. This knowledge and its technological application is embodied in such social institutions as religion, medicine, government, education, the economy, and most especially science. These institutions, themselves perhaps the epitome of human technological development, have raised human evolution above the level of blind trial and error of genotypic selection to the level of cultural evolution.

Believing that the quality of the species gene pool already has been compromised sufficiently to prevent human adaptation at a future time of great ecological stress, some may not cheer this success of culture. Nevertheless, one enduring human value has been to seek control over the conditions of existence. To some this means more than the ability to adapt efficiently, even to severe stress from the environment. In a sense, it involves becoming more like the "image of God," that is, being able to guide the objective conditions of existence. This value is manifest in the very development of culture and its mediating and transforming institutions.

Humankind may no longer carry within its biological capacities sufficient genetic diversity to adapt to many conceivable environmental changes, including some conditions that could result from existing cultural patterns. Widespread nuclear warfare could be such a case. Thus the future of humankind may depend inevitably upon cultural evolution. Under such conditions it becomes imperative to recognize interdependence as the fundamental fact of human existence and evolution. Culture is that blueprint, that set of ground rules, which describes and directs patterns of interdependence between humans and between humans and the natural environment.<sup>6</sup> Hence those environmental compromises which threaten the viability of American culture as a mechanism of long-run adaptation become important first priorities for correction by those in the environmental movement whose objectives involve long-range concerns for environmental quality and human adaptation.<sup>7</sup>

While some appear ready to jettison completely the culture upon which they have been dependent for their survival, there is considerable reluctance, even among scholars, to tamper imaginatively with the basic organization, value, and belief patterns of American culture, to propose radical alternatives, to create images of desirable futures distinct from existing patterns. There is an understandable prefer-

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ence for orderly, controlled, predictable change, where change appears warranted. However, when the objective conditions of existence are rapidly altered, such as with a restricted energy supply, alternative paths and their consequences must be explored since, whatever the outcomes, living conditions probably will be different from what they are at present. What now follows is an effort to examine some selected, currently prominent values viewed by some observers as particularly compromising to long-term environmental quality and some apparently ascending values that are expected to be more conducive to viable human futures.

### CURRENTLY PROMINENT AND ASCENDING VALUES

Tables 1 and 2 summarize, respectively, the environmental impacts of currently prominent American values (PAV) and values within American culture that appear to some observers to be ascending in importance (AV). The values chosen for inclusion in table 1 as currently prominent American values were selected because of their collective pivotal importance as obstacles to a fairly comprehensive American cultural transition toward an expanded environmental consciousness and commitment to desirable human futures. These values make operational an "ethic of anthropocentric hedonism." Taken together, they constitute a threat not only to the quality of present and future life but perhaps also to the fact of life for future human generations.

By contrast, table 2 shows a dozen apparently ascending American values. Their ascendance to prominence probably would establish firmly an environmental ethic as a guiding gyroscope of American culture processes. Taken together, they constitute one formulation of a desirable image of individual and collective human futures. The security of these futures is postulated upon this "ethic of preeminent environmental consciousness."

In short, the ethic of anthropocentric hedonism conjures up the imagery of the mine, a nonliving thing. The environment is viewed as a mine to be rapaciously exploited. When the extraction of value is complete, the mine is sealed and abandoned, useless to future generations. American culture is the mining company whose only commitment is to ever more efficient extraction of value from the mine. By contrast, the ethic of preeminent environmental consciousness flowers in the imagery of the garden. The environment of the garden is ordered by the gardener (a reorganized American culture), who tends the garden with both respect and genuine reverence for its vital quality and affection for those who will inherit a plot. The gardener understands that as a living organism the garden must be nurtured and protected against the occasional capriciousness of weather varia-

TABLE 1

THE ETHIC OF ANTHROPOCENTRIC HEDONISM ("THE MINE"): PROMINENT AMERICAN VALUES (PAV), THEIR ENVIRONMENTAL IMPACT, AND PROCESSES OF CULTURAL ADAPTATION TO THEIR ENVIRONMENTAL IMPACT

PAV	Environmental Impact	Processes of Cultural Adaptation	Specific Examples of Cultural-Adaptation Processes
1. Maximally desirable present (egoistic hedonism)	Lack of desirable images of the future to motivate collective adaptation (future seen as dystopian)*	Extol the "now existence"; extend easy credit; reward consumption rather than saving and deferred gratification	Prominence of 1984, <i>Brave New World</i> , and <i>Fahrenheit 451</i> as probable models of the future; high level of indebtedness
2. Maximum short-term stability (suppression of tension, conflict, and change whenever possible)	Social change with high collective and personal costs†	Permit change through growth and "trickle-down effect," but minimize redistribution	Suburbanization and loss of city tax base, high inflation, and unemployment; taxes raised, reliance on public welfare programs to maintain dependents at a minimum level of living
3. Materialistic progress and growth; isolation with things for entertainment	Environment mined rather than nurtured‡	Emphasize economically profitable applications of technology; substitute machines for human skills wherever possible; acquire material wealth to demonstrate success	Spending of public funds on space and military hardware while going door to door to collect cancer-society funds; high-technology medicine amid widespread medical indigence
4. Environmental exploitation (environment viewed chiefly as a commodity for its profit value)	Contamination-depletion of environment (less security regarding continuity of life)§	Prefer the "technological fix" to prevention; harbor anthropocentric view of the natural environment	Chlorination of water supply; use of bottled spring water

\*Fred Polak, *The Image of the Future*, trans. and abr. Elise Boulding (San Francisco: Elsevier/Jossey-Bass Inc., 1973); Alvin Toffler, ed., *The Futurists* (New York: Random House, 1979).

†Max Birnbaum and John Moge, *Social Change in Urban America* (New York: Harper & Row, 1972); F. F. Piven and Richard Cloward, *Regulating the Poor: The Functions of Public Welfare* (New York: Vintage Books, 1971).

‡Sidney Lens, "Running out of Everything," *Progressive* 38 (1974): 15-21; U.S. Council on Environmental Quality, *Environmental Quality: The Sixth Annual Report of the Council on Environmental Quality* (Washington, D.C.: Government Printing Office, 1975); U.S. Department of Health, Education, and Welfare, *Toward a Social Report* (Washington, D.C.: Government Printing Office, 1969).

§Barry Commoner, *The Closing Circle* (New York: Alfred A. Knopf, Inc., 1971); E. N. Anderson, Jr., "Life and Culture in Ecotopia," in *Reinventing Anthropology*, ed. Dell Hymes (New York: Vintage Books, 1974).

TABLE 1 (Continued)

PAV	Environmental Impact	Processes of Cultural Adaptation	Specific Examples of Cultural-Adaptation Processes
5. Private property-riparian rights viewed as chief among individual rights (natural and human resources viewed as commodities)	High potential for misuse of natural and human resources upon which a collectivity may be dependent; resource depletion	Use more intense and costly exploitation techniques; expand exploration, use marginal-quality resources, ignore net-energy principle	Alaska pipeline, shale oil development, Elk Hills Diversion (Teapot Dome II); expansion of strip mining; substitution of coal for oil and lower air-pollution standards
6. Population growth (implying strength, success, and economic health)	Growth exceeding ability to plan for it, future sacrificed to meet pressing immediate needs, competitive demand stimulating inflation <sup>#</sup>	Accept famine and warfare for containment, employ triage model and lifeboat ethics	Bangladesh, Biafra, Sahel, Navajo Indian Reservation
7. Radical individualism (underestimation of interdependence)	Competition taking precedence over cooperation (individuals who "lose" having little stake in the system and perhaps willing to destroy it)**	See poverty as just and as an acceptable correlate of progress; social inequality becomes more structured	Slums, lack of low-income housing; high crime rates, common mental health problems, accepted malnutrition, skid row, poor nursing-home conditions; social Darwinism and work ethic used to explain success
8. Personal security through competitive advantage over others	Increased personal insecurity and fear, increased threat to public order, increased property destruction††	Expand formal social control and surveillance	Expanded police budgets, use of national guard on campuses, development of computer-linked information networks, infiltration of "subversive" groups

†California Tomorrow, *Private Property and the Public Interest: Summary of Proceedings of a California Tomorrow Legal Seminar on the Use and Regulation of Land* (San Francisco: California Tomorrow, 1974); John W. Reys, "The Future of American Planning: Requiem or Renaissance?" in *CLUG: Community Land Use News*, ed. Allan G. Feldt (New York: Free Press, 1972).  
 #Garrett Hardin, "The Tragedy of the Commons," *Science* 162 (1968): 1243-48; Edgar Chastean, *The Case for Compulsory Birth Control* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1971).  
 \*\*Philip Slater, *The Pursuit of Loneliness* (Boston: Beacon Press, 1971); R. Cloward and F. Piven, *The Politics of Turnout: Poverty, Race and the Urban Crisis* (New York: Vintage Books, 1975).  
 ††Richard Ney, *The Wall Street Jungle* (New York: Grove Press, 1970); Birnbaum and Moggy; Richard Parker, *The Myth of the Middle Class* (New York: Harper & Row, Harper Colophon Books, 1972); Serge Denisoff, ed., *The Sociology of Dissent* (New York: Harcourt Brace Jovanovich, 1974).

TABLE 1 (Continued)

PAV	Environmental Impact	Processes of Cultural Adaptation	Specific Examples of Cultural-Adaptation Processes
9. Persons valued as interchangeable and expendable commodities (utilitarian value)	Widespread alienation (and resulting loss of sense of personal responsibility for own actions)##	Offer financial and other compensations to the exploited rather than ceasing exploitation; seek identity outside work	Union pressure for shorter work week and higher wages; the Watergate affair; destruction in Lordstown, Ohio, GM plant by workers
10. Centralization of authority (representation by experts)	Expanded bureaucratic complexity and ascendancy of large-scale organizations (fostering dependency and waste)##	Expand government services, tolerate monopoly in private sphere	Growth of government, New York City financial crisis, growth of multinational corporations, corporate interference in government process
11. "Pragmatic," reactive, short-term treatment of symptoms of immediate problems ("muddling through")	Unanticipated consequences of many "independent" individual decisions	Emphasize "clean-up" operations after the fact	Lack of comprehensive-integrated public policies, frequent changes in public policies and programs for cosmetic and political purposes
12. Science valued chiefly as an adjunct of the marketplace (including warfare capability)	Science more reactive than anticipatory (not as protective of humans as it is capable of being), producing a false sense of security##	Take a curative rather than preventive approach to illness, accidents, or natural disasters	Lack of national health policy; reduced basic scientific research budgets; disasters explained as the "will of God" rather than the "failure of man"

##Richard Sennett and J. Cobb, *The Hidden Injuries of Class* (New York: Vintage Books, 1974); Emma Rothschild, "GM in Trouble," *New York Review of Books* (February 25, 1971), pp. 14-20.

##Anthony Sampson, *The Sovereign State of ITT* (Greenwich, Conn.: Fawcett Publications, 1973); Andrew Hacker, "What Rules America?" *New York Review of Books* (May 1, 1975), pp. 9-10, 12-13.

|||Martin Kuzenzon, *Playing Urban Games: The Systems Approach to Planning* (San Diego, Calif.: George Braziller, Inc., 1972); Alice Rivlin, *Systematic Thinking for Social Action* (Washington, D.C.: Brookings Institution, 1971).

##Albert H. Teich, ed., *Technology and Man's Future* (New York: St. Martin's Press, 1972); Dean Schooler, Jr., *Science, Scientists, and Public Policy* (New York: Free Press, 1971).



TABLE 2

THE ETHIC OF PREEMINENT ENVIRONMENTAL CONSCIOUSNESS ("THE GARDEN"): ASCENDING VALUES, THEIR POSSIBLE ENVIRONMENTAL IMPACT, AND ALTERNATIVE CULTURAL-ADAPTATION PROCESSES

AV	Possible Environmental Impact	Alternative Cultural-Adaptation Process (Sociocultural Change Needed to Establish AV)
1. Optimally desirable quality of future life (expectation of cultural continuity motivating sacrifice and change in the present)	Greater personal security, improved mental health of the community, enhanced sense of personal meaningfulness; positive images of the future to flourish*	Construct and promote collectively positive utopias, use educational curriculum and mass media to promote consciousness and imagination
2. Dynamic order (understanding positive functions of tension, conflict, and change)	Change more easily accommodated and less resisted; more interesting, humane, and representative political process†	Institute comprehensive-integrated planning; encourage and support development of alternative institutions, bring program diversity in rather than out
3. Qualitative culture and human-skill development (e.g., "technique," handicrafts, interpersonal communications); participation in community	Environment nurtured and treated as a garden rather than mined‡	Experiment with new life-styles, emphasize getting by with less, substitute human skills for machines, "translate" and distribute specialized knowledge
4. Environmental control (through harmony with laws of nature and respect for carrying-capacity limits)	Less destruction and waste of resources, lower taxes, greater predictability of consequences of actions on the environment§	Institute preventive approach, reduce waste to a minimum, recycle; promote public planning
5. Public "ownership" of basic resources (air, water, land), private stewardship as temporary control with accountability	Greater ability to accomplish the goals of a plan, environmental quality more secure in the long run, reduced social and economic inequality	Introduce air-, water-, and land-management policies; revise riparian-rights system of owner sovereignty; promote public planning

\*Robert Theobald, *Futures, Conditional* (Indianapolis: Bobbs-Merrill Co., 1972); Alvin Toffler, *Learning for Tomorrow: The Role of the Future in Education* (New York: Vintage Books, 1974); Polak (table 1, n. p.).

†Kuenzlen (table 1, n. ||); John W. Abbott, ed., *Democracy in the Space Age: Regional Government under a California State Plan* (San Francisco: California Tomorrow, 1973).

‡Anderson (table 1, n. §); Theobald, E. F. Schumacher, *Small Is Beautiful* (New York: Harper & Row, 1974).

§Alfred Heller, ed., *The California Tomorrow Plan: The Future Is Now* (Los Altos, Calif.: William Kaufmann, Inc., 1972); André Van Dam, "The Limits to Waste," *Futurist* (March 1975), pp. 18-19; Howard T. Odum, *Environment, Power, and Society* (New York: John Wiley & Sons, 1971).

||Reps (table 1, n. ||); Kuenzlen.

TABLE 2 (Continued)

AV	Possible Environmental Impact	Alternative Cultural-Adaptation Process (Sociocultural Change Needed to Establish AV)
6. Population planning	Destructive competition and conflict reduced, warfare and famine controlled, slower rate of heat production by man#	Develop a national population policy, support population-control research, raise standard of living of poor who use children as "social security"
7. Interdependence (collective security as the means to personal security), respect for human life in all states of dependence	Increased human control of evolution and adaptation process**	Reduce structured inequality; institute tax reform, guaranteed rights, and minimum standards
8. Relative social and economic equality	Reduced destructive conflict, increased sense of stake in maintaining an orderly system††	Effect social change through resource redistribution and greater equality of future resource allocation
9. Guaranteed personal dignity and worth of each individual	Greater sense among the majority of a stake in society, more willingness to participate and take responsibility for resources under one's stewardship‡‡	Stress theme of interdependence, guarantee that basic human needs are met independently of occupational role, increase worker participation in decisions affecting work role
10. Self-reliance and personal efficacy (decentralization to facilitate participation by all in resource-allocation decisions)	Greater initiative and imagination in problem solving, greater political participation, less administrative waste§§	Effect genuine revenue sharing, decentralize authority to local governments, reduce administrative complexity
11. Planning the future (anticipatory, idealistic solving of ongoing problems), treatment of problem "causes"	Humankind gains control and responsibility as the "helmsman" of planet Earth	Legitimize and establish comprehensive-integrated yet decentralized planning as a major national priority
12. Science valued as a principal tool of human adaptation, noncommercialized	Cybernetic adaptation, more enthusiasm and optimism about long-term continuity of human species, enhanced sense of personal security##	Make greater investment in scientific research, promote cybernetic thinking, extend scientific findings so public can understand and apply them

# See table 1, n. #; Robert L. Heilbroner, *An Inquiry into the Human Prospect* (New York: W. W. Norton & Co., 1974).

\*\* Polak.

†† Parker (table 1, n. ††); Herbert J. Gans, *More Equality* (New York: Vintage Books, 1974); S. M. Miller and P. Roby, *The Future of Inequality* (New York: Basic Books, 1970).

‡‡ Sennett and Cobb (table 1, n. ‡‡); Parker.

§§ Abbott; Ruth Sidel, *Women and Child Care in China* (Baltimore: Penguin Books, 1972); Reps.

|||| R. B. Lindsay, "The Larger Cybernetics," *Zygon* 6 (1971): 126-34; Van Rensselaer Potter, "Biocybernetics and Survival," *ibid.* 4 (1970): 229-46.

## Teich (table 1, n. #); Toffler (table 1, n. \*).

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tions. The images of mine and garden summarize the principal choice being confronted in the transition of American culture postulated here.

The complex of values labeled the "ethic of anthropocentric hedonism" (see table 1) clusters around several nuclei:<sup>8</sup> a general orientation (items 1-3), involving egoistic hedonism, class stability and resistance to social change, and materialistic progress and growth; the human-environment relationship (rows 4-6), including exploitation of the environment for economic gain, the primacy of private property, and population growth; the human-human relationship (rows 7-9), encompassing radical individualism, competitive advantage, and the utilitarian value of the human person; and methods of problem solving (rows 10-12), incorporating centralization of authority, a preference for "muddling through," and science as an adjunct of the marketplace.

In addition to the prominent American values which comprise the ethic of anthropocentric hedonism, table 1 summarizes the salient impacts of each value on the environment, the way American culture has been adapted to the environmental impact, and some specific examples of that adaptation process.

In contrast with table 1, table 2 presents one alternative image of the future of American culture. The components of the "ethic of preeminent environmental consciousness" are the general orientation (rows 1-3), including an optimally desirable future, dynamic order preferred to stability, and advances in qualitative (as opposed to material) culture; the human-environment relationship (rows 4-6), involving control through harmony with natural laws, public ownership of basic resources, and population planning; the human-human relationship (rows 7-9), encompassing interdependence, relative social and economic equality, and guaranteed personal dignity and worth; and methods of problem solving (rows 10-12), incorporating self-reliance and decentralization, planning the future, and science valued primarily as a tool of human adaptation.

In addition to the apparently ascending values which compose the ethic of preeminent environmental consciousness, table 2 summarizes possible impacts of each value on the environment and the change in the cultural-adaptation process needed to establish the ascending value as a prominent value within American culture.

Given that the advantage of incumbency lies with the "environment as mine," positive actions will be required to redirect the anthropocentrically hedonistic American values if the "environment as garden" is to have any chance of survival.

SOURCES OF VALUE CHANGE IN PRESENT-DAY AMERICA

There are two prongs to the value-change process in contemporary America. One consists of a set of forces working to erode the prominent values of the ethic of anthropocentric hedonism. However, this prong does not carry with it the conditions to develop sufficiently comprehensive positive images of human futures necessary to motivate a thorough reorientation of American culture. The second prong is that motivational power arising from the dynamic interface of science and religion. The dialectic between these two prongs, erosion of established values and motivation and confidence to bring about change, is essential to the establishment of the ethic of preeminent environmental consciousness.<sup>9</sup>

The set of forces working to erode currently prominent values includes (1) a vast array of social movements among those traditionally locked out of the resource-allocation process (these have not yet coalesced in an effective political mobilization but appear to be moving toward that eventuality; the issues around which these movements are organized include racial and ethnic rights, unionization of farm workers, women's rights, welfare rights, the right to choice regarding sexual-expression preferences, and environmental quality; their very emergence challenges the legitimacy of the existing cultural fabric); (2) advances in science and technology, particularly in the critical areas of monitoring previously mysterious and subtle ecosystem changes and in the development of renewable resource bases;<sup>10</sup> (3) an attitude of pluralism and experimentation with life-styles designed to generate alternative styles of human relationships, particularly between the sexes, in "family" living, and in relatively autonomous communal groups; (4) development of comprehensive planning models, especially at regional levels, and their early gropings for identity and legitimacy (successes have been uneven, but they are a factor that hardly existed prior to a decade and a half ago);<sup>11</sup> and (5) an awareness that the time for choice is at hand and that if humans fail to plan the future toward consciously chosen desirable ends the future will emerge to constrain us with a series of *faits accomplis* that we do not now see as desirable.<sup>12</sup>

The nexus of science and religion has made it appear increasingly reasonable to offer an affirmative response to the question of whether man both can and should attempt to direct the ecovolutionary process toward goals more likely to yield continued life than those of present American culture. Science has hinted that such conscious direction indeed may be possible. Religion has provided the justification that

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permits humans to believe they should accept responsibility to undertake such an endeavor. Saying yes implies that there indeed may be some values which are absolute for the human species. Humankind's historical quest to overcome the constraints of the natural environment suggests that there are such absolutes. One such absolute value might be made operational as the desire to control a wider and longer range of the objective conditions of human existence, perhaps even to direct intentionally the very process of ecovolution. Within a religious framework one might say that the value is to increase the degree to which humans act as "cocreators" with "God," thus fulfilling the *imago dei*.<sup>13</sup> Such a value can facilitate the understanding of how science and religion ultimately can be consummated in union since the goals of science are given commonly as description, explanation, prediction, and, ultimately, control.

In short, the replacement of the ethic of anthropocentric hedonism by the ethic of preeminent environmental consciousness will require a continued dialectic between those forces actively eroding prominent values and the motivational power of the mutual reinforcement of science and religion. The cultural glue that holds the transforming dialectic together is a value-belief system or ideology expressed as an image of the future that compels commitment to change. To transform the mine into a garden humans must believe in their responsibility to develop alternative desirable images of human futures upon which cultural evolution can be nourished and to forge the political tools to transform the images into reality.

There is one particularly perplexing obstacle to the establishment of an ethic of preeminent environmental consciousness that exists within the value-change process itself. From some of the social movements mentioned above comes a message that those who traditionally have been shortchanged in the resource-allocation process want more of the material rewards that many Americans have enjoyed, even squandered, for so long. Supporters of the environmental movement generally have failed to make the connection between their goal of long-term environmental quality and the expressed needs of participants in other movements for a greater share of the American pie.<sup>14</sup> While certain movements, especially among the poor, by their very existence involve a challenge to prominent American values, they will not necessarily become allies who readily adopt the objectives of environmental-movement members. Given a choice between an expanding economy with increased job opportunities and a clean environment, the poor and unemployed go on record in support of more jobs. This becomes an unneeded choice only when resource redistribution is accepted as an alternative to growth as a means to social change.

The dilemma is apparent when it is realized that the active backbone of the environmental movement is an upper-middle-class, professional, highly educated constituency, which mistakenly believes that any resource reallocation would be principally at its expense. However, if the goals of the environmental movement are to be established as guidelines to important moral and political decisions in coming decades, activists in that movement must address simultaneously those conditions which prevent members of other movements from becoming their allies.

#### THE ROLE OF IMAGES OF THE FUTURE

The Dutch futurologist Fred Polak has suggested that "the choice for modern man is no longer between this image of the future and that, but between images of his own choosing and images which are forced upon him by outside pressures."<sup>15</sup> He suggests further that images of the future can affect the formation of values and the degree of commitment that values are capable of eliciting.

According to Polak, the image of the future functions as (1) a synthesizing ideology to bind together resources such as people, organization, dollars, and technology, to produce sociocultural change; (2) an indicator of cultural dynamics (his historical survey of past cultures found a close relationship between a positive image of the future and the flowering of a culture and between weakened images of the future and cultural decay); (3) a barometer to assess the potential strength of a culture by measuring the intensity and energy of its images of the future; (4) a regulative mechanism (the concept of the image of the future has made it possible to move from diagnosis to prognosis due to the observed intimate relationship between the image of the future and the future); and, finally, (5) an actual forecast (the image of the future not only indicates choices and possibilities but has an ideological dimension in that it actively promotes certain choices and, in effect, puts them to work in determining the future; it serves as self-fulfilling prophecy). To this list of functions can be added another. The image of the future can serve as a standard against which to assess the quality of ethical and moral judgments being made by decision makers empowered with the authority to lead a culture toward a specified desirable future. The image becomes a tool for accountability.

The garden imagery of the operational ethic of preeminent environmental consciousness presented in table 2 can serve as a foundation upon which a more comprehensive positive image of the future might be constructed in detail. It is offered to stimulate debate regarding what is indeed a desirable image of the future of the human

species, American culture, and individuals, both living and yet unborn. While many diverse conceptions of desirable futures can and ought to be generated, the garden ethic outlined in table 2 ought to remain central to such images due to the positive impact on the environment that is postulated for its operational values.

An analysis of what needs to be done having been offered, the task remains as to how concretely to bring about the changes necessary to establish securely the garden in place of the mine.

It has been suggested that this is a matter requiring both political strategy and motivation based on the dynamic interaction of science and religion. There are probably a number of strategic options, which range from armed rebellion, such as installed the new regime in China, and the prognostications of Robert L. Heilbroner regarding the emergence of powerful religions of social control and dictatorial, centralized authority,<sup>16</sup> to a laissez-faire trust in the omnipotence of the "technological fix" and the "maximum growth is best" economy as a road to change. Both extremes are self-defeating. Both compromise as means many of the values purported to be desirable as ends. But are the standard alternatives to these extremes likely to prove viable? Are good example and honest, well-meaning leadership sufficient? Do we need near ecocatastrophic crises to react to? Should we join the squirrel race of radical individualism and store up nuts hoping for personal competitive advantage in the possibly impending long, dark winter? We know that we will probably work within the general framework of existing culture. Hence it is urgent that a positive image of desirable futures be an important item on the agenda of institutions of education and socialization in American culture, especially churches, schools, mass media, professional journals, learned societies, and political advocacy and lobbying groups.<sup>17</sup> This is one essential entry on an agenda for action, the other being the increased political involvement of those with a future-oriented, environmental consciousness. They must move out into the arenas where the social movements are forming, planning agencies struggling, new life-styles emerging and where science and technology are being directed. In fact, it is in these arenas where debates about what is desirable are most intense and also most likely to be short term in focus. It is the perspective of the long-range future and of history that can be added to these debates to help shape them, to make the connections between what we do now and the probability of not only survival but the opportunity to experience the desirable later on. Example, honesty, and leadership armed with a powerful image of a desirable future can revitalize a wounded American culture. But without the image and without the direct involvement of its carriers in the daily

lives of oppressed peoples, to set an example condemns those who cannot conform. Then honesty becomes defense of privilege, and leadership becomes dominance. Under such circumstances a critical mass of humans may well lose interest in preserving the future.

It will take the motivation of the gardener committed to his plot to challenge the entrenchment and short-term seductiveness of the mining company's exploitive operation. As the gardener does not begin to sow without an image of the orderliness among the fully blossomed fruits of his cultivation, so must those who are committed to long-term environmental quality develop an image of the ends of their endeavors. Mining is a depleting, self-limiting process which culminates in ravaged desolation and abandonment. However, the life of the garden goes full circle and generates future life. Under the reverent eye and guidance of the gardener it becomes Creation in a microcosm.

#### NOTES

1. For a helpful discussion of some of the implications of the laws of thermodynamics, see R. B. Lindsay, "The Larger Cybernetics," *Zygon* 6 (1971): 126-34. The futures of the species, the culture, and individuals now living can be analyzed separately even though they are mutually interdependent at any specific moment of time. This is so because the human species probably will survive beyond the point where remnants of a disintegrated American culture as we presently know it are no longer readily recognizable to surviving humans. It is also possible because both the human species and American culture can endure beyond the life span of any given individual. Moreover, some Americans will survive as individuals beyond that time when American culture has been reorganized drastically. Such was the case for the survivors of the collapse of the Roman Empire and, more recently, the fall of the German Third Reich.

2. The term "ecolution" combines the concerns of evolutionists and ecologists and is defined as the simultaneous and mutually interdependent evolution of the human species (in both biological and cultural contexts), nonhuman species, and the physical environment—with a focus on the evolution of the relationships among them.

3. The term "degrees of freedom" is used here in the sense used by statisticians. When information is known or choices are made about some categories in a statistical problem, the remaining categories become determined.

4. This is illustrated by the proposal of Senator Mike Gravel (D.-Alaska) for a Nuclear Power Reappraisal Act of 1975.

5. Van Rensselaer Potter, "Biocybernetics and Survival," *Zygon* 5 (1970): 245.

6. See Ralph Wendel Burhoe's discussion of the "culturetype" in his "Natural Selection and God," *Zygon* 7 (1972): 43-45.

7. For a brief discussion of one example of a "first priority," see the final paragraph in the subsection "Sources of Value Change in Present-Day America" below.

8. These nuclei were first identified to me by Karl E. Peters.

9. The two prongs of value change are in accord with Anthony F. C. Wallace's more detailed description of revitalization movements and the thought of some that we are currently in the middle of such major cultural change. See his *Religion: An Anthropological View* (New York: Random House, 1966), pp. 157-63, and Solomon H. Katz's "The Dehumanization and Rehumanization of Science and Society," *Zygon* 9 (1974): 130-34.

10. For a discussion of the need for even greater visibility of environmental monitoring indices, see my "When the Earth Dies, Where Do We Bury It?" *Florida Naturalist* 49 (1976): 20-24.



## ZYGON

11. The regional-planning-council concept is becoming fairly well established in several states, most notably Florida and California. See California Land-Use Task Force, *The California Land: Planning for People* (Los Altos, Calif.: William Kaufmann, Inc., 1975).

12. For a comprehensive historical analysis of the role of the image of the future in past cultures and the implications of this for contemporary civilization, see Fred Polak, *The Image of the Future*, trans. and abr. Elise Boulding (San Francisco: Elsevier/Jossey-Bass, Inc., 1973).

13. This is not the same as saying that man hopes to *become* God—which, according to traditional Christian thought, is the essence of sin. Rather, it is the fulfillment of the Gen. 1 charge to have dominion over the earth.

14. For an excellent and comprehensive review of the history and nature of the environmental movement in the United States, see David L. Sills, "The Environmental Movement and Its Critics," *Human Ecology* 3, no. 1 (1975): 1-41.

15. Polak, p. 302.

16. Robert L. Heilbroner, *An Inquiry into the Human Prospect* (New York: W. W. Norton & Co., 1974).

17. For some suggestions regarding how this may be done in educational programs, see my and Thane Maynard's "When the Earth Dies, Where Do We Bury It? Or Applying Environmental Education Programs to Local Environmental Movements," in *Environmental Education-II*, ed. Robert Manlett (ERIC/SMEAC, Ohio State University, 1976).