

CHAPTER 4

EVOLVING CONCEPTS OF SUSTAINABILITY IN ENVIRONMENTAL POLICY

LAMONT C. HEMPEL

A public policy, in its broadest sense, is a statement about the future (Tugwell 1973). Public policy making in democratic polities can be viewed as a struggle to create and legitimize statements about the future in ways that persuade the attentive public, or at least secure its acquiescence. Sustainability involves a particular kind of statement about the future—for example, that communities of life continue to flourish in the long term—while the questions of what exactly is to be sustained or allowed to flourish, and for how long, are usually left unanswered. Most sustainability concepts promote an intergenerational perspective that requires integration of environmental, social, and economic quality of life across both spatial and temporal dimensions of existence.

Anthropocentric notions of sustainability envision a future that “will indefinitely support human security, wellbeing, and health” (McMichael, Butler, and Folke 2003). A middle view holds that human welfare is a necessary but not sufficient condition for achieving sustainability; the welfare of all species must be considered. In many versions, ecological integrity, social equity, and economic vitality are combined as the three “pillars” of sustainability, with humans as the core beneficiaries but with the added recognition that human welfare depends on the welfare of many other species (Marshall and Toffel 2005). Although there is significant disagreement about what constitutes the core of sustainability,

the concept has become influential in environmental politics and offers an intriguing but operationally challenging ideal to guide public policy design and evaluation.

Sustainability makes normative claims on policy and directs attention to political constituencies not yet born. While moralistic overtones are clearly evident in the rhetoric of sustainability, some advocates prefer to emphasize sustainability *science*, or at least testable principles of sustainable design. Most, however, acknowledge an ethical core that sometimes makes it difficult to distinguish policy debates about sustainability from those taking place under the rubric of “environmental justice.” The explicit inclusion of values statements and concerns about intergenerational equity are no doubt responsible for some of the resistance to the concept exhibited by many policy analysts and decision makers, who remain uncomfortable with overtly normative approaches to policy making.

The standard definition of sustainability is the one provided by the Brundtland Commission: “[meeting] the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987, 8). Such a definition benefits from the use of strategic ambiguity about timescales and capacities to anticipate the needs and abilities of future generations. Such ambiguity was critical for the successful integration of the terms “sustainable” and “development” into public policies promoted at the first Earth Summit, the United Nations Conference on Environment and Development (United Nations 1993), and has subsequently dominated much of the international environmental policy agenda.

Critics point out that these political strengths are intellectual weaknesses. The Brundtland definition invites serious questions about the specification of *needs* and determination of future *abilities*, not to mention the precise nature of policies or practices that might be *compromising*. Many analysts argue that present generations cannot reliably forecast needs of future generations or their capabilities, especially those developed through unforeseeable advances in science and technology (Barracough 2005). Nor can they possibly know to what degree their own actions might compromise the ability of future generations to act. Why, then, should present generations be held strictly responsible for preserving resources and opportunities for future generations?

In practice, sustainability has become a “sponge” word that absorbs multiple meanings and interpretations, many of which simultaneously expand its appeal yet undermine its integrative power. Much has been written about the vagueness of the sustainability concept (Lele 1991) and the difficulty in applying it to non-overlapping future generations (Sachs 1993). Perhaps the strongest criticism has been directed at its allegedly “hidden” political agenda. This is particularly troublesome when the word “sustainable” is paired with the word “development.” Many see the phrase as an oxymoron (Sachs 1993 and 1999), rife for misappropriation by governments and corporations bent on promoting business-as-usual growth while using the rhetoric of environmental and social responsibility. For some, sustainable development is a self-serving justification by rich countries for imposing “limits to growth” constraints on developing countries with which they compete for scarce resources

(Banerjee 2003). Others see the real objective as controlling population growth in developing countries (Anderson 2002; Aguirre 2002). A few see the concept as the spearhead of an effort to impose world government or to establish a new and dangerous anti-Western ideology that threatens America's reputation and its dominant position in world affairs (Wood 2009).

Defenders of sustainability ideas are quick to point out that our society's most precious concepts—for instance, democracy, freedom, faith, justice, critical thinking—appear elusive when subjected to rigorous analysis. In fact, it appears that most powerful ideas resist precise definition. Sustainable development, for many supporters, represents a politically expedient compromise among corporate capitalists, social justice activists, and environmentalists. By harnessing the power of strategic ambiguity, sustainable development makes possible environmental action that would not be achievable using environmental rhetoric alone (Hempel 1996). From a political perspective, the term is an enabler for coalition formation and compromise, an outcome that seems increasingly important in an era of “play to the base” politics (Frum 2007). But there is also a deeply held belief among supporters that sustainability invokes fundamental principles that, if taken seriously, will greatly improve the quality and legitimacy of public policy making across the board.

With that objective in mind, this chapter explores the evolution and application of sustainability concepts in environmental politics and policy, paying particular attention to the challenges of operationalizing and measuring sustainability in the highly dynamic environment of twenty-first-century politics and policy. After surveying the concept's historical roots, the chapter examines the struggle to refine and apply the concept in contemporary policy analysis. It reviews the key policy initiatives that have incorporated sustainability language or contributed to its development within each branch of government. Attention is then focused on the pragmatic adoption of sustainability principles in policy making, culminating in a discussion of future directions and research needs.

1. CONCEPTUAL EVOLUTION AND HISTORICAL INTEGRATION

In order to appreciate the power and insights provided by sustainability discourses, it is important to understand their historical development and social context. Like tributaries of a vast river system, the ideas that carry sustainability forward flow from many different sources, some deep and powerful, others shallow and sometimes underground. Unfortunately, achieving consensus about the nature and boundaries of this intellectual “watershed” is very difficult. The study of concept evolution is typically fraught with hazards of interpretation and social

construction. Hence, this chapter surveys the intellectual roots of sustainability in a state of deep humility about what is known and how it influences environmental policy today.

There have been previous attempts to map a detailed intellectual history of sustainability, usually in the form of a time line,¹ but as is usually the case, influential voices from the past are often missed or, at the other extreme, granted undue prominence. Both types of errors will be difficult to avoid in the brief overview that follows.

1.1 Early Conceptual Tributaries

The evolution of sustainability concepts can be traced back to at least the fifth century BC, starting with Plato, and probably earlier. Long before the language of sustainability appeared in U.S. literature and policy, non-English terms for “sustainability” were being employed in Europe and in certain African and Asian countries (Du Pisani 2006), perhaps most prominently in the early literature about German forestry. Hans Carl von Carlowitz wrote about sustainable forestry practices in 1713, using the term *nachhaltende Nutzung*, which can be translated as “sustainable use” (Du Pisani 2006, 85).

Strong intimations of the concept are clearly present in some of the writings of America’s founding fathers. Writing to Madison in 1789, Thomas Jefferson argued that the environment “belongs in usufruct to the living.” By using the legal concept of “usufruct”—the temporary right of stewards of the land to use the environment in benign ways—Jefferson called for intergenerational equity in development of natural resources, so as not to allow “one generation of men to bind another” (Ball 2000). Jefferson was merely invoking long-standing stewardship principles found in the Bible and in Locke’s notion of the environment as a commons that should be accessible across generations.

During this period, Malthus was writing his *Essay on the Principle of Population* (1798), warning of both social and environmental disruption from overpopulation. The condition of overshoot described by Malthus was based on an immutable mathematical logic but offered very little of what today we would call insights about human behavior from social science or notions of resilience and substitutability. Whether his conclusions were wrong or simply premature, the impact of his deterministic ideas helped spawn research on the concept of carrying capacity, which later influenced debates about sustainability.

1. See, for example, the time line of the history of sustainability concepts available at www.archis.org/history-of-sustainability/ (originally published in *Volume #18–After Zero* published by Archis.org). A similar timeline, but with an American focus, is available at sustainableleadership.info/SustainableTimeline.pdf.

1.2 Nineteenth-Century Streams of Thought

Carrying this debate forward in the nineteenth century were two peripheral and occasionally interwoven streams of thought: American transcendentalism and anti-industrialism. As expressed in the writings of George Ripley (1802–1880), Ralph Waldo Emerson (1803–1882), Margaret Fuller (1810–1850), Henry David Thoreau (1817–1862), John Ruskin (1819–1900), and many others, securing the future meant finding a balance in nature, spirit, development, and community that allowed individuals, through direct experience, to develop “an original relation to the universe” (Emerson 1990, 3). Implicit in much of their idealism was the notion of a sustainable civilization that operated far above the imperatives of biological survival. Similarly, the anti-industrial themes prominent in many of these writers called for a concept of community that rested on values and goals more fundamental than technological innovation and economic growth. Some of these sustainability-friendly ideas have helped to fuel the “degrowth” and “transition towns” movements today.

John Stuart Mill’s writings about formation of a just “stationary state” helped buttress these ideas with philosophical observations about the political economy of sustainability. In *Principles of Political Economy* (1848, book IV, chapter 6), Mill combines arguments about economic growth and population growth in ways that anticipate many contemporary debates about sustainability (O’Connor 1997).

Other important contributions flowed from the pens of naturalists and environmental defenders of the mid- to late nineteenth century. George Perkins Marsh, echoing Jefferson’s use in 1789 of the term “usufruct,” explored sustainability themes through his experience as a Vermont conservationist, concerned about forests and grasslands in many different parts of the world. In *Man and Nature* (1864), he writes, “Man has long forgotten that the earth was given to him for usufruct alone, not for consumption, still less for profligate waste” (Marsh 1965, 36).

Similar arguments can be found in the writings of John Muir, John Wesley Powell, and a host of other Victorian Era writers in Europe and the United States, many of whom strongly asserted that human welfare and improvements in the distribution of wealth need not result in a loss of nature (Lumley 2004). Interwoven in these arguments was the notion that what many today call “sustainability” was a matter of moral duty, not simply a means for sustaining human welfare or social progress. Like the anti-industrialists, they often tied issues of sustainability to ideals about flourishing communities.

1.3 Twentieth-Century Watersheds

Toward the end of the nineteenth century, sustainability concepts began to branch more visibly, with one major stream influencing the early development of professional natural resource management, as associated with Gifford Pinchot, and the other stream emerging as part of urban reform and progressive thought, as exemplified by the Garden City movement, which took much of its impetus from

Ebenezer Howard's (1898) publication *Tomorrow: A Peaceful Path to Real Reform*. This latter branch served to facilitate development of what is today referred to as the "sustainable community" or "smart growth" movement. Thinkers from Patrick Geddes to Lewis Mumford helped determine the direction, tone, and depth of this movement, with much of the progress measured in the planning and design features of new urban forms and settlement patterns (Hempel 2009, 38).

The stream carrying elements of natural resource management policy emerged most forcefully in the views of Gifford Pinchot, following a course set nearly 200 years earlier by the German forester von Carlowitz. Pinchot saw conservation struggles in terms remarkably similar to those used by the Brundtland Commission to define sustainable development:

the right of the present generation to use what it needs and all it needs of the natural resources now available, but...equally our obligation so to use what we need that our descendents shall not be deprived of what they need. (Pinchot 1910, 80)

Amplifying Pinchot's views was President Theodore Roosevelt's efforts to preserve for future generations large areas of forest and scenic lands as national monuments and parks. In a 1910 speech entitled "The New Nationalism," Roosevelt used sustainable development arguments to temper his growing reputation in conservation with related concerns about development and intergenerational equity:

Conservation means development as much as it does protection. I recognize the right and duty of this generation to develop and use the natural resources of our land; but I do not recognize the right to waste them, or to rob, by wasteful use, the generations that come after us. (Roosevelt 1910)

Closely aligned with this form of presidential activism was President Franklin Roosevelt's New Deal, which included explicit goals to integrate economic recovery with social improvement and environmental conservation, using programs such as the Civilian Conservation Corps. Aldo Leopold's land ethic (1948) extended the conservation idea by expanding the meaning of community, thereby providing an important frame for later development of sustainability concepts.

Following World War II, ideas about sustainability appear to have temporarily receded in public debate, although not without provoking strong warnings from pioneers of the modern environmental movement. Publications that nicely capture some of the sustainability concerns beginning to emerge during this period include Fairfield Osborn's *Our Plundered Planet* (1948), William Vogt's *Road to Survival* (1948), the Paley Commission's *Resources for Freedom* (1952), Harrison Brown's *The Challenge of Man's Future* (1956), Murray Bookchin's (a.k.a. Lewis Herber's) *Our Synthetic Environment* (1962), Rachel Carson's *Silent Spring* (1962), Paul Ehrlich's *The Population Bomb* (1968), and Barry Commoner's *The Closing Circle* (1971). In the late 1960s and early 1970s, the convergence of concerns about environmental protection, social welfare, and economic development accelerated, and for the first time the concept of sustainable development was elevated to the status of an organizing principle for both national and international policy. Perhaps the first international forum to discuss the power of this concept was the Intergovernmental Conference for Rational Use and Conservation of Biosphere, convened by UNESCO in 1968.

Shortly after the meeting, Barbara Ward popularized the concept, using the language of “sustainable development” in a book coauthored with Rene Dubos, *Only One Earth: The Care and Maintenance of a Small Planet* (1972). The concept was further developed in the Stockholm Declaration on the Human Environment (1972), which incorporated the concept of sustainable development in its call for the integration of environmental, social, and economic components of development.

Serving to energize sustainable development ideas at the Stockholm Conference and give them added academic and scientific support was the release in 1972 of the book *Limits to Growth* (Meadows, Randers, and Meadows), the first report to the Club of Rome. This controversial report essentially galvanized the systems-level thinking needed for analyzing sustainability objectives on university campuses and in think tanks around the world. Despite its weaknesses, *Limits to Growth* provided the first highly visible test for operationalizing the concept of sustainability using dynamic systems modeling.

Parallel research on entropy by economist Nicholas Georgescu-Roegen (1971), and on resilience by C. S. Holling (1973) and other ecologists, also contributed important new scientific perspectives on sustainability. These writers and others helped to create novel perspectives that propelled sustainability concepts in the direction of intellectually defensible and operational uses.

It was only a short time before the language of sustainability began appearing in many different disciplines and publishing venues, ranging from influential essays by E. F. Schumacher (1973) to major environmental reports, such as the *World Conservation Strategy* (IUCN 1980), as well as in the titles of popular books, such as Lester Brown’s *Building a Sustainable Society* (1981). During this period, academic disciplines were beginning to undertake research on sustainability, often pushed by radical ecologists, such as Edward Goldsmith, and skeptical economists, such as Robert Solow (1974). This was followed by work conducted by social scientists trying to gauge the attitudinal and policy implications of value changes associated with this growing phenomenon—see, for example, Ronald Inglehart’s theory of postmaterial value change (1977).

By the time the Brundtland Commission published its widely influential definition of sustainable development (1987), the ground had already been very well prepared for the public emergence of the concept. During the ensuing two decades, widespread adoption took place under the guise of *environmental* sustainability. It is only in recent years that a comprehensive, integrated concept of sustainability that transcends ecology has begun to flourish, although it remains to be seen whether this expanded concept will be embraced by the environmental policy community.

2. EXPANSION AND CONVERGENCE

In thinking about the influence of sustainability on environmental policy making, it is important to recognize how young this field of study is in relation to

most other lines of scholarship. Almost all of the specialized academic analyses of environmental policy and politics have appeared in the last four decades. It can be nicely characterized by the evolutionary stages—the three “generations”—presented in chapter 1. With the exceptions noted in the previous section, sustainability has only two decades of organized scholarship behind it and consequently stands in relation to environmental policy in much the same way as a baby to a toddler. Despite dozens of books and hundreds of published articles, the integration of scholarship about environmental policy and sustainability is very much in its infancy.

2.1 The Operational Challenge

Sustainability concepts have made inroads in policy dialogue and analysis partly because conventional environmental policy and regulation has increasingly been viewed as a domain of special interest politics—one that seems hostile to development interests and economic growth. The perceived legitimacy of environmental policies that reach beyond narrowly defined goals for protecting human health appears to have declined as political polarization has increased. Although the tendency in the past has been to equate sustainability with *ecological* sustainability, the growing attention to social and economic dimensions has opened the concept to wider dialogue about policy integration and synergy, potentially enlarging the ideological space needed for bipartisan efforts to emerge. At the same time, however, the continuing emphasis that policy analysts place on the quantification of environmental risks and costs may discourage efforts to reconceptualize environmental issues within the broader and more qualitative terms of sustainability.

For nearly three decades, the U.S. EPA has relied on risk frameworks for improving environmental policy and management. In the summer of 2011 recommendations were developed by the National Research Council (NRC) to assist the EPA in incorporating sustainability concepts formally in its goals and practices (U.S. National Research Council 2011). Known as the “Green Book,” the NRC report marks a potentially major transition from the era of risk management to one more loosely based on sustainability. A closely related study, “Sustainability Linkages in the Federal Government” (U.S. NRC 2011), attempts to address the sustainability potential for federal agencies in general. A challenge for the authors of both reports was the implicit need for sustainability indicators and scientific measures that could be used in operationalizing sustainability concepts, ideally in accord with rigorous quantitative standards.

Herein lies the crux of a dilemma that faces policy makers and analysts interested in sustainability. A practical implication of the sustainability revolution is that environmental specialists will be encouraged to replace the familiar quantitative risk framework with a qualitative one derived from cross-cutting ideals of sustainability. But most of these specialists appear to favor environmental

frameworks that lend themselves to quantification, ordinal ranking, and legal sufficiency tests based on narrow precedents. Sustainability frameworks tend to be qualitative, normative, and sometimes metaphysical. Operationalizing sustainability almost invariably means narrowing its usual definitions and applying it reductively to measurable subsystems of human and natural systems. It cannot be easily and simultaneously applied to both in ways that meet the test of scientific rigor. Moreover, it pulls environmental policy analysts in transdisciplinary directions that seem to devalue their expertise.

Sustainability objectives require optimization across multiple policy domains, implying high levels of synthetic research and integrative understanding—a difficult challenge for policy communities comprised mostly of disciplinary microspecialists, each working in one of many very narrow policy subfields. Further complicating efforts to incorporate sustainability are the demands it places on futures modeling and forecasting. Anticipation of social and ecological feedback processes is a vital requirement for policy communities concerned with sustainability. Anticipating the net aggregated results of simultaneous feedback from the economy, social systems, and the natural environment is a forecasting challenge that few if any policy organizations are prepared to meet with a high degree of competence.

There is also the question of dilution of policy aims and content due to sustainability's requirement for expanded objectives and target groups. Sustainability, having evolved to include social justice and economic claims that cannot be trumped or ignored by environmental claimants, threatens to undermine policies based almost exclusively on environmental concerns. The very legitimacy of "environment only" approaches is called into question. Even laws that in a sense seem radical in their sustainability aims, such as the Endangered Species Act, could conceivably become vulnerable to weakening amendments and reinterpretation under a broad and mostly anthropocentric notion of sustainability.

Remaking environmental policy with the language of sustainability implies a loss of environmental primacy. It may even suggest a devaluation of environmental policy itself. Sustainability adherents can argue with justification that changes in certain nonenvironmental policies (e.g., campaign finance reform) may have greater influence on valued environmental outcomes than policies explicitly aimed at environmental protection. Following the integrative logic of sustainability arguments, environmental policy targets may be seen as lower priorities in situations in which changes in finance policy or tax equity may be more urgently needed for enabling lasting improvements in ecosystems, economies, and social justice. Moreover, a truly balanced sustainability "portfolio" (e.g., optimal shares of environment, economy, equity) would seem to require a deemphasis of environmental concerns in current discussions about sustainability.

Because sustainability issues historically have been foremost about environmental matters, even sustainability advocates may be uncomfortable with agendas dominated by economic welfare and social equity issues. For reasons of entrained thought, the sustainability movement has seldom emphasized equity concerns or

issues of economic regulation as appropriate priorities in policy design for sustainability. For example, very few sustainability advocates would regard Elizabeth Warren, a well-known consumer financial protection advocate, as a leading figure in the sustainability movement. But a closer inquiry into the environmental implications of banking policy and the financial dimensions of sustainability might suggest that such reform efforts are indispensable to the movement's ultimate aims and constitute one of the most critical challenges for sustainability advocates of this era.

2.2 Economic Perspectives

The closest thing we have to a self-confident institutional basis for optimization and operational assessment is provided by economics, but many professionals and academics outside this field dismiss its claims as acts of hubris. Critics from ecologists to ethicists argue that the “devil” can be found in the assumptions of economists. Economists tend to reduce sustainability ideas to issues of dynamic efficiency and intergenerational equity (Stavins 2003), defining the objective as merely “non-declining utility” in the long run. Having largely dismissed the “limits to growth” arguments of the 1970s (Nordhaus 1992), most economists have not embraced sustainability themes with great enthusiasm.

One might expect exceptions in the case of environmental economists, but a perusal of the relevant literature suggests a general lack of enthusiasm for efforts to refine the concept in operational terms. Support for sustainability ideas in economics is likely to rest on a distinction between *ecological* and environmental economists. Environmental economists are heavily invested in theories of market failure for explaining unsustainable environmental practices. Socially optimal policies are simply those that yield long-term net benefits without reducing the productivity of natural systems (unless comparable artificial substitutes are available). Sustainability simply adds the proviso that the “long term” should extend to nonoverlapping future generations and across national markets, provided that people in the future continue to value the protections sustainability policies afford, as evidenced by their willingness to pay for their continuation.

Ecological economists, such as Kenneth Boulding, Herman Daly, and Robert Costanza, are more comfortable with the language of sustainability and its potential for practical application. In their view, differences between present and future welfare reflect deeply seated assumptions about discounting and self-serving methods for making intertemporal comparisons. As Bromley argues, “Environmental policy that is consistent with achieving sustainability must consider the present in terms of the future. In contrast, the [current process] fails precisely because it considers the future in terms of the present” (2007, 679).

Very few conventional economists subscribe to the view held by ecological economists and sustainability advocates, in general, that increasing limits

on carrying capacity are likely to affect human welfare. Many would agree with Martin Weitzman that “the historical record is full of past hurdles to growth that were overcome by substitution and technological progress” (1992, 53). Indeed, the historical support for this view is strong; the question is whether the past will continue to be prologue.

For policy analysts trained in economics, arguments about past and prologue appear unproductive. They tend to focus, instead, on the ability to operationalize sustainability principles in ways that allow analysts reliably to measure policy inputs, outputs, and long-term outcomes (Howarth 2007). Some economists note that sustainability arguments, regardless of their merit, are unlikely to have a major influence on policy making as long as they are treated as dichotomous choices, bound by inflexible notions of “either/or”—that is, sustainable or unsustainable outcomes. Economist Robert Solow, for example, offers an “almost practical step” toward the incorporation of sustainability into policy debates:

In a complex world, populated by people with diverse interests and tastes, and enmeshed in uncertainty about the future (not to mention the past), there is a lot to be gained by transforming questions of yes-or-no into questions of more-or-less. Yes-or-no lends itself to stalemate and confrontation; more-or-less lends itself to trade-offs. The trick is to understand more of what and less of what. (1993, 172)

2.3 Idealists and Pragmatists

The utility of sustainability concepts for achieving effective environmental protection depends on whether sustainability is conceived as an end or a means. While some embrace sustainability as an ethic, others view it as a form of strategic optimization—that is, managing the inevitable trade-offs involved in simultaneously addressing social, economic, and environmental imperatives. Sustainability as an ethic can go far, perhaps, in motivating and strengthening support for environmental measures. But only when sustainability is conceived in terms of large-scale optimization is it likely to have far-reaching effects on policy content.

Given the central importance of economic arguments in policy debates involving optimization, it seems clear that the future role of sustainability in environmental policy may depend in important ways on developments in the fields of ecological economics and, perhaps, in a reconceptualization of welfare economics. But beyond that, it will depend on progress in quantifying and accounting for sustainability practices in ways that provide financial and scientific credibility. Toward that end, much of the policy future may turn on developments in sustainability science (e.g., Kates et al. 2001) and accounting (e.g., ISO 14000). To date, progress in these fields has not been particularly visible outside associated centers of research. Hence, the search for precision and reliability in defining and measuring sustainability still appears to have a long way to go. Ambitious research in this

area may include not only efforts to reinvent the science of choice, presently ruled by neoclassical economists, but to reinvent science itself in the service of sustainability. Such research is likely to encounter strong resistance but, if successful, lead to revolutions in normal science, triggered perhaps by the rise of Kuhnian anomalies in the old paradigm.

With these operational limitations in mind, it is helpful to examine some of the actual policy initiatives of the present and recent past that attempt to infuse sustainability principles in environmental protection. By identifying the origins and tracing the influence of these principles in particular initiatives, the promise and limitations of sustainability in environmental policy become clearer, even as the concept continues to evolve.

3. POLICY INITIATIVES

The National Environmental Policy Act (NEPA 1969) contains language that is very close in meaning to that commonly used today to define sustainability. In the first paragraph of Title 1 (Section 101a), the Act calls for the creation and maintenance of human and natural systems that “exist in productive harmony, and fulfill the social, economic and other requirements of present and future generations of Americans.” The Act goes on to declare that it is the responsibility of each generation to be a “trustee” for future generations (Section 101b). There is even a call for interdisciplinarity, a hallmark of sustainability thinking, in the Act’s provisions for design and implementation. Section 102(a) of the Act directs all federal agencies to “utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making which may have an impact on man’s environment.”

Although the appearance of sustainability concepts in federal law predates NEPA, it is common to view NEPA as the enabling legislation for nearly all subsequent U.S. policy initiatives seeking to promote sustainability. Initiatives and partnerships at the international level that have utilized NEPA principles include U.S. positions at the Stockholm Conference on the Human Environment (1972), the Earth Summit in Rio (1992), and the World Summit on Sustainable Development in Johannesburg (2002). Of special significance were 27 core principles, including the precautionary principle adopted at the Earth Summit and given expression as parts of Agenda 21, the Framework Convention on Climate Change, and the Convention on Biological Diversity.²

Domestic policy initiatives developed under the influence of NEPA are extensive and varied. They are addressed in what follows as part of an effort to summarize some of the major milestones in U.S. sustainability policy, organized by branch and level of government.

3.1 Presidential Leadership

White House leadership on sustainability extends back at least 100 years, although the resulting policies, if any, have usually been weakly designed and implemented. Beginning with Jefferson's views on usufruct and the aforementioned efforts of Presidents Teddy Roosevelt and Franklin Roosevelt to incorporate sustainable development principles into natural resource conservation policy, evidence of early presidential leadership on sustainability is reasonably strong with respect to agenda setting and, on occasion, policy formation.

George H. W. Bush took the first opportunity as president to endorse a policy explicitly calling for sustainable development: Agenda 21 (signed at the first Earth Summit in June 1992). But it was President Clinton who became the first chief executive actively to promote the term "sustainable development" as administration policy (EO 12852 and 13141) and to link it indirectly to initiatives for environmental justice (EO 12898). By establishing the President's Council on Sustainable Development in 1993, Clinton provided an important venue for policy discussion and analysis of sustainability concepts. The second Bush administration included sustainability language in some of its programs and executive orders (e.g., EO 13423) as well, and accepted "promotion of sustainable development" as an explicit goal of the Trade Promotion Act of 2002 (19 USC § 3803–3805). President Obama has continued the trend of inserting sustainability language and goals into a number of policy initiatives and executive orders (e.g., EO 13584). In the eyes of some observers, the use of sustainability rhetoric by presidents and other government leaders has now become almost perfunctory, although the repeated use of phrases such as "sustainable growth" may call into question the level of understanding behind the rhetoric.

3.2 Congressional Leadership

Legislative initiatives, like those of the executive and judicial branches, are spread across many decades of policy history and sometimes have their origins in state and local initiatives. In the U.S. Congress, however, the development of sustainability policies has proceeded with more mixed results and failed outcomes, as exemplified, arguably, by the Senate's resounding rejection of the Kyoto Protocol in 1997. Although many sustainability-related initiatives have appeared since then, most retain the singular design and focus of energy, transportation, health, and environmental policies from past eras.³ The NEPA, as noted earlier, remains the foundation for most sustainability initiatives to date. However, the Endangered Species Act of 1973 (ESA) probably represents the most far-reaching step taken by Congress

2. The 27 principles are listed in the "Report of the U.N. Conference on Environment and Development," Annex I, available at <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm>.

on behalf of sustainability, foreshadowed to some extent by prior conservation acts, such as the Lacey Act of 1900 and the Migratory Bird Treaty (1918).

Sustainability policy in the 111th and 112th Congress, as of this writing, has shown little progress. In fact, the demise of legislation on climate protection and green energy in 2010 and the highly polarized budget battles of 2011 suggest that sustainability initiatives may have lost ground in contemporary American politics. Despite extensive lip service, actual legislative commitments on behalf of sustainability in the first decade of the twenty-first century have been at best meager and disappointing in the eyes of most sustainability advocates (see chapter 13 in this volume).

3.3 Judicial Leadership

In the case of the judicial branch, most efforts to incorporate sustainability principles and rhetoric in court rulings and judicial policy have predictably occurred in piecemeal and ad hoc fashion. Probably the earliest court rulings with strong sustainability overtones arose with the Federal Power Act and related Supreme Court cases of *Scenic Hudson Preservation v. Federal Power Commission* and *Udall v. Federal Power Commission* (Hodas 1998). Beyond that, a flurry of lawsuits involving air and water pollution in the 1960s and 1970s helped focus attention on the trade-offs involved in environmental protection and economic development and may have steered future policy in directions conducive to multicriteria and integrated decision making. Subsequent judicial interpretations of the Clean Air Act, Clean Water Act, and many other major legislative initiatives may have invited shifts in policy strategy from single-media, command-and-control regulatory frameworks to broader, multimedia approaches that were much more amenable to the language and concepts of sustainability. But it was in cases involving the Endangered Species Act of 1973 (ESA) and issues of legal standing—for example, *Sierra Club v. Morton*, 405 U.S. 727 (1972)—that the biggest implications for policy development emerged with respect to sustainability.

Perhaps the high point in recent Supreme Court rulings came in a 5–4 ruling in 2007 (*Massachusetts v. Environmental Protection Agency*) in which the Court declared that the EPA had authority to regulate greenhouse gas emissions from automobiles and trucks under the Clean Air Act. The implications of this decision are potentially enormous for climate protection and the EPA's future, but resistance by Republicans and some Democrats in the 112th Congress has been strong. Whatever its long-term impacts, however, this decision has not signaled a major rise in judicial sympathy for sustainability arguments. James May, writing about the Supreme Court under Justice Roberts, finds little evidence that sustainability is faring well within the highest level of the judiciary: "In sum, the Court seems at

3. See, for example, initiatives compiled by Smart Growth America's Leadership Institute: "Initiative for Sustainable Communities and States," available on line at <http://www.sustainablecommunitiesandstates.org/>.

worst hostile to, at best agnostic about, and most likely ignorant of sustainability as a governing principle” (May 2009, 29).

3.4 Local and State Government Leadership

Agenda 21 provided a potentially strong foundation on which to build local and state initiatives in sustainability. For one thing, the document calls for “delegating planning and management responsibilities to the lowest level of public authority consistent with effective action” (UNCED, Agenda 21, UN Doc A/CONF.151.26 paragraph 20.1). It also explicitly encourages development of local versions of Agenda 21, expanding on the 27 principles for sustainable development offered in the original document. In the United States, much of the actual policy development at the local level has occurred under labels such as “smart growth” and “livable communities.”

At the state level, policy development has emphasized either climate change issues, as in California, or better statewide integrated land use planning, such as that in Oregon. A few states, such as Hawaii, have language in their constitutions that incorporates sustainability goals and decision criteria. One of the most strongly worded sustainability efforts at the state level can be found in the Oregon Sustainability Act (HB 3948) and subsequent executive orders by Oregon governors John Kitzhaber (EO 00–07) and Theodore Kulongoski (EO 03–03 and EO 06–02).

Many of these state, regional, and local sustainability initiatives have developed greater traction than their federal counterparts, especially in the case of the expanding sustainable communities movement (Mazmanian and Kraft 2009), a subject to which we shall return in the final sections of this chapter.

4. THE PRAGMATIC EMBRACE OF SUSTAINABILITY

Sustainability is viewed in policy circles less as an attainable goal than as a “process of constant improvement” (Faber 2005, 27–28), preferably with measurable baselines and milestones. Because the ideal of sustainability faces serious challenges of scientific uncertainty, poorly integrated governance, single-issue politics, corporate capitalism, and soft enforcement, the policy community is unlikely to adopt it unchanged. What started out as an all-encompassing, nonincremental policy ideal has predictably become incremental and contingent. Rather than talk about an entity that is sustainable, in any final sense, it is preferable to talk about an entity that is sustainable *in relation to* another entity of similar function or purpose (Faber 2005, 5). The dynamics of the concept preclude rigid definition or interpretation. Moreover, they limit the use of the term as a metaconcept that can

be applied to anything and everything. For policy analysts, sustainability needs to have operational objectives and useful evaluation criteria if it is to have any widespread application beyond political and rhetorical appeal (Howarth 2007). But therein lies the split between pragmatists and idealists. Embracing sustainability as the organizing principle for all future policy initiatives—environmental and non-environmental—lies at the core of idealists' belief systems, but it is likely to strike many policy pragmatists as something more akin to religion than to a reasoned outcome of collective action in the political arena.

For many policy analysts, sustainability is merely one more criterion to be added to a list of considerations in policy design, adoption, implementation, and evaluation. The following is a list of key criteria commonly employed in policy analysis and evaluation, with sustainability representing the newest addition:

1. **Effectiveness**—does the policy or program accomplish its goals and objectives?
2. **Cost-effectiveness/efficiency**—is the ratio of valued inputs to valued outputs and outcomes less than 1.0? And are resources employed at the Pareto optimal level?
3. **Priority responsiveness**—are the problems addressed by the policy or program the most significant and urgent ones?
4. **Equity**—is the distribution of costs and benefits from implementation perceived by stakeholders as fair?
5. **Sustainability**—are the policy outcomes conducive to living sustainably within the means of nature, justice, and economic resilience?

Note that many of the criteria above are employed within a framework of individualistic utility maximization. They are appropriate for treating public policy as a collective action problem that seeks to reconcile competing claims of individuals. However, the addition of sustainability as a criterion challenges the individualistic frame of analysis, especially if sustainability is understood to be fundamentally concerned with the relationships between communities, both present and future, both human and nonhuman. For that reason, it may be more appropriate to think in terms of *sustainability* policy, as distinct from *environmental* policy.

4.1 Sustainability Policy versus Environmental Policy

Sustainability is not a new category of environmental policy but, rather, a new way of understanding and combining existing categories by way of integration with social and economic concerns. That is to say, sustainability provides a new and broader way of framing what was previously viewed largely as natural resource policy or environmental regulation. Many sustainability advocates argue that environmental policy is best understood as a subcategory of sustainability. They are careful to distinguish between environmental policy and “sustainability policy” (Pezzey 2004), arguing that the terms cannot be used interchangeably without unacceptable distortion.

Although many distinctions between environmental policy and sustainability policy involve semantics more than substance, there are at least two important respects in which the two seem to differ fundamentally. On the one hand, sustainability implies a values commitment that is inflexible and indivisible—an “all or nothing” goal. Environmental policy, on the other hand, can accomplish 99 percent of what is needed to preserve habitat, protect human health, or minimize environmental risk and thereby receive lavish praise for good design and effectiveness. Sustainability does not offer that luxury. A hard-driven set of policies and behaviors that make a system *almost* sustainable are nevertheless failures in terms of the only criterion that ultimately matters. As policy analyst Richard Nelson (1977) observed, these kinds of policies involve indivisible ends and means. In theory, achieving sustainability, like going to the moon, ultimately allows no room for near misses or missions “almost accomplished.”

The second distinction is even more fundamental to a proper understanding of the concept. Although it is widely assumed that *environmental* sustainability is the first and prime imperative of sustainability in its broadest sense, scholars have begun to turn this logic on its head (e.g., Agyeman 2003). They note, invoking a very common argument, that people living in absolute poverty or in deeply oppressive societies are in no position to put environmental needs first. Basic food, justice, and other human needs must be met before environmental concerns can emerge. This notion of nested imperatives has helped propel efforts to define sustainability as a *primary* concept—one that cannot be reduced to separate core components. Sustainability as a concept and practice transcends environmental applications. Strictly speaking, there is no such thing as *environmental* sustainability, only *sustainability*—an irreducible synergy of social justice, ecological integrity, and economic vitality, applied across present and future generations. Although the health of our ecological life-support system is logically prior to and dominant among sustainability imperatives, maintaining the health of ecosystems on a human-dominated planet requires achievements in social health and economic vitality that are imperatives in their own right, and not just for environmental protection. While securing the life-support system seems a logical first priority, creating a healthy economy and social system in the short term may be a logical prerequisite for addressing that long-term fact. Efforts to avoid infinite regress in such arguments are futile. Hence, *sustainability* as a primary concept cannot be coherently reduced to its environmental, social, and economic components. It is the synergy of all three that constitutes the essence of the concept.

4.2 Policy Dilemmas

Many sustainability advocates believe that there is no room to compromise on objectives. The indivisible means and ends previously discussed drive sustainability's true believers in radical directions. Sustainability, after all, is both the goal

and the criterion for measuring success. Hence, champions of sustainability policy will often be regarded as politically weak, since they lack any significant capacity to bargain about ends within the policy-making process.

Paradoxically, pragmatic supporters of sustainability may be drawn to the concept in large part because they believe its application increases the potential for successful bargaining and coalition formation. This was the key insight of those who planned the Earth Summit (United Nations 1993): to employ the term “sustainable development” as a negotiating bridge between environmental and economic development interests.

As sustainability has gained more and more pragmatic adherents in environmental policy, a question has arisen that closely parallels the previous discussion of sustainability as an ethic. Advocates want to know whether the growing use of sustainability language represents primarily a strategic approach to environmental politics or an ethical commitment to a new policy paradigm. While both motivations may be found in the same individual, the perceived legitimacy of sustainability policies may rest increasingly on their ethical appeal for paradigm change. “Business as usual” environmental policy is profoundly inadequate in the view of many environmentalists and sustainability advocates alike. Increasingly, they fear that even perfect compliance with all existing environmental rules and regulations, fully implemented and enforced, would merely delay, not prevent, ecological ruin and serious threats to human health and well-being. Consequently, the politics-versus-ethics dichotomy, while simplistic, operates as a useful litmus test for “true believers” in sustainability policy. They demand qualitatively new “frames,” constructed from the core principles of sustainability and accompanied by quantum leaps in the rate and magnitude of policy changes based on those principles.

5. RETHINKING ENVIRONMENTAL SUSTAINABILITY

An oversimplified, yet potentially useful, three-word characterization of the history of U.S. environmental policy might label the three generations introduced in chapter 1 as “conservation,” “risk,” and “sustainability.” A similar attempt to characterize the historical evolution of sustainability might distinguish four generations and employ four different terms of emphasis: “usufruct,” “carrying capacity,” “development,” and “community.”

As mentioned previously, the sustainability generation that is most associated with the current evolutionary stage of environmental policy may not represent the most highly evolved form of sustainability available. In fact, the environmental policy perspective on sustainability continues, not surprisingly, to focus more on older generations of approaches, involving carrying capacity and the environmental

costs of development—that is, *environmental* sustainability. Merely to use the term *environmental policy* today implies that notions of sustainability as an irreducible primary concept are not yet in vogue. Quite understandably, most environmental policy makers and analysts are not yet ready or able to subsume their interests and expertise in policy domains that are inherently *synthetic*, in the best sense of that word, and inseparable from issues of social justice, economic vitality, and other considerations that lie outside core environmental concerns.

Replacing the old dichotomy of environmentalist versus developer with that of sustainable versus unsustainable development has obvious political appeal, but if sustainability is just another word for environmental protection, the improvement may be cosmetic. The rhetoric of sustainable development, viewed within the frame of environmental problem solving, is really just a variation on carrying capacity arguments. The ecological footprint concept, for example, would be more practical and helpful in such situations than the broader notion of sustainability.

5.1 Panarchy

Given the implications of sustainability as a primary concept, many in the environmental policy community may find the concept of “panarchy” (Holling 2000) more alluring than the latest generation of sustainability thought. While the two have considerable overlap, panarchy has more to offer environmental specialists in terms of ecological focus and a language that resonates among ecologists. Holling defines panarchy as

the structure in which systems of nature (e.g., forests, grasslands, lakes, rivers, and seas), of humans (e.g., systems of governance, tribes, and cultures), as well as combined human–nature systems (e.g., agencies that control natural resource use), are interlinked in never-ending adaptive cycles of growth, accumulation, restructuring, and renewal. These transformational cycles take place in nested sets at scales ranging, for example, from a leaf to the biosphere, over periods from days to geologic epochs. (2000, 7)

Such a conceptual framework, based in ecology, seems to require much less emphasis on, say, poverty eradication or banking regulation than does the latest thinking about sustainability, which gives increasing attention to properties of social and economic resilience while focusing on the enduring life of interactive communities as a single complex adaptive system.

Downplaying the environmental prominence of earlier phases of sustainability thought is now viewed as a necessary step in reclaiming sustainability as an organizing principle for public policy design and implementation everywhere. Simply stated, sustainability concepts have been so closely associated with environmental ends in the past that their continued conceptual evolution may depend on efforts to transcend their “green” connotations and to elevate and blend social and economic concerns seamlessly with those of ecological substance.

Unfortunately, this more inclusive idea of sustainability strikes many environmental policy specialists as a transcendental exercise in overreach and imprecision. It runs counter to the reductionist tendencies of modern policy analysis and the microspecialization that characterizes the education and training of analysts. Although attempts to compartmentalize sustainability in ways that retain an environmental focus may appeal to many in the environmental community, the urge to compartmentalize is clearly incompatible with the evolving meaning of sustainability. The concept has outgrown its home in environmentalism.

Perhaps the only way to rescue sustainability from the fate of becoming too big to apply analytically is to pair it with other concepts, such as *design* or *community*, thereby providing greater specificity and focus. The notion of *sustainable community* is particularly appealing as a way to harness the environmental, social, and economic synergies implicit in both concepts.

5.2 Sustainable Communities

From the perspectives of both policy utility and moral credibility, the most frequent and best use of sustainability concepts may be in conjunction with concepts of community. (For instance, see chapter 9 in this volume.) Sustainable communities do not face the widespread criticism reserved for sustainable *development*, viewed by many to be an oxymoron. Moreover, community ideas resonate deeply in both the worlds of ecology and human affairs.

In fact, the essence of sustainability could be defined as preserving the life of community (human and nonhuman) for purposes that include happiness, spiritual growth, and progress toward unfulfilled potential, perhaps in the form of evolving standards of human decency and accountability. Ultimately, sustainability requires the societal investment and collective self-restraint necessary for the survival of our species. But its highest objective is not species survival, at least not as *Homo sapiens* or “*Homo colossus*” (Catton 1982, 170). Instead, it is primarily about securing the great web of life and the nonliving systems that support development of *Homo humanus*—a creative, intellectually curious, spiritual, and empathic being that justifies continuation of life beyond mere biological existence. It is premised on the idea that human potential is sufficiently great to privilege our species with a special claim on continued existence, but only under conditions in which stable populations of enlightened humans cooperate to protect and preserve ecological and social life-support systems for purposes beyond our own existence. As such, the objective of sustainability is *preserving the opportunity* to discover our connection to something greater than ourselves. It is the precondition for achieving a sense of community that outlives us as individuals. When sustainability and community are linked in this way, the object of sustainability is specified in a way that is broad enough to encompass the aspirations of *Homo humanus*, yet narrow enough to permit policy design that is concrete, locally bounded, and applicable across time and space.

Sustainable communities ideally have levels of pollution, consumption, and population size that are in keeping with regional and global carrying capacity; their members share an ethic of responsibility to each other and to future generations; they provide decent livelihoods and health, safety, and lifelong education services for all who need them; the price of their goods and services reflect the full social and environmental costs of their provision and disposal; their poorest members are protected from the impacts of full-cost pricing by equity mitigation measures; their systems of governance, education, and civic leadership encourage informed democratic deliberation; and their design of markets, transport, land use, and architecture enhances community livability and preserves ecological integrity.

Clearly, these objectives represent “soft” policy targets, in the sense that ideas such as “regional carrying capacity,” “decent livelihoods,” and “full-cost pricing” are, like sustainability itself, difficult to operationalize. In summary form, as provided here, many of them appear hopelessly idealistic and values-driven. Yet it is difficult to imagine any concept of sustainable community worth embracing that can be fully captured in a detailed model, econometric analysis, or conventional policy design. Box 4.1 provides a sample of criteria that could be used as initial guidelines for policy development, but it is far from being either comprehensive or operational in any clear way. The policy community is confronted with a trade-off between future policy responsiveness and present methodological rigor, in much the same way that past policy making has sometimes pitted legal sufficiency against efficiency and problem-solving effectiveness.

Box 4.1 Criteria for Assessing Sustainability Objectives and Practices in Public Policy

Does a proposed policy or program:

General Objectives (ideals)

1. Advance the welfare of people and ecosystems, coevolving through time?
2. Provide economic vitality and security for those most in need?
3. Stop the export of problems to other peoples, places, or times?
4. Strike a balance between national pride, global citizenship, and local self-reliance (“glocal” thinking)?
5. Reform financial incentive structures that enable greed, domination, and exploitation?
6. Promote just, participatory, prosperous, and peaceful institutions and livelihoods?
7. Reflect whole systems thinking and informed, democratic decision making?
8. Redefine progress in ways that emphasize art and learning over technology?
9. Help build a green economy that operates with efficiency, within a culture of sufficiency?
10. Restore damaged people, communities, cultures, and natural areas to life with dignity?
11. Avoid making by-products, waste, or pollution that exceeds nature’s assimilative capacity?
12. Encourage glocal connections and local solutions that harness the power of diversity?

13. Recognize the resilience, and limitations of resilience, in natural systems?
14. Recognize the resilience, and limitations of resilience, in human social systems?
15. Communicate knowledge, skills, and values necessary for a sustainable way of life?
16. Leave a legacy or bequest to future generations that help us feel good about ourselves?
17. Create opportunities and values that help us discover the purpose of our lives?

Specific Objectives

18. Increase the Earth's tree cover and enlarge and strengthen protected natural areas?
19. Champion efforts to achieve equity in gender, race, and social background?
20. Help to voluntarily stabilize human population and promote small, happy families?
21. Aid development of wholesome food production systems at appropriate scales for a stabilized population?
22. Accelerate the transition to clean and renewable energy sources and systems?
23. Support the aims of living wage and progressive tax and tax-shifting reforms?
24. Secure for future generations the opportunity to experience wildlife in their native habitat?
25. Conserve and provide access to freshwater, topsoil, and other essential natural resources through land reform and protection of common property?
26. Reinvigorate participatory democracy through campaign finance reform and fair redistricting?
27. Encourage appropriate use of durable, recycled, and reusable materials?
28. Defend coral reefs and contribute to the recovery of a healthy ocean?
29. Prepare communities for adaptation to climate disruption and extreme weather events?
30. Maintain or enhance biodiversity and the value of unpriced ecosystem services?
31. Preserve wild space, open space, and the common heritage of outer space?
32. Address the concentration of wealth and power in financial institutions and industries that benefit greatly from unsustainable practices and products?

6. CONCLUSION

Sustainability as a primary concept has major implications for policy specialists in environmental, social welfare, and economic development areas. In effect, policy specialists from each of the three knowledge domains would be expected to transcend their narrow interest and training for the sake of an integrative and synergistic idea. Environmental analysts would have to probe the social and economic meaning of environmental policies over an indefinite period of time and across a transjurisdictional range of space. This is not only demanding and daunting but also suggests to many policy specialists that depth of knowledge must be sacrificed for breadth. In essence, a focus on sustainability tends to reduce the power and authority of specialists and the long-standing political, academic, and professional organizations that support them.

To be sure, an army of specialists will be required to achieve major improvements in sustainability. The point is that achieving such progress will demand increasing amounts of transdisciplinary knowledge and skills, and leadership from

broad-gauged, integrative thought leaders. Their agendas will necessarily require familiarity with a wide range of interlocking social, economic, and environmental issues. Synthesis will become as important as analysis.

Within the environmental policy community, calculating the value added, if any, of sustainability approaches over those of traditional environmental policy is largely a matter of paradigm change and framing environmental issues in new ways. The credibility and effectiveness of emerging sustainability policy initiatives will take decades to assess properly. By elevating nonenvironmental objectives of social and economic welfare, sustainability policy calls for far-reaching equity measures and investment strategies that may compete with conventional environmental policy objectives designed to internalize externalities through emissions taxes, resource subsidies, and command-and-control regulation (Pezzey 2004). As a result, sustainability approaches are likely to continue to be viewed by many in the environmental policy community as “soft” and even counterproductive.

Production of good research under the rubric of sustainability science will help with credibility issues, but some of the most valuable research is likely to emerge from highly applied fields of investigation, such as geospatial decision support systems, integrated sensor networks for monitoring ecosystems, and regional governance design. Systems dynamics software for use in modeling and responding to sustainability challenges at the local level may be particularly helpful for moving policy analysis to higher levels of integration and specificity. So will advances in green accounting practices.

Research that advances sustainability science, spatial analysis, local modeling, and accounting practices will be important for hastening the adoption of sustainability policies. But so will value changes that hold policy making to higher ethical standards. Progress in both areas, in turn, may facilitate needed changes in the structure of today’s consumption-driven economies, designed in an era of cheap oil and planned obsolescence. Ultimately, any lasting shift to sustainability policy implies a wholesale transformation of the incentive structures that drive economic and social development. The ways in which those incentives are designed to serve the interests of rich and powerful political actors should provide sobering reflections about just how difficult such a transformation will be. In the short run, at least, sustainability arguments are more likely to provide rhetorical and political cover than policy substance.

Is that a justification for inaction? Probably not, if one accepts the view that environmental policy, as presently conceived, is failing to halt the rapid decline of ecosystem health and massive overexploitation of natural resources. A new consensus is needed, one that starts with some very basic insights: a world that works for everyone will be green, profitable, fair, and “glocal.” It will encourage lifelong learning. And it will *not* be based on models of governance, development, or education that prevailed in the nineteenth and twentieth centuries.

Sustainability, as a primary concept, offers a promising model for policy development in an emerging era of integrative systems thinking, but it may also

undermine important policies from the tunnel-visioned past. It promises to improve moral legitimacy, but not necessarily economic efficiency, environmental effectiveness, or short-term social harmony. Fundamentally, sustainability is about our collective bequest: what we leave future generations in the way of healthy ecosystems, strong economies, great art, vibrant communities, adaptive management systems, and challenges worthy of a highly educated society. Sustainability, as a unifying philosophy that is grounded in the life of community, might just satisfy the disparate needs of people today and those who will follow, and might warrant the serious risk taking that all big ideas demand.

REFERENCES

- Aguirre, M. S. 2002. "Sustainable Development: Why the Focus on Population?" *International Journal of Social Economics* 29 (12): 923–945.
- Agyeman, J., R. Bullard, and B. Evans, eds. 2003. *Just Sustainabilities: Development in an Unequal World*. Cambridge, MA: MIT Press.
- Anderson, M. J. 2002. *Sustainable Development*. WFF Voices, 17, 1 Online Edition, available at www.wf-f.org/o2-1-UNSustainableDev.html (accessed May 8, 2012).
- Ball, T. 2000. "The Earth Belongs to the Living: Thomas Jefferson and the Problem of Intergenerational Relations." *Environmental Politics* 9 (2): 61–77.
- Banerjee, A. V. 2003. "Contracting Constraints, Credit Markets and Economic Development." In *Advances in Economics and Econometrics: Theory and Applications, Eighth World Congress, Vol. III*, ed. L. Hansen, M. Dewatripont, and S. Turnovsky. Cambridge, UK: Cambridge University Press.
- Barracough, S. 2005. "In Quest of Sustainable Development." Paper 4. Geneva, Switzerland: United Nations Research Institute for Social Development (UNRISD).
- Catton, W. R. 1982. *Overshoot: The Ecological Basis of Revolutionary Change*. Chicago: Illini Books.
- Du Pisani, J.A. 2006. "Sustainable Development: Historical Roots of the Concept." *Environmental Sciences* 3, 2 (June): 83 – 96.
- Emerson, R. W. 1990. *Ralph Waldo Emerson*. Ed. Richard Poirier. Oxford: Oxford University Press.
- Faber, N., R. Jorna, and J. van Engelen. 2005. "The Sustainability of 'Sustainability'—A Study into the Conceptual Foundations of the Notion of 'Sustainability.'" *Journal of Environmental Assessment Policy and Management* 7 (1): 1–33.
- Frum, D. 2007. "Building a Coalition; Forgetting to Rule." *New York Times*, August 14.
- Georgescu-Roegen, N. 1971. *The Entropy Law and the Economic Process*. Cambridge, MA: Harvard University Press.
- Hempel, L. C. 1996. *Environmental Governance: The Global Challenge*. Washington, DC: Island.
- . 2009. "Conceptual and Analytical Challenges in Building Sustainable Communities." In *Toward Sustainable Communities: Transition and*

- Transformations in Environmental Policy*, 2nd ed., ed. D. A. Mazmanian and M. E. Kraft. Cambridge, MA: MIT Press.
- Hodas, David R. 1998. "The Role of Law in Defining Sustainable Development: NEPA Reconsidered." *Widener Law Symposium Journal* 3,1 (1998): 1–60.
- Holling, C. S. 1973. "Resilience and Stability of Ecological Systems." *Annual Review of Ecology and Systematics* 4: 1–24.
- , 2000. "Theories for Sustainable Futures." *Conservation Ecology* 4 (2): 7.
- Howarth, R. B. 2007. "Towards an Operational Sustainability Criterion." *Ecological Economics* 63: 656–663.
- International Union for Conservation of Nature (IUCN), United Nations Environment Program, and World Wildlife Fund. 1980. *World Conservation Strategy*. Gland, Switzerland: IUCN.
- Kates, R., et al. 2001. "Sustainability Science." *Science* 292 (5517): 641–642.
- Lele, S. M. 1991. "Sustainable Development: A Critical Review." *World Development* 19 (6): 607–621.
- Lumley, S., and P. Armstrong. 2004. "Some of the Nineteenth Century Origins of the Sustainability Concept." *Environment, Development and Sustainability* 6 (3): 367–378.
- McMichael, A. J., C.D. Butler, and C. Folke. 2003. "New Visions for Addressing Sustainability." *Science* 302 (December 12, 2003): 1919–1920.
- Marsh, G. P. 1965. *Man and Nature*, ed. David Lowenthal. Cambridge, MA: Belknap Press of Harvard University Press.
- Marshall, J. D., and M. W. Toffel. 2005. "Framing the Elusive Concept of Sustainability: A Sustainability Hierarchy." *Environmental Science and Technology* 39 (3): 673–682.
- Mazmanian, D. A., and M. E. Kraft, eds. 2009. *Toward Sustainable Communities: Transition and Transformations in Environmental Policy*. 2nd ed. Cambridge, MA: MIT Press.
- National Environmental Policy Act. 1969. 42 U.S.C. 4321 et seq. Washington, DC: U.S. Government Printing Office. Available at epw.senate.gov/nepa69.pdf.
- Nordhaus, W. 1992. "Lethal Model 2: The Limits to Growth Revisited." *Brookings Papers on Economic Activity* 2: 1–43.
- O'Connor, M. 1997. "John Stuart Mill's Utilitarianism and the Social Ethics of Sustainable Development." *European Journal of the History of Economic Thought* 4 (3): 478–506.
- Pezzey, J. 2004. "Sustainability Policy and Environmental Policy." *Scandinavian Journal of Economics* 106 (2): 339–359.
- Pinchot, G. 1910. *The Fight for Conservation*. New York: Doubleday, Page & Company.
- Roosevelt, T. 1910. "The New Nationalism." Speech at Osawatomie, Kansas, August 31, available at www.presidentialrhetoric.com/historicspeeches/roosevelt_theodore/newnationalism.html (accessed December 14, 2010).
- Sachs, W., ed. 1993. *Global Ecology: A New Arena of Political Conflict*. London: Zed Books.
- . 1999. "Sustainable Development and the Crisis of Nature: On the Political Anatomy of an Oxymoron." In *Living with Nature: Environmental Politics as Cultural Discourse*, ed. F. Fischer and H. A. Maarten. New York: Oxford University Press.
- Schumacher, E. F. 1973. *Small Is Beautiful: A Study of Economics as if People Mattered*. London: Blond and Briggs.

- Solow, R. M. 1974. "Intergenerational Equity and Exhaustible Resources." *Review of Economic Studies* 41: 29–46.
- Stavins, R. N., A. F. Wagner, and G. Wagner. 2003. "Interpreting Sustainability in Economic Terms: Dynamic Efficiency Plus Intergenerational Equity." *Economics Letters* 79 (3): 339–343.
- Tugwell, F. 1973. *Search for Alternatives: Public Policy and the Study of the Future*. Cambridge, MA: Winthrop.
- United Nations. 1993. *Agenda 21: The United Nations Programme of Action from Rio*. New York: United Nations.
- U.S. National Research Council. 2011. "Incorporating Sustainability in the U.S. Environmental Protection Agency." Report commissioned by EPA (ORD). Washington, DC: National Academy of Sciences.
- Wood, P. 2009. "The Sustainability Movement in the American University." Princeton, NJ: National Association of Scholars, July 27, available at www.nas.org/articles/The_Sustainability_Movement_in_the_American_University (accessed May 8, 2012).
- World Commission on Environment and Development (WCED). 1987. *Our Common Future*. New York: Oxford University Press.