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Ethics, Public Policy, and Global Warming

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There are many uncertainties concerning climate change, but a rough international consensus has emerged that a doubling of atmospheric carbon dioxide from its pre-industrial baseline is likely to lead to a 2.5 degree centigrade increase in the earth's mean surface temperature by the middle of the next century. Such a warming would have diverse impacts on human activities and would likely be catastrophic for many plants and nonhuman animals. The author's contention is that the problems engendered by the possibility of climate change are not purely scientific but also concern how we ought to live and how humans should relate to each other and to the rest of nature; and these are problems of ethics and politics.

There has been speculation about the possibility of anthropogenic global warming since at least the late nineteenth century (Arrhenius 1896, 1908). At times the prospect of such a warming has been welcomed, for it has been thought that it would increase agricultural productivity and delay the onset of the next ice age (Callendar 1938). Other times, and more recently, the prospect of global warming has been the stuff of "doomsday narratives," as various writers have focused on the possibility of widespread drought, flood, famine, and the economic and political dislocations that might result from a "greenhouse warming"-induced climate change (Flavin 1989).

Although high-level meetings have been convened to discuss the greenhouse effect since at least 1963 (see Conservation Foundation 1963), the

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emergence of a rough, international consensus about the likelihood and extent of anthropogenic global warming began with a National Academy Report in 1983 (National Academy of Sciences/National Research Council 1983); meetings in Villach, Austria, and Bellagio, Italy, in 1985 (World Climate Program 1985); and in Toronto, Canada, in 1988 (Conference Statement 1988). The most recent influential statement of the consensus holds that although there are uncertainties, a doubling of atmospheric carbon dioxide from its preindustrial baseline is likely to lead to a 2.5 degree centigrade increase in the earth's mean surface temperature by the middle of the next century (Intergovernmental Panel on Climate Change [IPCC] 1990). (Interestingly, this estimate is within the range predicted by Arrhenius [1896]). This increase is expected to have a profound impact on climate and therefore on plants, animals, and human activities of all kinds. Moreover, there is no reason to suppose that without policy interventions, atmospheric carbon dioxide will stabilize at twice preindustrial levels. According to the IPCC (1990), we would need immediate 60% reductions in net emissions in order to stabilize at a carbon dioxide doubling by the end of the next century. Since these reductions are very unlikely to occur, we may well see increases of 4 degrees centigrade by the end of the twenty-first century.

The emerging consensus about climate change was brought home to the American public on 23 June 1988, a sweltering day in Washington, D.C., in the middle of a severe national drought, when James Hansen testified to the U.S. Senate Committee on Energy and Natural Resources that it was 99% probable that global warming had begun. Hansen's testimony was front page news in the *New York Times* and was extensively covered by other media as well. By the end of the summer of 1988, the greenhouse effect had become an important public issue. According to a June 1989 Gallup poll, 35% of the American public worried "a great deal" about the greenhouse effect, while 28% worried about it "a fair amount" (Gallup Organization 1989).

Beginning in 1989 there was a media "backlash" against the "hawkish" views of Hansen and others (for the typology of "hawks," "doves," and "owls," see Glantz 1988). In 1989 the *Washington Post* (8 February), the *Wall Street Journal* (10 April), and the *New York Times* (13 December) all published major articles expressing skepticism about the predictions of global warming or minimizing its potential impacts. These themes were picked up by other media, including such mass circulation periodicals as *Reader's Digest* (February 1990). In its December 1989 issue *Forbes* published a hard-hitting cover story titled "The Global Warming Panic" and later took out a full-page ad in the *New York Times* (7 February 1990) congratulating itself for its courage in confronting the "doom-and-gloomers."

The Bush administration seems to have been influenced by this backlash. The April 1990 White House conference on global warming concluded with a ringing call for more research, disappointing several European countries that were hoping for concerted action. In July at the Houston Economic Summit, the Bush administration reiterated its position, warning against precipitous action. In a series of meetings this year, convened as part of the IPCC process, the American government has stood virtually alone in opposing specific targets and timetables for stabilizing carbon dioxide emissions. The Bush administration has continually emphasized the scientific uncertainties involved in forecasts of global warming and also expressed concern about the economic impacts of carbon dioxide stabilization policies.

It is a fact that there are a number of different hypotheses about the future development of the global climate and its impact on human and other biological activities; and several of these are dramatically at variance with the consensus. For example, Budyko (1988) and Idso (1989) think that global warming is good for us, and Ephron (1988) argues that the injection of greenhouse gases will trigger a new ice age. Others, influenced by the "Gaia Hypothesis" (see Lovelock 1988), believe that there are self-regulating planetary mechanisms that may preserve climate stability even in the face of anthropogenic forcings of greenhouse gases.

Although there are some outlying views, most of the differences of opinion within the scientific community are differences of emphasis rather than differences of kind. Rather than highlighting the degree of certainty that attaches to predictions of global warming, as does Schneider (1989), for example, some emphasize the degree of uncertainty that attaches to such predictions (for example, Abelson 1990).

However, in my view, the most important force driving the backlash is not concerns about the weakness of the science but the realization that slowing global warming or responding to its effects may involve large economic costs and redistributions, as well as radical revisions in lifestyle. Various interest groups argue that they are already doing enough in response to global warming, while some economists have begun to express doubt about whether it is worth trying to prevent substantial warming (*New York Times*, 11 November 1989; White House Council of Economic Advisors 1990). What seems to be emerging as the dominant view among economists is that chlorofluorocarbons (CFCs) should be eliminated, but emissions of carbon dioxide or other trace gases should be reduced only slightly if at all (see Nordhaus 1990; Darmstadter 1991).

There are many uncertainties concerning anthropogenic climate change, yet we cannot wait until all the facts are in before we respond. All the facts may never be in. New knowledge may resolve old uncertainties, but it may

bring with it new uncertainties. And it is an important dimension of this problem that our insults to the biosphere outrun our ability to understand them. We may suffer the worst effects of the greenhouse before we can prove to everyone's satisfaction that they will occur (Jamieson 1991).

The most important point I wish to make, however, is that the problem we face is not a purely scientific problem that can be solved by the accumulation of scientific information. Science has alerted us to a problem, but the problem also concerns our values. It is about how we ought to live, and how humans should relate to each other and to the rest of nature. These are problems of ethics and politics as well as problems of science.

In the first section I examine what I call the "management" approach to assessing the impacts of, and our responses to, climate change. I argue that this approach cannot succeed, for it does not have the resources to answer the most fundamental questions that we face. In the second section I explain why the problem of anthropogenic global change is to a great extent an ethical problem, and why our conventional value system is not adequate for addressing it. Finally I draw some conclusions.

Why Management Approaches Must Fail

From the perspective of conventional policy studies, the possibility of anthropogenic climate change and its attendant consequences are problems to be "managed." Management techniques mainly are drawn from neoclassical economic theory and are directed toward manipulating behavior by controlling economic incentives through taxes, regulations, and subsidies.

In recent years economic vocabularies and ways of reasoning have dominated the discussion of social issues. Participants in the public dialogue have internalized the neoclassical economic perspective to such an extent that its assumptions and biases have become almost invisible. It is only a mild exaggeration to say that in recent years debates over policies have largely become debates over economics.

The Environmental Protection Agency's draft report *Policy Options for Stabilizing Global Climate* (U.S. Environmental Protection Agency 1989) is a good example. Despite its title, only one of nine chapters is specifically devoted to policy options, and in that chapter only "internalizing the cost of climate change risks" and "regulations and standards" are considered. For many people questions of regulation are not distinct from questions about internalizing costs. According to one influential view, the role of regulations and standards is precisely to internalize costs, thus (to echo a parody of our forefathers) "creating a more perfect market." For people with this view,

political questions about regulation are really disguised economic questions (for discussion, see Sagoff 1988).

It would be both wrong and foolish to deny the importance of economic information. Such information is important when making policy decisions, for some policies or programs that would otherwise appear to be attractive may be economically prohibitive. Or in some cases there may be alternative policies that would achieve the same ends and also conserve resources.

However, these days it is common for people to make more grandiose claims on behalf of economics. As philosophers and clergymen have become increasingly modest and reluctant to tell people what to do, economists have become bolder. Some economists or their champions believe not only that economics provides important information for making policy decisions but that it provides the most important information. Some even appear to believe that economics provides the only relevant information. According to this view, when faced with a policy decision, what we need to do is assess the benefits and costs of various alternatives. The alternative that maximizes the benefits less the costs is the one we should prefer. This alternative is "efficient" and choosing it is "rational."

Unfortunately, too often we lose sight of the fact that economic efficiency is only one value, and it may not be the most important one. Consider, for example, the idea of imposing a carbon tax as one policy response to the prospect of global warming (Moomaw [1988] 1989). What we think of this proposal may depend to some extent on how it affects other concerns that are important to us. Equity is sometimes mentioned as one other such concern, but most of us have very little idea about what equity means or exactly what role it should play in policy considerations.

One reason for the hegemony of economic analysis and prescriptions is that many people have come to think that neoclassical economics provides the only social theory that accurately represents human motivation. According to the neoclassical paradigm, welfare can be defined in terms of preference-satisfaction, and preferences are defined in terms of choice behavior. From this, many (illicitly) infer that the perception of self-interest is the only motivator for human beings. This view suggests the following "management technique": If you want people to do something give them a carrot; if you want them to desist, give them a stick. (For the view that self-interest is the "soul of modern economic man," see Myers 1983).

Many times the claim that people do what they believe is in their interests is understood in such a way as to be circular, therefore unfalsifiable and trivial. We know that something is perceived as being in a person's interests because the person pursues it; and if the person pursues it, then we know that the person must perceive it as being in his or her interests. On the other hand

if we take it as an empirical claim that people always do what they believe is in their interests, it appears to be false. If we look around the world we see people risking or even sacrificing their own interests in attempts to overthrow oppressive governments or to realize ideals to which they are committed. Each year more people die in wars fighting for some perceived collective good than die in criminal attempts to further their own individual interests. It is implausible to suppose that the behavior (much less the motivations) of a revolutionary, a radical environmentalist, or a friend or lover can be revealed by a benefit-cost analysis (even one that appeals to the “selfish gene”).

It seems plain that people are motivated by a broad range of concerns, including concern for family and friends, and religious, moral, and political ideals. And it seems just as plain that people sometimes sacrifice their own interests for what they regard to be a greater, sometimes impersonal, good. (Increasingly these facts are being appreciated in the social science literature; see, for example, Mansbridge [1990], Opp [1989], and Scitovsky [1976]).

People often act in ways that are contrary to what we might predict on narrowly economic grounds, and moreover, they sometimes believe that it would be wrong or inappropriate even to take economic considerations into account. Many people would say that choosing spouses, lovers, friends, or religious or political commitments on economic grounds is simply wrong. People who behave in this way are often seen as manipulative, not to be trusted, without character or virtue. One way of understanding some environmentalists is to see them as wanting us to think about nature in the way that many of us think of friends and lovers—to see nature not as a resource to be exploited but as a partner with whom to share our lives.

What I have been suggesting in this section is that it is not always rational to make decisions solely on narrowly economic grounds. Although economic efficiency may be a value, there are other values as well, and in many areas of life, values other than economic efficiency should take precedence. I have also suggested that people’s motivational patterns are complex and that exploiting people’s perceptions of self-interest may not be the only way to move them. This amounts to a general critique of viewing all social issues as management problems to be solved by the application of received economic techniques.

There is a further reason why economic considerations should take a back seat in our thinking about global climate change: There is no way to assess accurately all the possible impacts and to assign economic values to alternative courses of action. A greenhouse warming, if it occurs, will have impacts that are so broad, diverse, and uncertain that conventional economic analysis is practically useless. (Our inability to perform reliably the economic calcu-

lations also counts against the “insurance” view favored by many “hawks”: but that is another story.)

Consider first the uncertainty of the potential impacts. Some uncertainties about the global effects of loading the atmosphere with carbon dioxide and other greenhouse gases have already been noted. But even if the consensus is correct that global mean surface temperatures will increase 1.5-4 degrees centigrade sometime in the next century because of a doubling of atmospheric carbon dioxide, there is still great uncertainty about the impact of this warming on regional climate. One thing is certain: The impacts will not be homogeneous. Some areas will become warmer, some will probably become colder, and overall variability is likely to increase. Precipitation patterns will also change, and there is much less confidence in the projections about precipitation than in those about temperature. These uncertainties about the regional effects make estimates of the economic consequences of climate change radically uncertain.

There is also another source of uncertainty regarding these estimates. In general, predicting human behavior is difficult, as recent events in Central and Eastern Europe have demonstrated. These difficulties are especially acute in the case that we are considering because climate change, if it occurs, will affect a wide range of social, economic, and political activities. Changes in these sectors will affect emissions of “greenhouse gases,” which will in turn affect climate, and around we go again (Jamieson 1990). Climate change is itself uncertain, and its human effects are even more radically so. It is for reasons such as these that in general, the area of environment and energy has been full of surprises.

A second reason why the benefits and costs of the impacts of global climate change cannot reliably be assessed concerns the breadth of the impacts. Global climate change will affect all regions of the globe. About many of these regions—those in which most of the world’s population live—we know very little. Some of these regions do not even have monetarized economies. It is ludicrous to suppose that we could assess the economic impacts of global climate change when we have such little understanding of the global economy in the first place. (Nordhaus [1990], for example, implausibly extrapolates the sectorial analysis of the American economy to the world economy for the purposes of his study.)

Finally, consider the diversity of the potential impacts. Global climate change will affect agriculture, fishing, forestry, and tourism. It will affect “unmanaged” ecosystems and patterns of urbanization. International trade and relations will be affected. Some nations and sectors may benefit at the expense of others. There will be complex interactions between these effects. For this reason we cannot reliably aggregate the effects by evaluating each

impact and combining them by simple addition. But since the interactions are so complex, we have no idea what the proper mathematical function would be for aggregating them (if the idea of aggregation even makes sense in this context.) It is difficult enough to assess the economic benefits and costs of small-scale, local activities. It is almost unimaginable to suppose that we could aggregate the diverse impacts of global climate change in such a way as to dictate policy responses.

In response to skeptical arguments like the one that I have given, it is sometimes admitted that our present ability to provide reliable economic analyses is limited, but then it is asserted that any analysis is better than none. I think that this is incorrect and that one way to see this is by considering an example.

Imagine a century ago a government doing an economic analysis in order to decide whether to build its national transportation system around the private automobile. No one could have imagined the secondary effects: the attendant roads, the loss of life, the effects on wildlife, on communities; the impact on air quality, noise, travel time, and quality of life. Given our inability to reliably predict and evaluate the effects of even small-scale technology (e.g., the artificial heart, see Jamieson 1988), the idea that we could predict the impact of global climate change reliably enough to permit meaningful economic analysis seems fatuous indeed.

When our ignorance is so extreme, it is a leap of faith to say that some analysis is better than none. A bad analysis can be so wrong that it can lead us to do bad things, outrageous things — things that are much worse than what we would have done had we not tried to assess the costs and benefits at all (this may be the wisdom in the old adage that “a little knowledge can be a dangerous thing”).

What I have been arguing is that the idea of managing global climate change is a dangerous conceit. The tools of economic evaluation are not up to the task. However, the most fundamental reason why management approaches are doomed to failure is that the questions they can answer are not the ones that are most important and profound. The problems posed by anthropogenic global climate change are ethical as well as economic and scientific. I will explain this claim in the next section.

Ethics and Global Change

Since the end of World War II, humans have attained a kind of power that is unprecedented in history. While in the past entire peoples could be

destroyed, now all people are vulnerable. While once particular human societies had the power to upset the natural processes that made their lives and cultures possible, now people have the power to alter the fundamental global conditions that permitted human life to evolve and that continue to sustain it. While our species dances with the devil, the rest of nature is held hostage. Even if we step back from the precipice, it will be too late for many or even perhaps most of the plant and animal life with which we share the planet (Borza and Jamieson 1990). Even if global climate can be stabilized, the future may be one without wild nature (McKibben 1989). Humans will live in a humanized world with a few domestic plants and animals that can survive or thrive on their relationships with humans.

The questions that such possibilities pose are fundamental questions of morality. They concern how we ought to live, what kinds of societies we want, and how we should relate to nature and other forms of life. Seen from this perspective, it is not surprising that economics cannot tell us everything we want to know about how we should respond to global warming and global change. Economics may be able to tell us how to reach our goals efficiently, but it cannot tell us what our goals should be or even whether we should be concerned to reach them efficiently.

It is a striking fact about modern intellectual life that we often seek to evade the value dimensions of fundamental social questions. Social scientists tend to eschew explicit talk about values, and this is part of the reason why we have so little understanding of how value change occurs in individuals and societies. Policy professionals are also often reluctant to talk about values. Many think that rational reflection on values and value change is impossible, unnecessary, impractical, or dangerous. Others see it as a professional, political, or bureaucratic threat (Amy 1984). Generally, in the political process, value language tends to function as code words for policies and attitudes that cannot be discussed directly.

A system of values, in the sense in which I will use this notion, specifies permissions, norms, duties, and obligations; it assigns blame, praise, and responsibility; and it provides an account of what is valuable and what is not. A system of values provides a standard for assessing our behavior and that of others. Perhaps indirectly it also provides a measure of the acceptability of government action and regulation.

Values are more objective than mere preferences (Andrews and Waits 1978). A value has force for a range of people who are similarly situated. A preference may have force only for the individual whose preference it is. Whether or not someone should have a particular value depends on reasons and arguments. We can rationally discuss values, while preferences may be rooted simply in desire, without supporting reasons.

A system of values may govern someone's behavior without these values being fully explicit. They may figure in people's motivations and in their attempts to justify or criticize their own actions or those of others. Yet it may require a theorist or a therapist to make these values explicit.

In this respect a system of values may be like an iceberg — most of what is important may be submerged and invisible even to the person whose values they are. Because values are often opaque to the person who holds them, there can be inconsistencies and incoherencies in a system of values. Indeed much debate and dialogue about values involves attempts to resolve inconsistencies and incoherencies in one direction or another.

A system of values is generally a cultural construction rather than an individual one (Weiskel 1990). It makes sense to speak of contemporary American values, or those of eighteenth-century England or tenth-century India. Our individual differences tend to occur around the edges of our value system. The vast areas of agreement often seem invisible because they are presupposed or assumed without argument.

I believe that our dominant value system is inadequate and inappropriate for guiding our thinking about global environmental problems, such as those entailed by climate changes caused by human activity. This value system, as it impinges on the environment, can be thought of as a relatively recent construction, coincident with the rise of capitalism and modern science, and expressed in the writings of such philosophers as Francis Bacon ([1620] 1870), John Locke ([1690] 1952), and Bernard Mandeville ([1714] 1970; see also Hirschman 1977). It evolved in low-population-density and low-technology societies, with seemingly unlimited access to land and other resources. This value system is reflected in attitudes toward population, consumption, technology, and social justice, as well as toward the environment.

The feature of this value system that I will discuss is its conception of responsibility. Our current value system presupposes that harms and their causes are individual, that they can readily be identified, and that they are local in space and time. It is these aspects of our conception of responsibility on which I want to focus.

Consider an example of the sort of case with which our value system deals best. Jones breaks into Smith's house and steals Smith's television set. Jones's intent is clear: she wants Smith's TV set. Smith suffers a clear harm; he is made worse off by having lost the television set. Jones is responsible for Smith's loss, for she was the cause of the harm and no one else was involved.

What we have in this case is a clear, self-contained story about Smith's loss. We know how to identify the harms and how to assign responsibility. We respond to this breach of our norms by punishing Jones in order to prevent her from doing it again and to deter others from such acts, or we require

compensation from Jones so that Smith may be restored to his former position.

It is my contention that this paradigm collapses when we try to apply it to global environmental problems, such as those associated with human-induced global climate change. It is for this reason that we are often left feeling confused about how to think about these problems.

There are three important dimensions along which global environmental problems such as those involved with climate change vary from the paradigm: Apparently innocent acts can have devastating consequences, causes and harms may be diffuse, and causes and harms may be remote in space and time. (Other important dimensions may concern nonlinear causation, threshold effects, and the relative unimportance of political boundaries, but I cannot discuss these here [see Lee 1989].)

Consider an example. Some projections suggest that one effect of greenhouse warming may be to shift the Southern Hemisphere cyclone belt to the south. If this occurs the frequency of cyclones in Sydney, Australia, will increase enormously, resulting in great death and destruction. The causes of this death and destruction will be diffuse. There is no one whom we can identify as the cause of destruction in the way in which we can identify Jones as the cause of Smith's loss. Instead of a single cause, millions of people will have made tiny, almost imperceptible causal contributions – by driving cars, cutting trees, using electricity, and so on. They will have made these contributions in the course of their daily lives performing apparently “innocent” acts, without intending to bring about this harm. Moreover, most of these people will be geographically remote from Sydney, Australia. (Many of them will have no idea where Sydney, Australia, is.) Further, some people who are harmed will be remote in time from those who have harmed them. Sydney may suffer in the twenty-first century in part because of people's behavior in the nineteenth and twentieth centuries. Many small people doing small things over a long period of time together will cause unimaginable harms.

Despite the fact that serious, clearly identifiable harms will have occurred because of human agency, conventional morality would have trouble finding anyone to blame. For no one intended the bad outcome or brought it about or even was able to foresee it.

Today we face the possibility that the global environment may be destroyed, yet no one will be responsible. This is a new problem. It takes a great many people and a high level of consumption and production to change the earth's climate. It could not have been done in low-density, low-technology societies. Nor could it have been done in societies like ours until recently. London could be polluted by its inhabitants in the eighteenth century, but its reach was limited. Today no part of the planet is safe. Unless we develop new

values and conceptions of responsibility, we will have enormous difficulty in motivating people to respond to this problem.

Some may think that discussion about new values is idealistic. Human nature cannot be changed, it is sometimes said. But as anyone who takes anthropology or history seriously knows, our current values are at least in part historically constructed, rooted in the conditions of life in which they developed. What we need are new values that reflect the interconnectedness of life on a dense, high-technology planet.

Others may think that a search for new values is excessively individualistic and that what is needed are collective and institutional solutions. This overlooks the fact that our values permeate our institutions and practices. Reforming our values is part of constructing new moral, political, and legal concepts.

One of the most important benefits of viewing global environmental problems as moral problems is that this brings them into the domain of dialogue, discussion, and participation. Rather than being management problems that governments or experts can solve for us, when seen as ethical problems, they become problems for all of us to address, both as political actors and as everyday moral agents.

In this essay I cannot hope to say what new values are needed or to provide a recipe for how to bring them about. Values are collectively created rather than individually dictated, and the dominance of economic models has meant that the study of values and value change has been neglected (but see Wolfe 1989; Reich 1988). However, I do have one positive suggestion: We should focus more on character and less on calculating probable outcomes. Focusing on outcomes has made us cynical calculators and has institutionalized hypocrisy. We can each reason: Since my contribution is small, outcomes are likely to be determined by the behavior of others. Reasoning in this way we can each justify driving cars while advocating bicycles or using fireplaces while favoring regulations against them. In such a climate we do not condemn or even find it surprising that Congress exempts itself from civil rights laws. Even David Brower, the "archdruid" of the environmental movement, owns two cars, four color televisions, two video cameras, three video recorders, and a dozen tape recorders, and he justifies this by saying that "it will help him in his work to save the Earth" (*San Diego Union*, 1 April 1990).

Calculating probable outcomes leads to unraveling the patterns of collective behavior that are needed in order to respond successfully to many of the global environmental problems that we face. When we "economize" our behavior in the way that is required for calculating, we systematically neglect the subtle and indirect effects of our actions, and for this reason we see individual action as inefficacious. For social change to occur it is important

that there be people of integrity and character who act on the basis of principles and ideals.

The content of our principles and ideals is, of course, important. Principles and ideals can be eccentric or even demented. In my opinion, in order to address such problems as global climate change, we need to nurture and give new content to some old virtues such as humility, courage, and moderation and perhaps develop such new virtues as those of simplicity and conservatism. But whatever the best candidates are for twenty-first century virtues, what is important to recognize is the importance and centrality of the virtues in bringing about value change.

Conclusion

Science has alerted us to the impact of humankind on the planet, each other, and all life. This dramatically confronts us with questions about who we are, our relations to nature, and what we are willing to sacrifice for various possible futures. We should confront this as a fundamental challenge to our values and not treat it as if it were simply another technical problem to be managed.

Some who seek quick fixes may find this concern with values frustrating. A moral argument will not change the world overnight. Collective moral change is fundamentally cooperative rather than coercive. No one will fall over, mortally wounded, in the face of an argument. Yet if there is to be meaningful change that makes a difference over the long term, it must be both collective and thoroughgoing. Developing a deeper understanding of who we are, as well as how our best conceptions of ourselves can guide change, is the fundamental issue that we face.

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