

Part VI: Ethics and Equity
CHAPTER 16: ENVIRONMENTAL ETHICS
Pages 421-440

This Chapter deals with three conceptions of ethics that are specifically related to the global environment. The first is whether the focus should be on the rights of humans or on the rights of all living creatures including humans. The second is whether the rights of presently living humans exhaust the possibilities of rights, or whether provision should be made for the rights of nonexistent future generations of humans. Finally, this Chapter deals with the relation of transnational justice to the problem of environmental preservation.

The first two of these conceptions form the basis of the debate between Edith Brown Weiss and Anthony D'Amato. The third was considered earlier, in part, in the essay by Anthony D'Amato and Kirsten Engel contained in Chapter 9. The argument is continued in the excerpt from Christopher Stone's recent book contained in this Chapter.

A. Intergenerational Equity

1. Our Duty to Future Generations¹

We read every day about the desecration of our environment and the mismanagement of our natural resources. We have always had the capacity to wreck the environment on a small or even regional scale. Centuries of irrigation without adequate drainage in ancient times converted large areas of the fertile Tigris-Euphrates valley into barren desert. What is new is that we now have the power to change our global environment irreversibly, with profoundly damaging effects on the robustness and integrity of the planet and the heritage that we pass to future generations.

In Fairness to Future Generations argues that we, the human species, hold the natural environment of our planet in common with all members of our species: past generations, the present generation, and future generations.² As members of the present generation, we hold the earth in trust for future generations. At the same time, we are beneficiaries entitled to use and benefit from it.

There are two relationships that must shape any theory of intergenerational equity in the context of our natural environment: our relationship to other generations of our own species and our relationship to the natural system of which we are a part.

The human species is integrally linked with other parts of the natural system; we both affect and are affected by what happens in the system. The natural system, contrary to popular belief, is in many ways a hostile one. Deserts, glaciers, volcanoes, tsunamis can bring havoc to our species. Moreover, the natural environment can be toxic to our species, as through the natural toxicity of some plants and animals or the dramatic release of toxic clouds of carbon dioxide from Lake Nyos in the Cameroon, which killed 1,700 people. On the other hand, the natural system makes life possible for us. It gives us the resources with which to survive and to improve human welfare.

Our actions affect the natural system. We alone among all living creatures have the capacity to shape significantly our relationship to the environment. We can use it on a sustainable basis or we can degrade environmental quality and the natural resource base. As part of the natural system, we have no right to destroy its integrity; nor is it in our interest to do so. Rather, as the most sentient of living creatures, we have a special responsibility to care for the planet.

The second fundamental relationship is that between different generations of the human species. All generations are inherently linked to other generations, past and future, in using the common patrimony of earth.

To define intergenerational equity, it is useful to view the human community as a partnership among all generations. In describing a state as a partnership, Edmund Burke observed that "as the ends of such a partnership cannot be obtained in many generations, it becomes a partnership not only between those who are living but between those who are living, those who are dead, and those who are to be born."³ The purpose of human society must be to realize and protect the welfare and well-being of every generation. This requires sustaining the life-support systems of the planet, the ecological processes and the environmental conditions necessary for a healthy and decent human environment.

In this partnership, no generation knows beforehand when it will be the living generation, how many members it will have, or even how many generations there will ultimately be. It is useful, then, to take the perspective of a generation that is placed somewhere along the spectrum of time, but does not know in advance where it will be located.⁴ Such a generation would want to inherit the earth in at least as good condition as it has been in for any previous generation and to have as good access to it as previous generations. This requires each generation to pass the planet on in no worse condition than it received it in and to provide equitable access to its resources and benefits. Each generation is thus both a trustee for the planet with obligations to care for it and a beneficiary with rights to use

it.

Intergenerational equity calls for equality among generations in the sense that each generation is entitled to inherit a robust planet that on balance is at least as good as that of previous generations. This means all generations are entitled to at least the planetary health that the first generation had.⁵ In practice, some generations may improve the environment, with the result that later generations will inherit a richer and more diverse natural resource base. In this case, they would be treated better than previous generations. But this extra benefit would be consistent with intergenerational equity, because the minimum level of planetary robustness would be sustained and later generations would not be worse off than previous generations. The converse is also possible, that later generations would receive a badly degraded environment with major loss of species diversity, in which case they would be treated worse than previous generations. This latter case would be contrary to principles of intergenerational equity. Equity among generations provides for a minimum floor for all generations and ensures that each generation has at least that level of planetary resource base as its ancestors. This concept is consistent with the implicit premises of trusteeship, stewardship and tenancy, in which the assets must be conserved, not dissipated, so that they are equally available to those who come after.

The theory of intergenerational equity finds deep roots in international law. The Preamble to the Universal Declaration of Human Rights begins, "Whereas recognition of the inherent dignity and of the equal and inalienable rights of all members of the human family is the foundation of freedom, justice and peace in the world." The reference to all members of the human family has a temporal dimension, which brings all generations within its scope. The reference to equal and inalienable rights affirms the basic equality of these generations in the human family.

The United Nations Charter, the International Covenant on Civil and Political Rights, the Convention on the Prevention and Punishment of the Crime of Genocide, the American Declaration on the Rights and Duties of Man, the Declaration on the Elimination of Discrimination against Women, the Declaration on the Rights of the Child and many other human rights documents protect the dignity of all people and the equality of their rights. The Declaration of the Principles of International Cultural Co-operation provides in Article 1 that "each culture has a dignity and value which must be respected and preserved," and that "all cultures form part of the common heritage belonging to mankind." These instruments reveal a fundamental belief in the dignity of all members of human society and in an equality of rights that extends in time as well as space. Indeed, if we were to license the present generation to exploit our natural and cultural resources at the expense of the well-being of future generations, we would contradict the purposes of the United Nations Charter and international human rights documents.

It is not enough, however, to apply a theory of intergenerational equity only among generations. It also carries an intragenerational dimension. When future generations become living generations, they have certain rights and obligations to use and care for the planet that they can enforce against one another. Were it otherwise, members of one generation could allocate the benefits of the world's resources to some communities and the burdens of caring for it to others and still potentially claim on balance to have satisfied principles of equity among generations.

Moreover, the fulfillment of intergenerational obligations requires attention to certain aspects of intragenerational equity. As is well-known, poverty is a primary cause of ecological degradation. Poverty-stricken communities, which by definition have unequal access to resources, are forced to overexploit the resources they do have so as to satisfy their own basic needs. As an ecosystem begins to deteriorate, the poor communities suffer most, because they cannot afford to take the measures necessary to control or adapt to the degradation, or to move to pristine areas.

Thus, to implement intergenerational equity, countries need to help poor communities to use the natural environment on a sustainable basis, to assist them in gaining equitable access to the economic benefits from our planet, such as potable water, and to help protect them from degraded environmental quality. As beneficiaries of the planetary legacy, all members of the present generation are entitled to equitable access to and use of the legacy. The future nationals of all countries will benefit from efforts of the present generation to protect the general planetary environment for future generations. Conversely, all will suffer if the present generation does not make such efforts.

I have proposed three basic principles of intergenerational equity. First, each generation should be required to conserve the diversity of the natural and cultural resource base, so that it does not unduly restrict the options available to future generations in solving their problems and satisfying their own values, and should also be entitled to diversity comparable to that enjoyed by previous generations. This principle is called "conservation of options." Second, each generation should be required to maintain the quality of the planet so that it is passed on in no worse condition than that in which it was received, and should also be entitled to planetary quality comparable to that enjoyed by previous generations. This is the principle of "conservation of quality." Third, each generation should provide its members with equitable rights of access to the legacy of past generations and should conserve this access

for future generations. This is the principle of "conservation of access."

These proposed principles constrain the actions of the present generation in developing and using the planet, but within these constraints do not dictate how each generation should manage its resources.

These principles of intergenerational equity form the basis of a set of intergenerational obligations and rights, or planetary rights and obligations, that are held by each generation. These rights and obligations derive from each generation's position as part of the intertemporal entity of human society.

Planetary rights and obligations are integrally linked. The rights are always associated with obligations. They are rights of each generation to receive the planet in no worse condition than did the previous generation, to inherit comparable diversity in the natural and cultural resource bases, and to have equitable access to the use and benefits of the legacy. They represent in the first instance a moral protection of interests, which must be transformed into legal rights and obligations.

Planetary rights and obligations coexist in each generation. In the intergenerational dimension, the generations to which the obligations are owed are future generations, while the generations with which the rights are linked are past generations. Thus, the rights of future generations are linked to the obligations of the present generation. In the intragenerational context, planetary obligations and rights exist between members of the present generation. They derive from the intergenerational relationship that each generation shares with those who have come before and those yet to come. Thus, intergenerational obligations to conserve the planet flow from the present generation both to future generations as generations and to members of the present generation, who have the right to use and enjoy the planetary legacy.

Intergenerational rights of necessity inhere in all generations, whether these be immediately successive generations or ones more distant. There is no theoretical basis for limiting such rights to immediately successive generations. If we were to do so, we would often provide little or no protection to more distant future generations. Nuclear and hazardous waste disposal, the loss of biological diversity and ozone depletion, for example, have significant effects on the natural heritage of more distant generations.

Intergenerational planetary rights may be regarded as group rights, as distinct from individual rights, in the sense that generations hold these rights as groups in relation to other generations--past, present and future. They exist regardless of the number and identity of individuals making up each generation. When held by members of the present generation, they acquire attributes of individual rights in the sense that there are identifiable interests of individuals that the rights protect. However, those interests derive from the fact that those living now are members of the present generation and have rights in relation to other generations to use and benefit from the planet. The remedies for violations of these rights will benefit other members of the generation, not only the individual.⁶

Developments in international law outside the field of the environment make acceptance of intergenerational rights a natural and desirable evolution. Indeed, international human rights law--the genocide convention, and the prohibition against racial discrimination, to cite two examples--are arguably directed as much to the protection of future, as to present, generations. The extinction of, for example, an entire people is more odious in law than the murder of an equal number of people constituting a minority of each of several groups. Similarly, discrimination denies an "equal place at the starting gate" not only to the generation of the suppressed group but (by implication) also to future generations. Provisions in other human rights agreements refer to rights of children and of the elderly, and to education and training, which are implicitly temporally oriented.

One might still ask whether it is not preferable to speak only of planetary obligations toward future generations without corresponding intergenerational rights. Can intergenerational obligations exist without rights? While rights are always connected to obligations, the reverse is not always true. Theoretically, an obligation need not always entail a right. For example, a moral obligation of charity does not give those who benefit a right to charity. The legal positivist Hans Kelsen hesitated to find a legal right connected to certain legal obligations.

If the obligated behavior of one individual does not refer to a specifically designated other individual . . . but refers only to the legal community as such, then . . . one is satisfied . . . to assume a legal obligation without a corresponding reflex right: for example in case of the legal norms that prescribe a certain human behavior toward some animals, plants, or inanimate objects by pain of punishment. It is forbidden to kill certain animals at certain times (or altogether), to pick certain flowers, to cut certain trees or to destroy certain historical monuments. These are obligations which--indirectly--exist toward the legal community interested in these objects.⁷

John Austin described some obligations as absolute duties, which exist independently of any correlative right. He defined absolute duties as those prescribing actions toward parties other than the one obliged, who are not determinate persons, such as members generally of an independent society and mankind at large.⁸

If we were to follow this analysis, we would contend that the obligations of the present generation to future generations constitute obligations or duties for which there are no correlative rights, because there are no

determinate persons to whom the right attaches. Similarly, in the intragenerational context, obligations to conserve diversity, quality and access would be viewed as absolute duties for which there is no correlative right.

While this approach may be attractive, it ignores the fundamental temporal relationship that each generation has to all other generations and that gives rise to the rights of each generation to share equitably in the use of the planet and its natural resources. These rights focus discussion on the welfare of generations, what each generation is able to have and to enjoy, in a way that obligations cannot. If obligations of the present generation are not linked with rights, the present generation has a strong incentive to bias the definition of these obligations in favor of itself at the expense of future generations. Intergenerational rights have greater moral force than do obligations. They provide a basis for protecting the interests of all generations in a healthy and robust planet.

2. The Duty We Owe to All Existing Forms of Life⁹

There is a common assumption that the present generation owes a duty to generations yet unborn to preserve the diversity and quality of our planet's life-sustaining environmental resources. This duty is sometimes said to be an emerging norm of customary international law,¹⁰ including the more recently treaty-generated custom of the "common heritage of mankind."¹¹ Professor Edith Brown Weiss lists three different approaches one might take in response to an asserted environmental obligation to future generations: the "opulent" model, which denies any such obligation and permits present extravagance and waste; the "preservationist" model at the other extreme, which requires the present generation to make substantial sacrifices of denial so as to enhance the environmental legacy; and the "equality" model--favored by Professor Weiss--which says we owe to future generations a global environment in no worse condition than the one we enjoy.¹²

a. Parfit's Paradox of Future Individuals

International law scholars appear to have overlooked the startling thesis put forth by Derek Parfit in 1976.¹³ I will state his thesis in a somewhat stronger form than he did. Let us picture the people who will be living 100 years from now:¹⁴ they will be specific, identifiable persons. We can claim that we currently owe an environment-preserving obligation to those particular as-yet-unborn persons. Parfit's paradox arises when we seek to discharge that postulated obligation. Suppose that we undertake a specific environmental act of conservation. For example, we help to pass a law requiring catalytic converters on all automobiles in our state. We will thus have succeeded in intervening in the environment-making the environment slightly different from the way it would have been but for our action. Our intervention will reduce the amount of air pollution that otherwise would have taken place, and increase the utilization of energy and resources in the manufacture of catalytic converters.

Yet this slight difference resulting from our intervention in the environment will affect the ecosphere in the years subsequent to our intervention. In particular, it will affect the conditions under which human procreation place. The particular sperm and egg cells from which any human being develops is a highly precarious fact; the slightest difference in the conditions of conception will probably result in fertilization of the egg by a different sperm. Hence, when the environment is disrupted even a slight amount, a different future person will probably be conceived. According to Parfit's thesis, our intervention in the environment will make a sufficient impact to assure that different sperm cells will probably fertilize the egg cells in all procreations that take place subsequent to our environmental intervention. Different people will be born from those who would have been born if we had not intervened in the environment.

To be sure, in the first few years following our environmental intervention, there is very low probability that many subsequent human conceptions will be affected. But as years go by, the effect of our single environmental intervention increases exponentially until it is a virtual certainty that 100 years from now all human conceptions will have been affected a little bit from our single act of environmental intervention, and that this little effect will actually result in fertilization of egg cells by sperm cells different from those that would have fertilized those egg cells in the absence of our act. Parfit's conclusion is that every single person alive 100 years from now will be an entirely different individual from the person he or she would have been had we not intervened in the environment. This fact creates a paradox in our attempt to discharge our moral obligation to future generations. How can we owe a duty to future persons if the very act of discharging that duty wipes out the very individuals to whom we allegedly owed that duty? Our attempted environmental altruism will prevent the birth of the precise beneficiaries of our altruism.

It is no answer to argue that the entirely new set of individuals who will replace those we wipe out will themselves greatly benefit from our intervention. For although they may be the beneficiaries of our environmental intervention, we could not have owed a duty to them because they were not probable persons at the time we claimed that we had a duty. Any present duty that we have to future generations can only be a duty to particular future persons who are awaiting their turn to be born. If in exercise of such an alleged duty we commit an act of

environmental intervention that denies the opportunity to be born to those very individuals, we cannot possibly be making them better off by virtue of our intervention. Thus, we find that any attempted altruism on our part to intervene in the environment to help future persons will make those persons incomparably worse off than if we had not intervened. They would be better off living in a degraded environment 100 years from now--that is, in an environment we did not act to preserve--than not living at all.¹⁵

Parfit's paradox is uncomfortable and counterintuitive. Is it somehow fallacious? If not, is there any way we can accept Parfit's thesis and still make sense of the notion of "obligation to preserve the environment"?

b. Is Parfit's Reasoning Faulty?

People encountering Parfit's thesis for the first time are properly skeptical that a minor intervention in the environment can actually result in entirely different individuals in 100 years from those who would have existed then had there been no such intervention. But the result is scientifically accurate, stemming from the discovery in recent years of chaos theory. In the 1950s, Edward Lorenz, a meteorologist at the Massachusetts Institute of Technology, discovered that a very slight shift in the initial data about weather conditions fed into a computer will result in drastic differences in simulated weather conditions after a number of iterations.¹⁶ The differences, or perturbations, grow exponentially, doubling every 4 days. Lorenz called this the "butterfly effect." An environmental intervention as slight as a butterfly flapping its wings near a weather station will change long-term weather predictions. Although 2 weeks after the butterfly's capricious flight the effect will hardly be felt outside an area 16 times the path of the butterfly, after 1 or 2 years the butterfly's flight could actually be the cause of a major storm that otherwise would not have taken place.¹⁷ A weekly quadrupling rate means that an initial perturbation will increase by 4 to the 52d power after just 1 year--enough to make itself felt anywhere on the planet. By my own rough calculations, after 3 years the number of perturbations will have increased by more than the total number of atoms in the universe. Thus, applying chaos theory in support of Parfit's thesis makes clear that any action we take will affect the environment in such a way as to change the conditions of all acts of human procreation several decades hence. Even minor acts in the present can substantially affect which particular sperm cells succeed in fertilizing human ova 60 years from now.

If there is no valid scientific objection to Parfit's thesis, can we argue that it proves too much? Can we argue that any act that we do, not just acts of environmental preservation, will have a similar exponentially increasing future effect? For instance, a jogger will have this effect on the future, just as will the air-polluting automobile that drives by her as she jogs. Can we thus contend that since acts of environmental degradation as well as acts of environmental preservation equally change the composition of future populations, Parfit's thesis is vacuous? No, because Parfit's thesis is aimed at moral considerations. It is premised on the generally accepted moral obligation not to act in any situation where our action would make others worse off.¹⁸ Hence if we engage in an act of environmental preservation for the reason that we feel an obligation to future persons, our very act will make those persons worse off than if we had not acted at all; indeed, our act will make them totally worse off--they will be deprived of their existence. To be sure, the same is true of any environmentally degrading act that we might take--except that no one claims that we owe an obligation to future generations to degrade the environment! Parfit's thesis is thus pinpointed at only one claim of obligation: that if we act to preserve the environment out of a sense of obligation to future persons, that obligation is nonsensical because in so acting we destroy the obligees. Indeed, this theme could be embellished by pointing out that all environment-preserving actions are supererogatory in contrast to all selfish uses that we might make of the environment. The argument would proceed as follows. Imagine that we could have a conversation with a lawyer who represents the class of actual persons who will be alive 100 years from now. She tells us that she is prepared to accept just our selfishly motivated environmental acts. For when we act to use up environmental resources just to gratify our immediate desires, we are at least motivated by an understandable reason--the reason of self interest. True, she adds, those acts will operate to change the conditions of future human procreation in such a way that the class of persons she represents will change its members' identities each time we act. But she accepts this result as inevitable. On the other hand, she strenuously objects to any of our acts of environmental intervention that are motivated solely by a sense of obligation to her clients. That is not a good reason to act, she argues, because in so acting we will gratuitously destroy her clients. Our attempt to be altruistic to her clients will result in their destruction. "We don't need friends like you," she might conclude. "My clients would rather live in whatever environment is left to them than not be born at all."

Perhaps we can shift the ground of contention to argue that Parfit's thesis should be disregarded because our obligation to act to preserve the environment stems from a generic notion of "future generations" and not because we have any particular future individuals in mind. In other words, can we say that we do not care which persons inherit the earth so long as whoever inherits it inherits a habitable planet in no worse condition than the one we enjoy? Of course we can say all this, and in a rather rough way we probably think it and act upon it. But the

argument, upon inspection, simply glosses over the problem. Future generations are not an abstraction; they consist of individuals. The particularity of the individuals is apparent when we consider how lucky it is for anyone to be born. The odds of your being born instead of one of your many potential siblings are comparable to the odds of winning the Pennsylvania Lottery in the recent drawing when the first prize was over \$100 million. The point is that the winner of the lottery would not be equally content to have any other person win the lottery; similarly, you and I would not be content if a different person had been born instead of us. We may have been lucky to have been born at all, but we are not ready to relinquish that luck simply on the ground that large numbers and vanishingly small probabilities are involved. The fact that somebody will be born does not mean that the person lucky enough to be born is indifferent about who it is.¹⁹ Future generations cannot be indifferent about whether it is they or other persons who will enjoy the fruits of the earth. If we feel we owe an obligation to them, we, too, cannot be indifferent about the question. We cannot discharge our obligation to them if in the process of doing so we deprive them of life.

c. Given Parfit's Paradox, Do We Have Environmental Obligations?

At first blush, Parfit's thesis appears to set us back. It seems to justify Professor Weiss's "opulent" model in a way that most of us would instinctively find morally repulsive. Although I believe that Parfit's thesis is unassailable, I do not think it is retrogressive. Instead, it may help us to clear the ground of unnecessary conceptual confusion and proceed on a firmer footing.

I suggest that we begin by noticing that the notion of obligation to future generations is typically located within the developing concept of international human rights. The general argument starts with the claim that human rights are more important than any other value in international law, including the rights of states. And it continues by claiming that future generations also have a human right--the right to inherit an environment no worse than the one we enjoy.

The foregoing are relatively uncontroversial assertions. But if we look closely, we see that the entire concept of "human rights" is species chauvinistic. This form of chauvinism is illustrated by the following quotation from Judge Richard Posner: "Animals count, but only insofar as they enhance wealth. The optimal population of sheep is determined not by speculation on their capacity for contentment relative to people, but by the intersection of the marginal product and marginal cost of keeping sheep."²⁰ Posner purports to derive these conclusions from his principle of wealth maximization, which for him constitutes the bedrock moral justification for all law.²¹ He characterizes "wealth" solely in human terms; the sheep's own wealth, of course, is not to be maximized or even taken into account. Since a sheep's own capacity for enjoying life has by definition nothing to do with maximizing human wealth, it becomes for Posner morally and legally irrelevant. One of the most articulate opponents of "animal rights" is R. G. Frey, whose species chauvinism is explicit when he writes:

[I]t is the sheer richness of human life, and in what this richness consists, which gives it its superior quality. Some of the things which give life its richness we share with animals; there are other things, however, which can fill our lives but not theirs. For example, falling in love, marrying, and experiencing with someone what life has to offer; having children and watching and helping them to grow up; working and experiencing satisfaction in one's job; listening to music, looking at pictures, reading books . . . By comparison with animals, our lives are of an incomparably greater texture and richness . . .²²

Few persons would quarrel with this statement if Professor Frey has in mind the lowest forms of animal life such as insects and mollusks. But what about whales or chimpanzees? Some whales possess a brain six times bigger than the human brain; Dr. John Lilly has claimed that they are more intelligent than any man or woman.²³ According to Dr. Kenneth Norris, whales see and taste through sounds, and possess many other faculties of which we are only vaguely aware.²⁴ Chimpanzees, monkeys and gorillas take obvious pleasure in raising their young, and exhibit the same gamut of emotions in the process as do humans. They seem to understand human sign language and, indeed, their "language ability" seems to increase the more researchers take pains to teach them our language.²⁵

Are we bound by a notion of "human rights" to consider that the only things that are valuable in the world are those that directly benefit ourselves? Consider the following thought experiment. Suppose Robinson is the last person on earth. When he dies, the human species will have come to an end. During his lifetime, would he have a moral right to kill animals for sport, even knowing that some of those he would kill are the last survivors of their own species? Posner's principle of maximizing wealth would still apply in Robinson's case; it is not dependent upon the existence of other humans. Under that principle, Robinson has a moral right to do whatever would contribute to his own wealth, including the hunting and termination of various animal species for no other reason than the "sport" of it. And under Frey's view, Robinson can do anything he pleases because his life is incomparably richer than any lives of the animals or animal species that he destroys.

Note, however, that the same result obtains under the traditional international conception, mentioned at the outset of this discussion, of preserving the environment for the benefit of future generations. Since there will be no

future generations, Robinson has a moral license under this conception--as well as under Posner's and Frey's views--to engage in hunting for sport even if in so doing he terminates entire animal species.²⁶ If this result is uncomfortable, it points to the shortcomings of the species chauvinism that underlies the theories of Posner, Frey and "fairness to future generations." All three are impoverished accounts of our actual sense of moral obligation. They are too dependent upon finding an articulate link to the improvement of the human condition.

It is important to recall that Parfit's thesis only deconstructs the notion of obligation to future generations, and not environmental obligations generally. If we have a choice between committing a wasteful act (such as killing a whale) or committing an environmentally preserving act (such as planting a tree), either act, under Parfit's thesis, will change the identity of future generations. Hence, we cannot assert a moral obligation to future generations to commit or refrain from committing either the wasteful or the conserving act. But that does not necessarily mean that we have no moral obligation at all.

Is there a different sense of moral obligation that could yield a duty to present generations to preserve the environment? Consider Parfit's own thoughts on the subject:

We need some new principle of beneficence, which is acceptable in all kinds of case. Though we have not yet found this principle, we know that it cannot take a person-affecting form. It will be about human well-being, and the quality of life, but it will not claim that what is morally most important is whether our acts will affect people for good or bad, better or worse. . . . [N]on-religious moral philosophy is a very young subject. We should not be surprised that much of it is still puzzling.²⁷

I agree with the sentiment of these thoughts but take slight exception to Parfit's search for a moral principle. In fact, I think the search for moral principles and precepts can indirectly support much immoral conduct, because no matter how a principle is stated, it may be interpreted and construed in such a way as apparently to justify immoral behavior.²⁸ In my view, it is better to begin with our pre-verbal sense of morality. That sense, I would suggest, tells us that it is somehow wrong to despoil the environment, to act in ways that waste natural resources and wildlife, and to gratify pleasures of the moment at the expense of living creatures who are no threat to us. What George F. Will said about whales in a sense is true of all acts of environmental preservation: "The campaign to save whales is a rare and refreshing example of intelligence in the service of something other than self-interest." Natural evolution has produced some prey-specific predatory animals that will hunt their prey to extinction, at which point they will become extinct themselves. Presumably if they had developed a greater intelligence, they would exercise restraint. Humans are lucky in that we are blessed with the intelligence to figure out how to survive in an environment where we are not physically the strongest, fastest or best-protected animals. That same intelligence can be stretched to include a world-based empathy for the environment, "beneficent" in Parfit's sense.

We should not limit our actions to those we are able to determine now as directly or indirectly benefiting ourselves or our descendants. Rather, we should cultivate our natural sense of obligation not to act wastefully or wantonly even when we cannot calculate how such acts would make any present or future persons worse off. There is good evidence that customary international law--with various fits and starts and setbacks--is moving generally in this direction, perhaps responding to a deep and inarticulate sense that human beings are not in confrontation with, but rather belong to, their natural environment. That such law is currently given the label "human rights" should not constrict our understanding of what it is or where it is going.

3. Reply²⁹

Professor D'Amato in his essay takes issue with the notion of rights of future generations to the planet by invoking Derek Parfit's famous paradox and combining it with the new theory of chaos. He argues that future generations cannot have rights because they are composed of individuals who do not exist yet and every intervention we take today to protect the environment affects the composition of these future individuals, robbing some potential members of future generations of their existence.

It is important to parse this analysis into its two component parts: that future generations cannot have rights because the individuals do not exist yet, and that actions to protect the environment for future generations will destroy the rights of some future individuals because different people will be born as a result of the intervention. The first is that future generations cannot have rights, because rights exist only when there are identifiable interests, which can only happen if we can identify the individuals who have interests to protect. Since we cannot know who the individuals in the future will be, it is not possible for future generations to have rights.

This paradox assumes the traditional conceptual framework of rights as rights of identifiable individuals. The planetary, or intergenerational, rights proposed in *In Fairness to Future Generations* are not rights possessed by individuals. They are, instead, generational rights, which must be conceived of in the temporal context of generations. Generations hold these rights as groups in relation to other generations--past, present and future. This is

consistent with other approaches to rights, including the Islamic approach, which treats human rights not only as individual rights, but as "rights of the community of believers as a whole."³⁰ They can be evaluated by objective criteria and indices applied to the planet from one generation to the next. To evaluate whether the interests represented in planetary rights are being adequately protected does not depend upon knowing the number or kinds of individuals that may ultimately exist in any given future generation.

Enforcement of these intergenerational rights is appropriately done by a guardian or representative of future generations as a group, not of future individuals, who are of necessity indeterminate. While the holder of the right may lack the capacity to bring grievances forward and hence depends upon the representative's decision to do so, this inability does not affect the existence of the right or the obligation associated with it.

Now it may be argued that such rights do depend upon knowing at least the number of individuals in the future, because if the earth's population continues to grow rapidly, the amount of diversity and degree of quality that must be passed on will be higher than if the population in the future were at the same level or less than it is today.

But, if anything, the existence of these generational rights to the planet may constrain the population policies of present and future generations. Whether a generation chooses to meet its obligations by curtailing exploitation, consumption and waste or by constraining population growth is a decision it must make. The fact that future generations have a generational right to receive the planet in a certain condition puts constraints on the extent to which a present generation can ignore this choice.

The second part to Professor D'Amato's argument is that if we intervene to conserve the environment to protect future generations, we cannot succeed in protecting them because our intervention will cause a different group of individuals to emerge. But since the rights of future generations exist only as generational rights, it does not matter who the individuals are or how many they may be. Only at the point where the individuals are born and by definition become members of the present generation do the generational rights attach to individuals.

Professor D'Amato's response is that "[f]uture generations are not an abstraction; they consist of individuals." But they do not consist of individuals until they are born, and hence it is necessary and appropriate to speak of future generations qua generations as having rights in relation to the planet.

Professor D'Amato correctly points out that the composition of future generations cannot be known in advance, in part because it is affected by actions of the present generation. Indeed, he does not make his own case as strongly as he might. For example, we do not need to limit ourselves to ascribing these effects to subtle changes in the biochemistry of conception, as Professor D'Amato does in his amusing excursion into the dynamics of egg and sperm.

Virtually every policy decision of government and business affects the composition of future generations, whether or not they are taken to ensure their rights under the guidelines enunciated above. Decisions regarding war and peace, economic policy, the relative prosperity of different regions and social groups, transportation, health, education--all influence the demographics and the composition of future generations by affecting the lives and fortunes of the present generation: who will succeed and prosper, who will marry whom, who will have children, and even who will emigrate.

In *Fairness to Future Generations* takes the view that our planetary obligations to future generations are owed to all the earth's future human inhabitants, whoever they may be. This opens the possibility that these decisions, too, deserve to be scrutinized from the point of view of their impact on future generations. Professor D'Amato's approach reflects an unnecessarily constrained view of human rights law that would shut off a useful and broadly acceptable theoretical underpinning to sustainable resource development. The possibility that intergenerational equity may place limits on our actions is an important new area of human rights research.

Such limitations should be applied very narrowly, lest the rights of future generations develop into an all-purpose club to beat down any and all proposals for change. But surely long-term environmental damage is a good place to begin. Future generations really do have the right to be assured that we will not pollute ground water, load lake bottoms with toxic wastes, extinguish habitats and species or change the world's climate dramatically--all long-term effects that are difficult or impossible to reverse--unless there are extremely compelling reasons to do so, reasons that go beyond mere profitability.

Professor D'Amato invokes chaos theory to justify his contention that any environmental intervention will produce different individuals in the future than would otherwise have been produced. But he overlooks the most important implication of chaos theory for the environment and for future generations: namely, that systems do not proceed on orderly, linear paths of change, but rather that they will abruptly change.³¹ This can be demonstrated on a home computer, using a very simple program. It has been suggested that there may be key breaking points in our global environmental system, beyond which systems will reorganize and substantially change their properties. If we are concerned about future generations, it is important to try to predict these breaking points. More importantly, the

best tool that we could give future generations to respond to abrupt changes and reorganizations is a robust planet, which requires conserving a diversity of resources so that future generations have greater flexibility in designing responses.

Professor D'Amato proposes that there is a "pre-verbal sense of morality" that tells us not to waste resources, degrade the environment or wantonly kill animals. But, if anything, history in the last few centuries suggests that our natural instincts are self-indulgent. We have desecrated environments, wasted resources and slaughtered animals purely for pleasure or for modest personal gain. It may be that the human species carries both a selfish gene and an altruistic one, as the sociobiologists tell us, but it is hardly sufficient to rely on the generous gene to build a theory of morality to overcome the selfish genes, without more.

In Fairness to Future Generations relies on a fundamental norm of equality among generations of the human species in relation to the care and use of the natural system. But it recognizes that we are part of the natural system and that we, as all other generations, must respect this system. We have a right to use and enjoy the system but no right to destroy its robustness and integrity for those who come after us.

Whether we rely on a beneficent "proverbial sense of morality" toward the planet and its resources or on theories rooted in the welfare of the human condition and the ecological system of which people are a part, there is a shared recognition that the present generation has an obligation to care for the planet and to ensure that all peoples can enjoy its services.

4. Rejoinder³²

Professor Weiss chides me for failing to make the argument that I made. She says I did not make my own case as strongly as I might, because "virtually every policy decision of government and business affects the composition of future generations." I did in fact argue that although every policy decision of government and business surely affects the composition of future generations, we are nevertheless entitled to examine each and every one of those policy decisions from a moral point of view. If some are immoral, we reject them for that reason alone. If others are asserted to be morally required solely because they will benefit future generations, then it is just those policy decisions that are subject to the Parfit rejoinder: if you undertake a policy decision only to benefit future generations, and that is its *only* "moral" justification, it is not morally justifiable at all because it destroys the very persons you claim to protect.

Professor Weiss says she is talking about group rights, not individual rights, when she talks about future generations, and hence the composition of the group does not matter too much. The reader can decide whether, if every single member of group A is wiped out and replaced by someone else, we are still entitled to call it "group A" and claim that at least the "group" has been preserved.

Professor Weiss criticizes my "pre-verbal sense of morality." She interprets it as calling for a return to "our natural instincts," but not everything that is pre-verbal is instinctual. Our sense of similarity (judging what objects are similar to others) is something we develop prior to learning the language--and may indeed be a prerequisite to language learning--without being a matter of instinct. I suspect that much of the grounding of our developed sense of morality comes from thousands of observations of situations that we analyze morally on the grounds of their similarity to other situations. Sometimes we confuse ourselves trying to reduce our sense of morality to verbal formulas. I am arguing that we should be truer to ourselves, to not get misled by the tyrannical hold that words can have on our thinking processes, to look without verbal rationalization into our human condition and to see how connected it is to other people and to animals, plants, and the natural environment. If we can strip away the layers of misleading theories that have justified man's inhumanity to man and man's inhumanity to animals, we may be able to get closer to our root sense of bioethics. If this must be called "our natural instincts," then I'm in favor of it.

B. International Environmental Ethics³³

But even if we suppose there is some core of international morality, it does not take us very far. A moderate realist will grant that we can identify familiar moral principles which, by easy extension, condemn as evil the torture of prisoners or the rape of civilians. The problem at hand is much tougher because it lacks any well-chartered foundation in domestic moral literature: for example, in urging protection of the biosphere, to what moral principles can a global moralist refer?

There are, in fact, two distinct types of moral questions relevant to biospherical degradation, each of which raises a fundamental philosophical challenge.

The first task is to identify a shared *international-morality-in-respect-of-the-environment*. To put it simply, if the nations of the world are to cooperate in the reduction of globe-hazarding substances or the protection of species, how are the burdens of those actions to be apportioned?

The second task is no easier: putting aside the conflicts that divide nations from one another: *What are the obligations that humankind, as a whole, owes to the rest of the natural world?*

To illustrate the difference in outlook, the first question could be illustrated thus: If whales are to be protected, have traditional whaling nations any claims for compensation from nations rich in cattle and grain? The second question is the deeper underlying one: Has humankind any duty to whales to begin with?

I will deal with these two questions, in turn.

Global Justice in the Environmental Context

The questions of the global environment would be hard enough to resolve if the required division of wealth and responsibility were to take place under the most ideal conditions we can imagine: in a world of nations virtually equal in wealth and power, their relations unclouded by any prior history of hard dealings, in circumstances of such abundance that each appropriator could be imagined to be leaving (in John Locke's phrase) "enough and as good for others." In our time, proposals for divvying up the remaining commons and imposing costs for upkeep of the remainder are met with continuous reminders that if so ideal a garden ever existed, we have long since vacated it.

The most outspoken of the "reminders" have been the underdeveloped countries, most vocally the Group of 77 nations (G-77),¹⁴ said collectively to represent 70 percent of the world's population but only 30 percent of its income. Their mood still finds its most authoritative expression in the U.N. General Assembly's 1974 Declaration on the Establishment of a New International Economic Order (NIEO). NIEO declared the principle of each nation's "full permanent sovereignty . . . over its natural resources and economic activity." The phrase was originally understood as a denunciation of exploitation by others, but today the other side of the coin is considered equally significant and continues to cast a shadow over agreements on bio-diversity and forests: the sovereign right of each nation to exploit its own timberland and ecosystems without denunciation or interference by others. At the same time as the LDCs stress their sovereign independence, they insist that the developed states acknowledge a duty to reduce the material disparities in wealth.

For many Third World leaders, the emphasis on moral duties and rights is critical. In the words of former President Julius Nyerere of Tanzania: "I am saying, it is not right that the vast majority of the world's population should be forced into the position of beggars, without dignity. . . . The transfer of wealth from rich to poor is a matter of right; it is not an appropriate matter for charity." Casting arguments for assistance in terms of "rights" is not only a sop to Third World pride, it rebukes the rich not to pressure the poor to accept conditions on the transfer of wealth--conditions such as reform of land and population policy, or the elimination of human rights violations.

While division of and responsibility for the commons have not constituted the principal focus of the NIEO (the same issues would have been raised had there been no unapportioned areas, but only bank debts), the new egalitarianism surfaces in whatever forum commons issues are presented. In the LOS negotiations, egalitarian agendas provided a continual source of contention in the context of forming an ownership regime for seabed mineral deposits. The United Nations, well aware that only the wealthy nations have the technological and financial wherewithal to mine, voted that the seabed, ocean floor, and subsoil were part of the "common heritage of mankind," not subject to appropriation by anyone or, indeed, even open to exploitation activities pending establishment of an international regime.

The dissension over the seabed wealth that was so vocal in the 1960s and 1970s came to be echoed in space. Here, too, it is the most developed nations that have the wealth and technology to grab the choice orbital "parking spaces" for geosynchronous orbits and frequencies. If traditional international law principles apply, they will get ownership of the choice slots on the same basis that the European naval powers once were awarded title to the Americas and other lands "uninhabited by Christian people"--by becoming the first humans to occupy them--"native" populations not counting. Understandably, just as in the oceans context, in space, too, it is the more numerous, less developed nations that seek to construe the distributional question to be one of "equitable access to frequencies . . . a natural resource of humankind."

The same sentiment has surfaced in the debates over the Antarctic. The Malaysians have denounced the treaty system worked out among the nations that discovered and explored the continent as "an agreement between a select group of countries that does not reflect the true feelings of the Members of the United Nations or their just claims. . . . Henceforth all the unclaimed wealth of this earth must be regarded as the common heritage of all the nations."

It should be added that recent estimates have downplayed the near-term commercial value of much of the commons wealth. So far as resources are concerned, an overburden either of ice or sea or, in the case of outer space, sheer distance makes the logistics of extraction and transport intimidating.

At the same time, the other side of the coin--how to pay for the upkeep of biodiversity, greenhouse blanket, ocean cleanliness, etc.--has only escalated in practical significance. If ozone-depleting agents and GHGs have to be

restricted, how should the costs of the efforts be split?

Rights and Claims of Justice

Politicians and diplomats are free to talk, as Nyerere did, in terms of absolute rights and duties. But if those demands are to have any moral appeal, one ought to know more about the basis on which they are grounded. The most useful entree is probably through the conventional distinction (it traces to Aristotle) between corrective justice and distributive justice. Questions of *corrective justice* are precipitated by blameworthy acts. In the familiar context of ordinary interpersonal conflicts, Al has wronged Barbara, either to Al's benefit or to Barbara's injury (or both). Corrective justice deals with what Al must do morally to set the situation aright: for example, to give up his ill-gotten benefit or compensate Barbara for her injuries. *Distributive justice* deals with obligations that arise not from what anyone has done to someone else, but from situational disparities. There is simply a discrepancy between Al's position and Barbara's position (in wealth or power or some other good) that exceeds defensible bounds, and redistribution is said to be in order independent of either side's blame.

The global environmental movement has provoked both kinds of justice claim--on a grand scale.

Corrective Justice

Most commonly, demands for corrective justice in the international arena take the form of LDCs insisting on some recognition for injuries they allegedly suffered during (and & from) colonial domination. Nigerian Chief Moshood Kashmowa Abiola has been pressing for white people in the United States, Europe, and the Middle East to repay Africa for damage done in the slave trade.

In the environmental area, corrective claims of a different sort are arising. Consider India's demand that the developed nations compensate her \$2 billion as a precondition of signing the Montreal Protocol on the grounds ``that since it is the Western nations that caused the ozone depletion, it is their moral responsibility to transfer technology for CFC substitution." The developed countries are to blame; they should pay what it will cost to clean it up.

The Moral Dimension

I have been stressing biospherical degradation as it appears from the viewpoint, largely, of the law, with some recognition now of a cultural and spiritual backdrop. But a comprehensive perspective on control efforts requires a synoptic vision that adds the viewpoint of morals. Indeed, law, where it is to be effective, has always to draw on morals. But this interdependency of law and morals is especially crucial in the area of international cooperation.

In part, the special burden that morality must carry in the international field owes much to the absence of a strong central world government with powers, ultimately, of coercion. Treaties can and do raise the specter of sanctions. But in the near foreseeable future we cannot expect even the most muscular treaty-made law to be backed by the familiar threats that domestic law deploys against polluters, such as criminal fines, punitive damages, much less imprisonment of serious wrongdoers. In fact, as we saw, it is likely that the more effective and threatening the drafters of a proposed convention make its legal sanctions, the dimmer will be its prospects of widespread ratification.

All this makes cooperation in the international arena all the more dependent on a feeling of rightness than on force. There is no world body with power to force a nation to protect its wetlands. To secure its cooperation, all the outside world has at its disposal is the threat of informal sanction--of labeling the noncooperator a bad world citizen; that and, one would hope, a shared sense that the world community's action in demanding wetlands conservation was morally justified--or, at least, *not unjust*.

But criticizing national behavior morally raises some tough questions. To begin with, there is a whole school of thought in international relations that denies that moral terms such as ``just" and ``right" have any application in this context. Realism takes many forms, from Hume and Hobbes to Hans Morgenthau, but the common elements are essentially (1) that global relations are international relations, predicated on the nation-centered system, and (2) that when nations conflict in the global arena, their actions are beyond good and evil, or (what amounts to the same thing) that any ``right" that can be spoken of comes directly down to ``might" and self-interest.

My own view is that realism exaggerates, somewhat--and distorts the real issue. No one is so naive as to suggest that there is a substantial catalog of moral imperatives so overwhelming that each nation should, much less will, subordinate national self-interest to it in all circumstances. (Few moralists claim many overwhelming and unexceptionable edicts in ordinary human intercourse.) The real question is whether there are not at least some moral considerations (over and above calculations of national advantage) that ought to enter into policymaking at least some of the time. I believe that evidence of such an international morality is, although not routine, not rare either.

One can intuit some force to the Indian claim. But putting a persuasive moral foundation under it is more

difficult. To begin with, the advanced nations' development of air conditioners and halon-using fire extinguishers is not quite comparable in blameworthiness with fostering terrorism or waging aggressive war. It is not clear how principles of corrective justice apply to the unintended consequences of acts that are not themselves morally culpable. Kant's general solution to the question of international morality (in *Perpetual Peace*) was: "All actions relating to the right of other men are wrong" if their maxim is not consistent with publicity. Roughly: "If you are a statesperson contemplating a public act that you cannot publicly acknowledge . . . without arousing everyone's opposition, it isn't moral and you shouldn't do it."

Kant's test is not bad as a rough and ready guide, even to this day. It applies easily to flagrant wrongs, such as torturing prisoners and, more in our context, the dumping of precariously packaged radioactive or toxic wastes in inhabited areas. The test also has the virtue of an application that expands with the growth of environmental consciousness; heads of state are not as prepared as they once were to openly stand behind drift-netting and elephant-poaching.* But it is of less help where we need guidance most: in regard to the broad range of more subtle or at least more ambiguous insults to the environment, such as deforestation in order to provide needed farmland. After all, heads of state have commonly been well prepared to stand behind many environment-affecting actions on the basis not just of naked sovereign prerogative, but of higher moral need. And in the specific illustration of India and CFC congestion, it is fairly clear that, given our collective ignorance about the perils, no head of state or anyone else would have disavowed the uses of CFCs during the buildup from the 1930s through the 1980s.

There is another argument that countries such as India might raise in favor of their position—if they would endure appealing to an English philosopher. It is, after all, John Locke to whom the developed world naturally looks for a moral defense to the rule that ownership of things held in the common (such as the fish of the sea, the acorns of the forest) is awarded to the "first occupant." Locke maintained, however, a less well known proviso to that principle—that the first appropriator's title holds only as long as the appropriator leaves "enough and as good for others." In other words, if there is an abundance of fish, so that the fisher leaves for others all that the others can use, there is no quarrel with his taking fish from the common pool.

But how does Locke apply in our real world, in which consumption is so often rival (more for me means less for you)? It is open to India to argue that the proviso dominates, and that over the past two centuries the industrial world has been congesting the atmosphere—"taking" its safe-range absorptive capacities without leaving, in Locke's phrase, "enough and as good for others." Along these lines, the Third World might draw from Lockean thinking a basis for corrective justice claims against the developed countries.

But even if we credit the strength of this line of argument, it runs into peculiar problems in application to nations. It is hard enough to say how corrective justice applies among ordinary mortals in ordinary family and neighborhood relations. But in this context the questions multiply. Even if we assume that nineteenth-century American slave traders injured nineteenth-century Africans in the slave trade, it is far less clear that modern-day (white) Americans are obliged to repay modern-day (black) Africans much less how any payment would be measured. If contemporary Britishers are under a moral obligation to make reparations to modern-day Indians for injuries done in colonial rule (even though colonialization was in keeping with the then accepted norms of the world order), may the British offset India's claims by the value of infrastructure received by India, including a common language, nationwide system of law and administration, and so on? Can an activity as well motivated (but ultimately harmful) as the manufacture of air conditioning units give rise to claims that carry from one generation to the next?

I emerge from these considerations unpersuaded that there is any body of universal corrective justice with a morality detailed and thick enough to govern global conflicts on its own terms; there may well be—I believe there is—a substratum of international morality, but rather than being self-executing, it requires continuous appeal to conventional norms embodied in legal rules and treaties. In other words, nations are obliged to deal justly with one another, but in any concrete circumstances we cannot specify the justness of their expectations except against a background of preexisting rules—rules of trade, of warfare, even, more recently, of the environment. The better formulated of these rules embed their own corrective justice formulas, specifying under what circumstances, and in what amounts and ways, reparation will be owing. But absent such rules, the filaments that relate nations across the globe appear too thin, and the expectations are too nebulous or scattered by conflicting moral codes for us to construct extensive and detailed guidance from the raw materials of any moral theory.

Distributive Justice

The distributive justice claims are appearing in the environmental context even more ubiquitously than those for corrective justice. That is because most of the controversy today focuses less on recrimination for past wrongs than on preventive measures to reduce degradation in the future. Unfortunately, the conflicts that arise over burden-sharing are particularly hard to mediate. The Law of the Sea negotiators had a tough enough time figuring out how

to divide the anticipated (and one would now say, exaggerated) new wealth that was to be drawn from the oceans. In the pollution-oriented treaties, the negotiators are faced with offering everyone a smaller cut of the pie.

Most would agree that to cut the pie justly is to do so fairly. But what is "fair" in this context? One view of fairness is that it demands *equality of effort* to reduce pollution. But do we have equality of effort when each nation has expended the same sum on abatement efforts: \$1 billion per nation? Or does fairness require the same percentage of each nation's GNP? Or installation by each nation of its "best available" technology?

On the other hand, the equality could be understood as an equality not of effort but of *outcome*. But outcome is ambiguous also. Some would say that the fair outcome is an equal reduction in units of emissions: every nation cuts back 100,000 tons. But if that is the process, the nations with the highest historical baselines will continue to outpollute the less developed nations--and maintain, "unfairly," their economic edge. Those who press for fair outcomes might therefore choose to aim for an all-things-considered outcome: each nation should put in so much effort at pollution control until we all have not an equality of emissions, but an equality of wealth or of opportunity or at least of some fundamental baseline index that assures a floor of adequate food, fuel, clothing, and the like.

The difficulties of sorting through these competing standards of "fairness" to find the morally right one is frustrating. And that frustration, in turn, provides a major boost for the various market solutions, which advertise the "unseen hand" of the market as rescuing the human mind from hard choices. Various schemes for marketable pollution allowances are a prime example. But most of the market-trading literature deals with the techniques and benefits of trading. It assumes someone else has provided an answer to the threshold question: How shall we assign the original entitlements, the starting point from which the trading begins to operate? Is the right to pollute a personal right of each member of the human species, to be handed out per capita? Or is it a geopolitical right, to be allocated, like a vote in the U.N. General Assembly, evenly among nations? The snag with the first alternative is that it undermines incentives to control population* and is theoretically obscure, anyway: Should each person on earth have a pro rata right to the globe's reserves of oil, fish, timber, and farmland? The problem with the second alternative is that to divide pollution entitlements evenly among nations would give the tiniest nation the right to pollute as much as the largest. Do we take the status quo as a starting point, so the rich can fortify the advantage they have gained over the poor, at the poor's expense? And so on.

These are not questions of economics, but, unavoidably, of ethics. Indeed, in any social philosophy, the just distribution of entitlements--of power, wealth, office, opportunity--is among the hardest, most foundational issues. The stakes are all the more momentous when applied on a global scale, but all the more problem-ridden too. Moral philosophers have their hands full warding off skeptics who charge that ordinary moral discourse is at bottom "meaningless." Philosophers who want to apply moral predicates on the international plane--to say that some international acts are "good" and others "evil"--face additional challenge from the realists, above, who maintain that even if moral discourse is intelligible generally, acts of state are beyond its purview. And then there is another tier of challengers, "reductionists" who mount not a moral but an even more fundamental metaphysical assault on the evaluation of national conduct. Persuaded that "states do not act, only people do," these critics never even reach the question whether the actions of states lie beyond good and evil, since there are in reality no *state* actions to evaluate. The notion of a state acting, rightly or wrongly, is simply incoherent. Only individuals act and are acted upon, have interests to advance or frustrate, can be praised and blamed.

The Contemporary Philosophical Background

Defending the global environment will cost huge sums of money. The burdens, particularly of maintaining the commons areas, have to be somehow distributed. It is hoped that they can be apportioned according to some notion of justice. But what does justice demand? In what circumstances does it apply? And between whom--or what--do claims of transglobal justice run--nations or people?

The contemporary reference point for these questions has become John Rawls's monumental *A Theory of Justice*. But in our area of inquiry Rawls's ambitions were uncharacteristically bridled. He drew a sharp line between the principles of justice that prevail among persons within a society, about which he had much to say, and "justice between states," which he considered to be much thinner and less pregnant. The entire subject of international justice, which I believe will be the great philosophical issue of the 1990s, Rawls touched upon in 1971 only indirectly in the course of illustrating conscientious refusals of citizens provoked by differences over foreign affairs; the entire treatment of international justice was thus disposed of in less than three pages too obscurely to rise to his indexer's attention.

The short shrift given global justice by Rawls flows in part from the times and in part from his conception of how principles of justice are established. He asks us to imagine ourselves as part of a hypothetical negotiation among all members of society at the time they came together into a social union. All the negotiants are assumed to

be predominantly interested in their own welfare, but are to imagine themselves hammering out the society's ground rules unaware of the particulars of how their lives will unfold. No one knows whether he or she will turn out to be a man or a woman, poor or rich, talented oboist or mentally retarded. The idea of laying down the framework from behind such a "veil of ignorance" is that, not knowing our gender, race, and so forth, we will vote for rules that are gender and race neutral—"fair," in the sense of not narrowly self-serving, and therefore "just."

Rawls maintains that, among other choices, the negotiators would agree on a set of rules reckoned to produce an equal distribution of primary goods. But there is a caveat that Rawls calls the Difference Principle. Unequal distributions are legitimate to the extent that the rules that permitted the inequalities to evolve make the least well off better off than they would have been without the rules. In other words, rules and institutions that make everyone better off are acceptable, even if some people emerge with more pie than others, as long as they maximize the welfare of the minimally well off.

The implications for international society could be weighty. To defend the rules of international trade or the concentration of carbon-belching industry in the industrialized North, an American might argue that although the underlying rules and practices that countenance them (those of international trade, banking, etc.) leave great disparities in wealth, they nonetheless operate to make even the least fortunate in Bangladesh better off than they would be otherwise—without those rules. That, at least, is how the argument goes. But can we really say with a straight face that if we were to surrender bits and pieces of our high technology opulence, the bottom would fall out of their jute and copper markets? The NIEO evidently thinks otherwise, that the practices which sustain existing disparities are simply stacked for the North, without any absolute measurable in long-term benefits to the least well off (or possibly even in the average welfare globally).

Who is right? If one is willing to accept that the international order is based upon sheer power, then the question of "right" does not enter and it is simply going to come down to our armies versus their terrorists. But for those who take morals seriously (who want the international order to be built on something beyond sheer power plays), the questions of justice are vital: Need the developed world defend existing practices by justifying them with some sort of Difference Principle defense?

Ironically, Rawls himself did not think so. He conceived his "veil-of-ignorance" thought experiment, above, to apply only to persons engaged in "a cooperative venture for mutual advantage" in a "self-contained community." Rawls felt that the relations among people within each nation met the standards of cooperative interchange, but that the quality and extent of interaction among nations themselves did not.

In consequence, on Rawls's view the principles of justice that prevailed internally stopped at national boundaries. While there were principles of international justice, they were special and limited. The rules are those we would get if, after the members of each nation had worked out their inward-looking justice principles, a second convocation of national leaders were held. The national leaders would have to imagine themselves behind their own veil of national ignorance, knowing that they represent nations (in principle) but unaware of whether they represented a big country or small, a naval power or an LDC. Rawls imagined that the results of this convention would produce "no surprises"; "the principles chosen would be . . . familiar ones" such as can be found in standard international law texts, such as norms touching nonaggression, the sanctity of treaties, the laws of warfare, and so on.

The passage regarding international justice commands so little space in *A Theory of Justice* that it was generally neglected by most of Rawls's commentators. But a few critics, catching the significance, lamented the fact that Rawls has nothing to say about population control, resource redistribution, division of the commons wealth, or the global environment. One of the principal critics was Brian Barry, who took Rawls to task for not pursuing the implication of a veil of ignorance to its logical conclusion and, in effect, globalizing the difference principle.

To dramatize what such a globalization would look like, Barry asks each of us to suppose "that you were a random embryo," and to ask ourselves:

What kind of world would you prefer? One, like the present one, which gives you about a fifty-fifty chance of being born in a country with widespread malnutrition and a high infant mortality rate and about a one in four chance of being born in a rich country, or a world in which the gap between the best and the worst has been reduced? Surely it would be rational to opt for the second kind of world; and this conclusion is reinforced if we accept Rawls's view that an element in rationality is playing safe when taking big decisions.

The approach is provocative. If we did not know how things would come out—whether we would wind up flourishing in the United States or (with much higher probability) struggling in the Third World, what sorts of rules would we vote for?

To start with one of the less world-shaking ramifications, but one relevant to the global environment, my guess is that most people would not vote to institutionalize the widely advocated entitlement of each nation to its pro

rata share of allowable carbon emissions based on population. If there are (as there would have to be) appreciable costs to trading, such a rule makes no sense. To see why, recall for a moment that farmland is a valuable global resource, too. Imagine a proposed rule that would allocate rights-to-farm among nations. Canada and the United States would be prohibited from harvesting more grain per capita than Kuwait and Bahrain. (Another rule would prohibit Kuwait and Bahrain from producing more than their per capita share of oil.) Assuming that there were costs to arranging the purchase of Kuwait and Bahrain's rights to grow crops and the sale to them of other countries' rights to produce oil, such a rule would yield less food and oil than is produced currently--hence, less real wealth for the world. There is no reason to suppose that it would make the least well off in the world any better off--if that is the test.

Now, the same thing seems true of national pro rata carbon permits. Just as the global negotiators would know (for their "veil of ignorance" does not deny them access to a good world atlas) that some nations would have comparative advantages in farming and others in oil production, so, too, some nations, on account of access to harbors and trade routes and early forms of energy, would develop into the most efficient industrial centers. Imposing special limits on each nation's "fair share" of fossil fuel use would not maximize global wealth within the constraints of climate safety. It would make no more sense than imposing national quotas on farm or oil production.*

But that does not mean that the negotiators would endorse the world as it is. It is in fact hard to imagine that the original international contractors would not agree upon some redistributive principles.

Charles Beitz, one of the most thoughtful of Rawls's commentators to take up this question, begins by distinguishing "two elements that contribute to the material advancement of societies. One is human cooperative activity itself, which can be thought of as the human component of material advancement. The other is what Sidgwick called 'the utilities derived from any portion of the earth's surface,' the natural component." Then, focusing on the nation's natural resource endowment, Beitz likens it to an individual's talent, that is, "arbitrary from a moral point of view." Hence he regards a nation's natural resources as readily and fully subject to redistribution on the view that one's "natural capacities" are a part of the self, "in the development of which a person might take a special kind of pride." From this, Beitz argues that even if we were to go along with the assumption that nations are self-sufficient, principles of resource redistribution from resource-rich to resource-poor nations (a correction for this morally arbitrary lottery) is surely "a subject that would be on the minds of the parties to the international original position."

I find this analysis forceful but not convincing, however. Why should natural resources or the benefits derived from them be subject to redistribution, rather than to focus redistribution on other indices of inequality such as total wealth or primary goods, or (Sen's suggestion) primary powers? One would think all of these can vary from country to country in ways that are no less morally arbitrary from the perspective of the "random embryo" and probably more directly influential on the life she will lead. Further, by choosing natural resources (rather than wealth) as providing the pot for redistribution, Beitz's justice has the odd implication of underwriting a transfer payment from resource-affluent Zaire to resource-poor Japan.

Indeed, the emphasis on resources (as distinct from the human component of a nation's wealth) seems increasingly incoherent the farther civilization has progressed. That is, at the beginning of civilization, the resources each group found under its feet might have been, as Beitz suggests, a matter of moral luck, utterly arbitrary. But once, crossing straits and mountains, people moved to and from resources, learning to exploit some and wasting or overlooking others, untangling wealth into two components is not just hard; it may not be intelligible. Consider an LDC's uranium or platinum or even diamonds. Are we to assign their values to nature--to the worth of the minerals in the ground?--or to the highly organized human activity of the advanced scientific and opulent nations, without which the minerals would lack any appreciable commercial market, would be at best pretty baubles? What would Saudi oil be worth, were it not for the invention of the internal combustion engine and the freeways of Los Angeles?

I doubt therefore that a justice conference would yield a rule of resource redistribution. My guess is that two sorts of rule--perhaps in the alternative or in some combination--would emerge. The first would be some unconstraining of boundaries. If we did not know where we would be born but were aware that conditions could vary radically, we would probably consider open (or more easily permeable) borders a condition of a just world order. I say probably, because it is not a sure thing. Each of us would have to weigh the prospect that we might find ourselves living in a community we found pleasant, but which would be, under an open-borders rule, subject to being disturbed if not overrun by others.

The second sort of rule would look beyond indirect indices of wealth such as carbon use or resource endowment as a reference for welfare-leveling and let's face it--pen up wealth itself. A wealth-regarding redistribution would not entail a global wealth-leveling tax, however. There are two reasons. First is the traditional argument that a highly progressive tax (one that sought to level post-tax welfare) would erode incentives and

therefore be rejected on the grounds that it would imperil wealth on average.*

The other constraint on a wealth-leveling tax is more subtle--and has more general application for us. To understand it, let me go back and question Barry's position that, to create the original (international) position, we imagine ourselves in the position of a fetus not knowing where it will be born. We might better imagine ourselves coming together as normal adults, not knowing where we will have been born, but knowing that, in principle, we will have evolved mature tastes, settled into an established pattern of living, and so on. We each have to weigh the risks of a sudden radical restructuring in midlife, perhaps upward, perhaps downward, depending on (what is unknown to us) the circumstances in which we will find ourselves, compared with the rest of the world. I raise this alternative because there is reason to believe that across a broad margin of wealth the risks of increases and decreases of equal magnitude are not valued symmetrically.* Losing a buck is somehow worse.

This asymmetry has two interesting implications for us. First, it suggests that if Rawls's justice principles are to be applied (contra Rawls) transglobally, the original contractors, coming into the negotiation rationally worried about the prospect that they might be caught up in a radical downward shuffling of wealth, would be likely to temper the leveling potential of a Difference Principle with side rules that insure against highly dislocating changes. I imagine that those rules would look much like the rules legal systems across the world embody in periods of limitation. The state cannot try a person for theft, or you cannot eject a trespasser who moved onto your land, twenty years later. All such rules recognize the value we attach to leaving expectations, even "wrongful" ones, undisturbed.

Indeed, the neo-Rawlsian negotiators might well emerge with some "entitlements" which, while perhaps not quite so unyielding as his nemesis Robert Nozick's, would nonetheless impede changes in established practices that have operated perhaps "unjustly" over time, but on which people have relied. For example, the advanced nations might justifiably argue something like this. We are not saying that we necessarily have a right to continue polluting as much as we have been. But just as a person who, after walking across a corner of his neighbor's lawn every day for twenty years to get to his garage gains a prescriptive easement in the pathway (a right to continue the use), so, too, some recognition has to be given to our settled expectations and the high costs of disturbing existing patterns of behavior. What I am suggesting is that the notion of a partial easement to pollute is not at all far-fetched. It may be exactly what original negotiators, operating from behind a veil of ignorance, would have agreed to as "just."

Second, I think that the same analysis reinforces my argument for a Global Commons Trust Fund. Imagine that the original negotiators foresee that some redirecting of wealth may be required. They know, too, that they will be risk-averse to a sharp decline in life-style should a course correction have to be made in their generation. It seems to me that before they would agree to a rule exposing established wealth and income streams to a global tax, they would expose the "new" unallocated wealth of the commons areas first. To illustrate, if \$1 billion had suddenly to be provided to clean up oceanic radioactive wastes, my guess is that they would prefer the sum to come (to the extent available) from auction of satellite slots than from a surcharge on national taxes.*

Before leaving this discussion of international justice, there is one last idea I want to toss out--not as a final solution, but as a candidate for further discussion. Essentially, if justice calls for a virtual pooling of the world's wealth (even allowing for some mitigating side rules) it demands too much to be acceptable outside the classroom or pulpit. But international justice need not demand such a far-reaching reshuffling of wealth. Let us go back and follow Rawls in grounding justice in the gains of social cooperation (rather than to emphasize the social contract behind a veil of ignorance). One could understand this to mean that once Nations *A*, *B*, and *C* reach a particular threshold or quality of social interrelationship, from there on justice demands a thorough pooling of *A*, *B*, and *C*'s total resources or other assets: if *C* flags, *A* and *B* have to dig into their pockets however far is required to satisfy the principle of maximizing the welfare of the least well off.

But we could also understand talk about the social gains from cooperation to imply something else. *A*, *B*, and *C*, independent in some undertakings and interdependent in others, might contribute to the common fund subject to redistribution only the gains derived from their social cooperation, withholding from one another's claims any wealth that is not the fruit of the interdependency. In other words, on this conception, justice would function somewhat like a commercial limited partnership.

To illustrate, suppose that *A*, *B*, and *C* are three neighboring coastal states, each with its characteristic wetlands, shorelines, fishing tastes and traditions, and so on. As a physical matter, without cooperation *A* *could* take from its territorial waters 10 tons of fish in the current year, *B*, 20, and *C*, 30. Of course, if any one of them seizes its maximum, the share remaining for all will decline over time in some indeterminate way. Contrariwise, if each takes less than the maximum it can land in the present year, the share available to each will gradually grow. Let us suppose that there are several far-reaching options that will, over time, stabilize the catch at up to 100 tons per year--a gain of 40 tons over the 60 that the free-for-all would yield. Achieving this maximum would require a certain amount of cooperation, however, as to seasons, seine size, maintenance of areas for spawning, and so on.

While such measures could increase the sustainable yield, because the species migrate and any arrangement will shift the ecological balance, no one can be sure exactly how the gains from any agreement will be distributed off each nation's coast. All they know is that the optimal management and harvest of the region will benefit each, but not each equally. In these circumstances a treaty that attempts to fix tonnage allocations in advance may be unfeasible.

Instead, it is tempting to follow Rawls and suppose that each nation will want (and ought justly to receive) an equal voice in the distribution of roles, offices, responsibilities, and opportunities of the fisheries management. Moreover, while they recognize the likelihood that unequal benefits may accrue over time, none should be allowed--or can morally demand--to extract from their mutual efforts a benefit not required by features of the arrangement that operate to the advantage of the nation least advantaged. In essence, this is to recognize some sort of Rawlsian "difference principle" as a requirement of justice.

A closer examination than I can engage in here, drawing on coalition analysis and game theory, would appear to suggest that Rawls's own notion of a difference principle is more underdetermined than conventionally observed. But there is no need to over-worry the fine details. The point to take away is simply that while there is a range of "just" solutions within Rawls's constraints, the "kitty" that *A*, *B*, and *C* subject to the justice principles could well be the gains (variously measured) that derive to each from the socially cooperative arrangement. If the catch at its most aggressively--even strategically--competitive circumstances would fall to 60 tons and undercooperation rise to 100 tons, then perhaps 40 tons are subject to redistribution (depending on time frame and adoption of the ordinary self-interest or the threat-point baseline), not necessarily the full 100 tons, much less *A*, *B*, and *C*'s total national resources.

Observe that the same sort of "justice" analysis could be introduced into negotiations over climate change, ozone shield, and other problems. One guiding ideal could be to distribute burdens not in proportion to national wealth as such, but to the benefits each nation could be expected to derive from the proposal at issue.*

It is instructive that thus far none of the major international environmental accords has attempted even to approximate any such theoretically fine-tuned solution to the distributive justice tensions. As a response to wealth differentials, the Montreal ozone negotiators simply deferred the compliance schedule for less developed nations, defined for these purposes as countries whose annual level of consumption of controlled substances is less than 0.3 kilograms per capita. There is also a proviso allowing an increase of up to 10 percent for less developed countries that need that amount to satisfy "basic domestic needs," as well as provisos for some "trading" of rights for nations at the lower end of the development scale.

Treaty-makers are not academics. (We would almost certainly not have had the ozone accords if they were.) Their job is entirely practical, and when distributive claims are aired the negotiators are inclined to forge compromises in rough and ready and largely intuitive approximations of what "justice" might require--particularly if there is no clear and persuasive argument that a practically achievable agreement is palpably *unjust*. And indeed, if a draft convention can attain the requisite consensus and is workable, there is no need to trouble unduly over its philosophical foundations. But considering that the future will see increasing efforts to form international regimes, often with profound effects on nonparticipants, surely more thought should be given to the underlying moral issues that such arrangements raise. Principles of global justice--not merely as they touch the environment but as they inform our actions regarding trade, armaments, human rights, treatment of ethnic minorities, and more--are going to count among the most important topics of the new world.

FOOTNOTES CHAPTER 16

¹ Edith Brown Weiss, *Our Rights and Obligations to Future Generations for the Environment*, 84 AM. J. INTL L. 198, 198-04 (1990). Copyright 1990. Reprinted by permission.

² E. BROWN WEISS, IN FAIRNESS TO FUTURE GENERATIONS: INTERNATIONAL LAW, COMMON PATRIMONY AND INTERGENERATIONAL EQUITY (1989).

³ E. BURKE, Reflections on the Revolution in France 139-40 (1790), in 2 WORKS OF EDMUND BURKE 368 (London 1854).

⁴ See J. RAWLS, A THEORY OF JUSTICE (1971).

⁵ See B. ACKERMAN, SOCIAL JUSTICE IN THE LIBERAL STATE (1980).

⁶ The temporal dimension may offer a theoretical basis for unifying those human rights that we now consider to be group or social rights and for so-called new human rights. Group rights, such as cultural rights, have a temporal dimension since the community inherently extends over time. Theoretically, rights to development, to food, to health, and to the environment can be seen as intergenerational, or intertemporal, in that they are rights of

access of each generation to use and benefit from our natural and cultural resources. See E. BROWN WEISS, *supra* note 2 at 114-15.

⁷ The temporal dimension may offer a theoretical basis for unifying those human rights that we now consider to be group or social rights and for so-called new human rights. Group rights, such as cultural rights, have a temporal dimension since the community inherently extends over time. Theoretically, rights to development, to food, to health, and to the environment can be seen as intergenerational, or intertemporal, in that they are rights of access of each generation to use and benefit from our natural and cultural resources. See E. BROWN WEISS, *supra* note 1, at 114-15.

⁸ I. J. AUSTIN, *AUSTIN'S JURISPRUDENCE, LECTURES ON JURISPRUDENCE* 413-15 (1873).

⁹ Anthony D'Amato, *Do we Owe a Duty to Future Generations to Preserve the Global Environment?*, 84 AM. J. INT'L L. 190, 190-98 (1990). Copyright 1990. Reprinted by permission.

¹⁰ Professor Weiss regards it as an obligation *erga omnes* that has some support in customary international law. See Weiss, *The Planetary Trust: Conservation and Intergenerational Equity*, 11 ECOLOGY L.Q. 495, 540-44 (1984).

¹¹ See D'Amato, *An Alternative to the Law of the Sea Convention*, 77 AM. J. INT'L L. 281, 282-83 (1983).

¹² E. BROWN WEISS, IN FAIRNESS TO FUTURE GENERATIONS: INTERNATIONAL LAW, COMMON PATRIMONY AND INTERGENERATIONAL EQUITY (1989).

¹³ Parfit, *On Doing the Best for Our Children*, in ETHICS AND POPULATION 100 (M. Bayles ed. 1976); Parfit, *Overpopulation: Part One* (ms. 1976), referred to in Parfit, *Future Generations, Further Problems*, 11 PHIL. & PUB. AFF. 113 (1982).

¹⁴ In saying this, I do not assume that the human race will necessarily survive the next 100 years. Acts of cosmic stupidity are always possible: self-obliteration by nuclear war, depletion of the ozone layer, and so on.

¹⁵ What if the environment is so bad that even the act of living is a curse? Would any person choose not to have lived at all rather than to be born into a miserable and degraded situation? We can perhaps choose for ourselves, but I doubt that we have a moral right to make that choice for others yet unborn.

¹⁶ See, e.g., I. PETERSON, *THE MATHEMATICAL TOURIST* 144-49 (1988); J. GLEICK, *CHAOS: THE MAKING OF A NEW SCIENCE* (1987).

¹⁷ I. EKELAND, *MATHEMATICS AND THE UNEXPECTED* 66 (1988).

¹⁸ With appropriate caveats. For example, if we bar the establishment of a McDonald's hamburger shop directly next to the geyser Old Faithful in Yellowstone National Park, we are making a McDonald's franchisee worse off. As with any moral consideration, we have to balance that against the aesthetic sensibilities of numerous tourists who want to view Old Faithful without updated reminders of how many billions of hamburgers have so far been made out of how many millions of cows.

¹⁹ Cf. Leslie, *No Inverse Gambler's Fallacy in Cosmology*, 97 MIND 269 (1988).

²⁰ R. A. POSNER, *THE ECONOMICS OF JUSTICE* 76 (1983).

²¹ "Wealth maximization provides a foundation not only for a theory of rights and of remedies but for the concept of law itself." *Id.* at 74.

²² R. G. FREY, *RIGHTS, KILLING, AND SUFFERING* 109-10 (1983).

²³ J. Lilly, *Man and Dolphin* (1961).

²⁴ Cited in D. DAY, *THE WHALE WAR* 154 (1987).

²⁵ See *LANGUAGE LEARNING BY A CHIMPANZEE: THE LANA PROJECT* (D. M. Rumbaugh ed. 1977).

²⁶ To be sure, we can argue that an "enlightened" Robinson might calculate that Darwinian evolution might result, 100 million years after his death, in the creation of a new human species. Hence, by not killing off various animal species, an enlightened Robinson might help speed up the evolutionary development of humans from those very animal species. Perhaps in that sense Robinson has a kind of obligation to a future to-be-evolved generation of humans. However, I would contend that this argument slyly begs the question. We can always define an "enlightened" human rights policy as including the preservation of nonhuman species. But then the same debate is reproduced as we argue about what is and what is not "enlightened."

²⁷ Parfit, *Future Generations*, *supra* note 13, at 171-72.

²⁸ In brief, any stated moral principle may be deconstructed. Contexts always exist in which a given moral principle, if strictly applied, would lead to an immoral result. See J. FLETCHER, *SITUATION ETHICS: THE NEW MORALITY* (N.D.); J. FLETCHER & J. W. MONTGOMERY, *SITUATION ETHICS: TRUE OR FALSE* (1972). Consider the most morally repugnant behavior in recent times: Hitler's policy of extermination of minority groups. This was "justified" at the time in terms of moral utilitarianism--the need to "purify" the human race. Yet even

entering into the "debate" about the immorality of "Aryan supremacy" was to compromise one's moral position--for it amounted to giving some degree of intellectual credence to the Nazi position! In other words, it wasn't the principle of utilitarianism that was "misapplied" by the Nazis; rather, any attempt to apply a "principle" to their acts was itself perverse.

²⁹ Edith Brown Weiss, *Our Rights and Obligations to Future Generations for the Environment*, 84 AM. J. INT'L L. 198, 204-07 (1990). Copyright 1990. Reprinted by permission.

³⁰ M. KHADDURI, *THE ISLAMIC CONCEPTION OF JUSTICE* 233 (1984).

³¹ For catastrophe theory, see R. THOM, *MATHEMATICAL MODELS OF MORPHOGENESIS* (1983); for the theory of complex systems, see I. PRIGOGINE & I. STENGERS, *ORDER OUT OF CHAOS: MAN'S NEW DIALOGUE WITH NATURE* (1984). For a concise review of the influence of chaos theory, see *Chaos Theory: How Big an Advance?* 245 *SCIENCE* 26 (1989).

³² By Anthony D'Amato, excerpted from: *Do We Owe a Duty to Future Generations to Preserve the Global Environment?* 84 AM. J. INT'L L. 190, 193 n. 11 (1990). Copyright 1990. Reprinted by permission.

³³ CHRISTOPHER D. STONE, *THE GNAT IS OLDER THAN MAN* 242-66 (1993). Copyright 1993. Reprinted by permission.

* Ironically, it is not likely that Kant, the staunchest opponent of moral relativism, would have ascribed true flexibility to this test, or considered flexibility a virtue. He might have acknowledged that as societies evolve different levels of knowledge, moral sensitivity and so on will issue in different moral judgments--each of which will be comprehensible as an application of the same unvarying (if general) moral law.

* This problem might be finessed by assigning each nation an emissions quota based on its population in the start-up year, with no credit for subsequent increases; of course, this strategy wanders away from the original underlying rationale, that each individual on earth should have an inherent equal right to pollute.

* This last issue sounds metaphysical and abstract, but the stakes are high. Ought we to embargo trade with Iraq, causing suffering to its people, on account of the actions of its leader? The classic utilitarian response is reductionist, to disregard states, and look only to the outcome in individual welfares. (The embargo will be wrong if and only if it can be shown that more people will suffer in the long run from not embargoing than from embargoing.) Others, including myself, are disinclined to dismiss states as transparent in all cases and may inject into some discussions of embargo or aid respecting Nation *N* that *N*'s failure to abide by a U.N. resolution or control population is a national failing of *N*--of its government and culture (like the loss by a team, which cannot be redescribed simply as the loss by each player). In the moral plane that relates nations to nations, *N*'s failing can be viewed as affecting analysis of our obligations, if any, that tie individuals across the globe. On the other hand, I do not believe that this consideration nullifies the obligation to provide famine relief, which is perhaps less to be treated as a question of justice than of humanity. This is a very complex area, which I have examined more fully elsewhere. See CHRISTOPHER D. STONE, *EARTH AND OTHER ETHICS* (New York: Harper and Row, 1987), chapter 16.

* Several commentators would argue that to globalize justice would simply "overstrain our commitments." Rawls, in a subsequent work expanding slightly on *A Theory of Justice*, reaffirms his conclusion that the difference principle that is championed domestically "is not suitable for justice between states," but the bases of his judgment are still not spelled out in detail. JOHN RAWLS, *JUSTICE AS FAIRNESS: A BRIEF RESTATEMENT* (Cambridge, Mass.: Unpublished, 1989), 151-53.

* Granted, making the quotas tradable would mitigate the nonsense, but the trading is hardly costless.

* As indicated above, Rawls's test suggests that a redistribution would seek to bring the least fortunate person's mix of primary goods toward the mean level; a simplifying assumption is that a tax would move people's wealth toward the mean.

* Daniel Kahneman and Arnold Tversky have demonstrated this asymmetry empirically (*The Psychology of Preferences*, *SCIENTIFIC AMERICAN* 246 [1982]: 160-73), but the notion is one Mark Sagoff, examining the disparity between prices we bid and ask for the same things, traces back to Hume's notion of hysterias, and relates to our resentment of being asked to pay for what one believes one already owns or has a right to. Mark Sagoff, *ETHICS AND ECONOMICS IN ENVIRONMENTAL LAW*, in Tom Regan, ed., *EARTHBOUND* (New York: Random House, 1984), 155.

* Once more, this is not to deny that if fees are collected for uses of the commons areas, someone's welfare, for example, that of stockholders in satellite corporations who no longer get slots for free, will go down. Tracing through such charges to identify who ultimately bears their incidence is no mean task.

* This approximates but is not exactly equivalent to what each nation would be willing to pay for the proposed plan on a take-it-or-leave-it basis.