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Subsistence Emissions and Luxury Emissions

HENRY SHUE

In order to decide whether a comprehensive treaty covering all greenhouse gases is the best next step after UNCED, one needs to distinguish among the four questions about the international justice of such international arrangements: (1) What is a fair allocation of the costs of preventing the global warming that is still avoidable?; (2) What is a fair allocation of the costs of coping with the social consequences of the global warming that will not in fact be avoided?; (3) What background allocation of wealth would allow international bargaining (about issues like 1 and 2) to be a fair process?; and (4) What is a fair allocation of emissions of greenhouse gases (over the long-term and during the transition to the long-term allocation)? In answering each question we must specify from whom any transfers should come and to whom any transfers should go. As the grounds for the answers we usually face a choice between fault-based principles and no-fault principles.

I. INTRODUCTION

The United Nations Framework Convention on Climate Change adopted in Rio de Janeiro at the United Nations Conference on Environment and Development (UNCED) in June 1992 establishes no dates and no dollars: no dates are specified by which emissions are to be reduced by the wealthy states and no dollars are specified with which the wealthy states will assist the poor states to avoid an environmentally dirty development like our own. The convention is toothless because throughout the negotiations in the Intergovernmental Negotiating Committee during 1991 to 1992 the U.S. played the role of dentist: whenever virtually all the other states in the world (with the notable exceptions of Saudi Arabia and Kuwait) agreed to convention language with teeth, the U.S. insisted that the teeth be pulled out.

The Clinton administration now faces a strategic question: should the next step aim at a comprehensive treaty covering all greenhouse gases (GHGs) or at a narrower protocol covering only one, or a few, gases, for example, only fossil-fuel carbon dioxide (CO₂)? Richard Stewart and Jonathan Wiener (1992) have argued for moving directly to a comprehensive treaty, while Thomas Drennen (1993) has argued for a more focused beginning. I will suggest that Drennen is essentially correct that we should

not try to go straight to a comprehensive treaty, at least not of the kind advocated by Stewart and Wiener. First I would like to develop a framework into which to set issues of equity or justice of the kind introduced by Drennen.

II. A FRAMEWORK FOR INTERNATIONAL JUSTICE

A. FOUR KINDS OF QUESTIONS

It would be easier if we faced only one question about justice, but several questions are not only unavoidable individually but are entangled with each other. In addition, each question can be given not simply alternative answers but answers of different kinds. In spite of this multiplicity of possible answers to the multiplicity of inevitable and interconnected questions, I think we can lay out the issues fairly clearly and establish that commonsense principles converge to a remarkable extent upon what ought to be done, at least for the next decade or so.

Leaving aside the many important questions about justice that do not have to be raised in order to decide how to tackle threats to the global environment, we will find four questions that are deeply involved in every choice of a plan for action. (1) What is a fair allocation of the costs of preventing the global warming that is still avoidable?; (2) What is a fair allocation of the costs of coping with the social consequences of the global warming that will not in fact be avoided?; (3) What background allocation of wealth would allow international bargaining (about issues like (1) and (2)) to be a fair process?; (4) What is a fair allocation of emissions of greenhouse gases (over the long-term and during the transition to the long-term allocation)? Our leaders can confront these four questions explicitly and thoughtfully, and thereby hope to deal with them more wisely, or they can leave them implicit and unexamined and simply blunder into positions on them while thinking only about the other economic and political considerations that always come up. What leaders cannot do is evade taking actions that will in fact be just or unjust. The subject of justice will not go away. Issues of justice are inherent in the kinds of choices that must immediately be made. Fortunately, these four issues that are intertwined in practice can be separated for analysis.

1. *Allocating the Costs of Prevention*

Whatever sums are spent in the attempt to prevent additional warming of the climate must somehow be divided up among those who are trying to deal with the problem. The one question of justice that most people readily see is this one: who should pay for whatever is done to keep global warming from becoming any worse than necessary?

One is tempted to say: "to keep it from becoming any worse than it is already going to be as a result of gases that are already in the air." Tragically, we will in fact continue to make it worse for some time, no matter how urgently we act. Because of the Industrial Revolution, the earth's atmosphere now contains far more accumulated CO₂ than it was normal for it to contain during previous centuries of human history. This is not speculation: bubbles of air from earlier centuries have been extracted from deep in the polar ice, and the CO₂ in these bubbles has been directly measured. Every day we continue to make large net additions to the total concentration of CO₂.

Several industrial nations have unilaterally committed themselves to reducing their emissions of CO₂ by the year 2000 to the level of their emissions in 1990. This may sound good, and it is obviously better than allowing emissions levels to grow in a totally uncontrolled manner, as the United States and many other industrial nations are doing. The 1990 level of emissions, however, was making a net addition to the total every day, because it was far in excess of the capacity of the planet to recycle CO₂ without raising the surface temperature of the planet. A reduction to the 1990 level of emissions means *reducing the rate* at which we are adding to the atmospheric total to a rate below the current rate of addition, but it also means *continuing to add to the total*.

Stabilizing emissions at a level as high as the 1990 level will not stabilize temperature – it will continue the pressure to drive it up. In order to stabilize temperature, emissions must be reduced to a level at which the accumulated *concentration* of CO₂ in the atmosphere is stabilized. CO₂ must not be added by human processes faster than natural processes can handle it by means that do not raise the surface temperature. Natural processes will, of course, have to "handle" whatever concentration of CO₂ we choose to produce, one way or another; some of those ways involve adjustments in parameters like surface temperature that we will have a hard time handling. There is, therefore, nothing magic about the 1990 level of emissions. On the contrary, at that historically unprecedented level of emissions, the atmospheric concentration would continue to expand rapidly – it merely would not expand as quickly as it will at present levels or at the higher business-as-usual future levels now to be expected.

Emissions must be stabilized at a much lower level than the 1990 level, which means that emissions must be sharply reduced. The most authoritative scientific consensus said that in order to stabilize the atmospheric concentration of CO₂, emissions would have to be reduced below 1990 levels by more than 60 percent! (Houghton, Jenkins & Ephraums, 1990: xviii, Table 2). Even if this international scientific consensus somehow were a wild exaggeration and the reduction needed to be, say, a reduction of only 20 percent from 1990 levels, we would still face a major challenge. Every day that we continue to add to the growing concentration, we increase the size of the reduction from current emissions necessary to stabilize the concentration at an acceptable total.

The need to reduce emissions, not merely to stabilize them at an already historically high level, is only part of the bad news for the industrial countries. The other part is that the CO₂ emissions of most countries that contain large percentages of the human population will be rising for some time. I believe that the emissions from these poor, economically less-developed countries also ought to rise insofar as this rise is necessary to provide a minimally decent standard of living for their now impoverished people. This is, of course, already a (very weak) judgment about what is fair: namely, that those living in desperate poverty ought not to be required to restrain their emissions, thereby remaining in poverty, in order that those living in luxury should not have to restrain their emissions. Anyone who cannot see that it would be unfair to require sacrifices by the desperately poor in order to help the affluent avoid sacrifices will not find anything else said in this article convincing, because I rely throughout on a common sense of elementary fairness. Any strategy of maintaining affluence for some people by keeping other people at or below subsistence is, I take it, patently unfair because so extraordinarily unequal – intolerably unequal.

Be the fairness as it may, the poor countries of the globe are in fact not voluntarily going to refrain from taking the measures necessary to create a decent standard of living for themselves in order that the affluent can avoid discomfort. For instance, the Chinese government, presiding over more than 22 percent of humanity, is not about to adopt an economic policy of no-growth for the convenience of Europeans and North Americans already living much better than the vast majority of Chinese, whatever others think about fairness. Economic growth means growth in energy consumption, because economic activity uses energy. And growth in energy consumption, in the foreseeable future, means growth in CO₂ emissions.

In theory, economic growth could be fueled entirely by forms of energy that produce no greenhouse gases (solar, wind, geothermal, nuclear [fission or fusion], and hydroelectric). In practice, these forms of energy are not now economically viable (which is not to say that none of them would be if public subsidies, including government-funded research and development, were re-structured). China specifically has vast domestic coal reserves, *the* dirtiest fuel of all in CO₂ emissions, and no economically viable way in the short run of switching to completely clean technologies or importing the cleaner fossil fuels, like natural gas, or even the cleaner technologies for burning its own coal, which do exist in wealthier countries. In May 1992 Chen Wang-xiang, general secretary of China's Electricity Council, said that coal-fired plants would account for 71 to 74.5 percent of the 240,000 megawatts of generating capacity planned for China by the year 2000 (1992). So, until other arrangements are made and financed, China will most likely be burning vast and rapidly increasing quantities of coal with, for the most part, neither the best available coal-burning technology, nor the best energy technology overall. The only alternative China actually has

with its current resources is to choose to restrain its economic growth, which it will surely not do, rightly or wrongly. (I think rightly.)

Fundamentally, then, the challenge of preventing additional avoidable global warming takes this shape: how does one reduce emissions for the world as a whole while accommodating increased emissions by some parts of the world? The only possible answer is: by *reducing* the emissions by one part of the world by an amount *greater than* the increase by the other parts that are increasing their emissions.

The battle to reduce total emissions should be fought on two fronts. First, the increase in emissions by the poor nations should be held to the minimum necessary for the economic development that they are entitled to. From the point of view of the rich nations, this would serve to minimize the increase that their own reductions must exceed. Nevertheless, the rich nations must, second, also reduce their own emissions somewhat, however small the increase in emissions by the poor, if the global total of emissions is to come down while the contribution of the poor nations to that total is rising. The smaller the increase in emissions necessary for the poor nations to rise out of poverty, the smaller the reduction in emissions necessary for the rich nations – environmentally sound development by the poor is in the interest of all.

Consequently, two complementary challenges must be met – and paid for – which is where the less obvious issues of justice come in.¹ First, the economic development of the poor nations must be as “clean” as possible – maximally efficient in the specific sense of creating no unnecessary CO₂ emissions. Second, the CO₂ emissions of the wealthy nations must be reduced by more than the amount by which the emissions of the poor nations increase. The bills for both must be paid: someone must pay to make the economic development of the poor as clean as possible, and someone must pay to reduce the emissions of the wealthy. These are the two components of the first issue of justice: allocating the costs of prevention.

2. *Allocating the Costs of Coping*

No matter what we do for the sake of prevention from this moment forward, it is highly unlikely that all global warming can be prevented, for two reasons. First, what the atmospheric scientists call a “commitment to warming” is already in place simply because of all the additional greenhouse gases that have been thrust into the atmosphere by human activities since around 1860. Today is already the morning after. We have done whatever we have done, and now its consequences, both those we understand and those we do not understand, will play themselves out, if not this month, some later month. Temperature at the surface level – at our level – may or may not already have begun to rise. But the best theoretical understanding of what would make it rise tells us that it will sooner or later rise because of

what we have already done – and are unavoidably going to continue doing in the short- and medium-term. Unless the theory is terribly wrong, the rise will begin sooner rather than later. In the century and a quarter between the beginnings of the Industrial Revolution and 1993, and especially in the half century since World War II, the industrializing nations have pumped CO₂ into the atmosphere with galloping vigor. As of today the concentration has already ballooned.

Second, even if starting tomorrow morning everyone in the world made every exertion she could possibly be expected to make to avoid as much addition as possible to today's concentration, we would continue to add CO₂ much faster than it can be recycled without a rise in temperature for an indeterminate number of years to come. A sudden huge decline in the rate of addition to the total is not physically, not to mention economically, feasible. Further, needless to say, not everyone in the world is prepared to make every reasonable exertion. The "leadership" of the United States, the world's largest injector of CO₂ into the planet's atmosphere, will not even commit itself to cap CO₂ emissions by 2000 at 1990 levels, as easy as that would be (and as little good as it by itself would do). Consequently, even a good-faith transition to sustainable levels of CO₂ emissions would make the problem of warming worse for quite a few years before it could begin to allow it to become better. Years of fiddling while our commitment to the warming of future generations expands will make their problem considerably worse still than it already has to be.

The second issue of justice, then, is: how should the costs of coping with the unprevented human consequences of global warming be allocated? The two thoughts that immediately spring to mind are, I believe, profoundly misguided; they are, crudely put, to-each-his-own and wait-and-see. The first thought is: let each nation that suffers negative consequences deal with "its own" problems, since this is how the world generally operates. The second is: since we cannot be sure what negative consequences will occur, it is only reasonable to wait and see what they are before becoming embroiled in arguments about who should pay for dealing with which of them. However sensible these two strategic suggestions may seem, I believe that they are quite wrong and that this issue of paying for coping is both far more immediate and much more complex than it seems. This brief overview is not the place to pursue the arguments in any depth, but I would like to telegraph why I think these two obvious-seeming solutions need at the very least to be argued for.

(a) *To-each-his-own*

Instantly adopting this solution depends upon assuming without question a highly debatable description of the nature of the problem, namely, as it was put just above, "let each nation that suffers negative consequences deal with 'its own' problems." The fateful and contentious assumption here is that

whatever problems arise within one's nation's territory are *its own*, in some sense that entails that it can and ought to deal with them on its own, with (only) its own resources. This assumption depends in turn upon both of two implicit and dubious premises.

First, it is taken for granted that every nation now has all its own resources under its control. Stating the same point negatively, one can say that it is assumed that no significant proportion of any nation's own resources are physically, legally, or in any other way outside its own control. This assumes, in effect, that the international distribution of wealth is perfectly just, requiring no adjustments whatsoever across national boundaries! To put it mildly, that the world is perfectly just as it is, is not entirely clear without further discussion. Major portions of the natural resources of many of the poorer nations are under the control of multinational firms operated from elsewhere. Many Third World states are crippled by burdens of international debt contracted for them, and then wasted, by illegitimate authoritarian governments. Thus, the assumption that the international distribution of wealth is entirely as it should be is hard to swallow.

Second is an entirely independent question that is also too quickly assumed to be closed: it is taken for granted that no responsibility for problems resulting within one nation's territory could fall upon another nation or upon other actors or institutions outside the territory. Tackling this question seriously means attempting to wrestle with slippery issues about the causation of global warming and about the connection, if any, between causal responsibility and moral responsibility, issues to be discussed more fully later. Once the issues are raised, however, it is certainly not a foregone conclusion, for instance, that coastal flooding in Bangladesh (or the total submersion of, for example, the Maldives and Vanuatu) would be entirely the responsibility of, in effect, its victims and not at least partly the responsibility of those who produced, or profited from, the greenhouse gases that led to the warming that made the ocean water expand and advance inland. On quite a few readings of the widely accepted principle of the "polluter pays" those who caused the change in natural processes that resulted in the human harm would be expected to bear the costs of making the victims whole. Once again, I am not trying to settle the question here, but merely to establish that it is indeed open until the various arguments are heard and considered.

(b) *Wait-and-see*

The other tactic that is supposed to be readily apparent and eminently sensible is: stay out of messy arguments about the allocation of responsibility for potential problems until we see which problems actually arise – we can then restrict our arguments to real problems and avoid imagined ones. Unfortunately, this too is less commonsensical than it may sound. To see why, one must step back and look at the whole picture.

The potential costs of any initiative to deal comprehensively with global warming can be divided into two separate accounts, corresponding to two possible components of the initiative. The first component, introduced in the previous section of this article, is the attempted prevention of as much warming as possible, the costs of which can be thought of as falling into the prevention account. The second component, briefly sketched in this section, is the attempted correction of, or adjustment to – what I have generally called “coping with” – the damage done by the warming that for whatever reasons goes unprevented.

It may seem that if costs can be separated into prevention costs and coping costs, the two kinds of costs could then be allocated separately, and perhaps even according to unrelated principles. Indeed, the advice to wait-and-see about any coping problems assumes that precisely such independent handling is acceptable. It assumes in effect that prevention costs can be allocated – or that the principles according to which they will be allocated, once they are known, can be agreed upon – and prevention efforts put in motion, before the possibly unrelated principles for allocating coping costs need to be agreed upon. What is wrong with this picture of two basically independent operations is that what is either a reasonable or a fair allocation of the one set of costs may – I will argue, does – depend upon how the other set of costs is allocated. The respective principles for the two allocations must not merely not be unrelated but be complementary.

In particular, the allocation of the costs of prevention will directly affect the ability to cope later of those who abide by their agreed-upon allocation. To take an extreme case, suppose that what a nation was being asked to do for the sake of prevention could be expected to leave it much less able to cope with “its own” unprevented problems, on its own, than it would be if it refused to contribute to the prevention efforts – or refused to contribute on the specific terms proposed – and instead invested all or some of whatever it might have contributed to prevention in its own preparations for its own coping. For example, suppose that in the end more of Shanghai could be saved from the actual eventual rise in sea-level due to global warming if China simply began work immediately on an elaborate and massive, Dutch-style system of sea-walls, dikes, canals, and sophisticated flood-gates – a kind of Great Sea-Wall of China – rather than spending its severely constrained resources on, say, purification technologies for its new coal-fueled electricity generating plants and other prevention measures. From a strictly Chinese point of view, the Great Sea-Wall might be preferable even if China’s refusal to contribute to the prevention efforts resulted in a higher sea-level at Shanghai than would result if the Chinese did cooperate with prevention (but then did not have time or resources to build the Sea-Wall fast enough or high enough).

This fact that the same resources that might be contributed to a multi-lateral effort at prevention might alternatively be invested in a unilateral effort at coping raises two different questions, one primarily ethical and one

primarily non-ethical (although these two questions are not unrelated either). First, would it be fair to expect cooperation with a multilateral initiative on prevention, given one particular allocation of those costs, if the costs of coping are to be allocated in a specific other way (which may or may not be cooperative)? Second, would it be reasonable for a nation to agree to the one set of terms, given the other set of terms – or, most relevantly, given that the other set of terms remained unspecified? Doing your part under one set now while the other set is up for grabs later leaves you vulnerable to the possibility of the second set's being stacked against you in spite of, or because of, your cooperation with the first set. It is because the fairness and the reasonableness of any way of allocating the costs of prevention depends partly upon the way of allocating the costs of coping that it is both unfair and unreasonable to propose that binding agreement should be reached now concerning prevention, while regarding coping we should wait-and-see.

3. The Background Allocation of Resources and Fair Bargaining

This last point about potential vulnerability in bargaining about the coping terms, for those who have already complied with the prevention terms, is a specific instance of a general problem so fundamental that it lies beneath the surface of the more obvious questions, even though it constitutes a third issue of justice requiring explicit discussion. The outcome of bargaining among two or more parties, such as various nations, can be binding upon those parties that would have preferred a different outcome only if the bargaining situation satisfies minimal standards of fairness. An unfair process does not yield an outcome that anyone ought to feel bound to abide by if she can in fact do better. A process of bargaining about coping in which the positions of some parties were too weak precisely because they had invested so much of their resources in prevention would be unfair in the precise sense that those parties that had already benefited from the invested resources of the consequently weakened parties were exploiting that very weakness for further advantage in the terms on which coping would be handled.

In general, of course, if several parties (individuals, groups, or institutions) are in contact with each other and have conflicting preferences, they obviously would do well to talk with each other and simply work out some mutually acceptable arrangement. They do not need to have and apply a complete theory of justice before they can arrive at a limited plan of action. If parties are more or less equally situated, the method by which they should explore the terms on which different parties could agree upon a division of resources or sacrifices (or a process for allocating the resources or sacrifices) is actual direct bargaining. Other things being equal, it may be best if parties can simply work out among themselves the terms of any dealings they will have with each other.

Even lawyers, however, have the concept of an unconscionable agreement; and ordinary non-lawyers have no difficulty seeing that voluntarily entered agreements can have objectionable terms if some parties were subject, through excessive weakness, to undue influence by other parties. Parties can be unacceptably vulnerable to other parties in more than one way, naturally, but perhaps the clearest case is extreme inequality in initial positions. This means that morally acceptable bargains depend upon initial holdings that are not morally unacceptable – not, for one thing, so outrageously unequal that some parties are at the mercy of others.

Obviously this entails in turn that the recognition of acceptable bargaining presupposes knowledge of standards for fair shares, which are one kind of standard of justice. If we do not know whether the actual shares that parties currently hold are fair, we do not know whether any actual agreement they might reach would be morally unconscionable. The simple fact that they all agreed is never enough. The judgment that an outcome ought to be binding presupposes a judgment that the process that produced it was minimally fair. While this may not mean that they must have “a complete theory of justice” before they can agree upon practical plans, it does mean that they need to know the relevant criteria for minimally fair shares of holdings before they can be confident that any plan they actually work out should in any way constrain those who might have preferred different plans.

If bargaining among nations about the terms on which they will cooperate to prevent global warming is to yield any outcome that can be morally binding on the nations who do not like it, the “initial” holdings at the time of the bargaining must be fair. Similarly, the “initial” holdings at the time of the bargaining about the terms on which they will cooperate to cope with the unprevented damage from global warming depends, once again, upon minimally fair shares at that point. Holdings at the point of bargaining over the arrangements for coping will have been influenced by the terms of the cooperation on prevention. Consequently, one requirement upon the terms for prevention is that they should not result in shares that would be unfair at the time that the terms of coping are to be negotiated. The best way to prevent unfair terms of coping would appear to be to negotiate both sets of terms at the same time and to design them to be complementary and fair taken together. This would deal with all the first three issues of justice at once. First, however, one needs to know the standard of fairness by which to judge. This is the third issue of justice.

4. Allocating Emissions: Transition and Goal

The third kind of standard of justice is general but minimal: general in that it concerns all the resources and wealth that contribute to the distribution of bargaining strength and weakness, and minimal in that it specifies, not thoroughly fair distributions, but distributions not so unfair as to under-

mine the bargaining process. The fourth kind of standard is neither so general nor so minimal. It is far less general because its subject is not the international distribution of all wealth and resources, but the international distribution only of greenhouse gas emissions in particular. And rather than identifying a minimal standard, it identifies an ultimate goal: what distribution of emissions should we be trying to end up with? How should shares of the limited global total of emissions of a greenhouse gas like CO₂ be allocated among nations and among individual humans? Once the efforts at prevention of avoidable warming are complete, and once the tasks of coping with unprevented harms are dealt with, how should the scarce capacity of the globe to recycle the net emissions be divided?

So far, of course, nations and firms have behaved as if each of them had an unlimited and unshakable entitlement to discharge any amount of greenhouse gases that it was convenient to release. Everyone has simply thrust greenhouse gases into the atmosphere at will. The danger of global warming requires that a ceiling – probably a progressively declining ceiling – be placed upon total net emissions. This total must somehow be shared among the nations and individuals of the world. By what process and according to what standards should the allocation be done?

I noted above the contrast between the minimal and general third kind of standard and this fourth challenge of specifying a particular (to greenhouse emissions) final goal. I should also indicate a contrast between this fourth issue and the first two. Both of the first two issues are about the allocation of costs: who pays for various undertakings (preventing warming and coping with unprevented warming)? The fourth issue is about the allocation of the emissions themselves: of the total emissions of CO₂ compatible with preventing global warming, what percentage may, say, China and India use – and, more fundamentally, by what standard do we decide? Crudely put, issues one and two are about money, and issue four is about CO₂. We need separate answers to, who pays? and to, who emits? because of the distinct possibility that one nation should, for any of a number of reasons, pay so that another nation can emit more. The right answer about emissions will not simply fall out of the right answer about costs, or vice versa.²

We will be trying to delineate a goal: a just pattern of allocation of something scarce and valuable, namely greenhouse-gas emissions capacities. However, a transition period during which the pattern of allocation does not satisfy the ultimate standard may well be necessary because of political or economic obstacles to an immediate switch away from the status quo. For instance, current emissions of CO₂ are very nearly as unequal as they could possibly be: a few rich countries with small populations are generating the vast bulk of the emissions, while the majority of humanity, living in poor countries with large populations, produces less altogether than the rich minority. It seems reasonable to assume that, whatever exactly will be the content of the standard of justice for allocating emissions, the emissions should be divided somewhat more equally than they currently are. Especially

if the total cannot be allowed to keep rising, or must even be reduced, the per capita emissions of the rich few will have to decline so that the per capita emissions of the poor majority can rise.

Nevertheless, members of the rich minority who do not care about justice will almost certainly veto any change they consider too great an infringement upon their comfort and convenience, and they may well have the power and wealth to enforce their veto. The choice at that point for people who are committed to justice might be between vainly trying to resist an almost certainly irresistible veto and temporarily acquiescing in a far-from ideal but significant improvement over the status quo. In short, the question would be: which compromises, if any, are ethically tolerable? To answer this question responsibly, one needs guidelines for transitions as well as ultimate goals: not, however, guidelines for transitions instead of ultimate goals, but guidelines for transitions *in addition to* ultimate goals. For, one central consideration in judging what is presented as a transitional move in the direction of a certain goal is the distance travelled toward the goal. The goal must have been specified in order for this assessment to be made.³

B. TWO MORE KINDS OF QUESTIONS

A principle of justice may specify to whom an allocation should go, from whom the allocation should come, or, most usefully, both. The distinction between the questions, from whom and to whom, would seem too obvious to be worth comment except that "theories" of justice actually tend in this regard to be only half-theories. They tend, that is, to devote almost all their attention to the question "to whom," and to fail to tackle the challenges to the firm specification of the sources for the recommended transfers. This is one legitimate complaint practical people tend to have against such "theories": "you have shown me it would be nice if so-and-so received more, but you have not told me who is to keep less for that purpose – I cannot assess your proposal until I have heard the other half."

Unfortunately, the answer to "from whom?" does not flow automatically from all answers to "to whom?" Often a given specification of the recipients of transfers leaves open a wide variety of possible allocations of the responsibility for making the transfers. For instance, if the principle governing the allocation of certain transfers were, "to those who had been severely injured by the pollution from the process," the potential sources of the transfers would include: those who were operating the process, the owners of the firm that authorized the process, the insurance company for the firm, the agency that was supposed to be regulating the process, society in general, only the direct beneficiaries of the process and no one else, and so on. Quite often proposals about justice are not so much wrong as too incomplete to be judged either right or wrong.

I have phrased the first four kinds of issues about justice, which arise from different aspects of the challenge of global warming, as, in effect,

from-whom questions, precisely because this is the neglected side of the discussion of justice. What we are now noticing is simply that there is, in addition, always the question "to whom?" It is more likely that "to whom?" will have an obvious answer than it is that "from whom?" will, but it is always necessary to check. If we are discussing the costs of coping, for example, it might seem obvious that from whomsoever the transfers should come, they should go to those having the most difficulty coping. However, if the specification of the sources of the transfers is, "those who caused the problem being coped with," then country A, which did in fact cause the problem in country X, might be expected to assist country X, and not country Y, even though country Y was having much more difficulty coping (but with problems that were not A's responsibility). Not much, unfortunately, is obvious, although I will try to show that a great deal is actually fairly simple, given commonsense principles of fairness.

One vital point that this abstract example of A, X, and Y illustrates is: answers to "from whom?" and answers to "to whom?" are interconnected. Once one has an answer to one question or the other, certain answers to the remaining question are inappropriate and, sometimes, another answer to the remaining question becomes the only one that really makes any sense. Often these logical connections are very helpful.

C. TWO KINDS OF ANSWERS

We saw, in section A, that if one thinks hard enough about how the international community should respond to global warming, questions about justice arise unavoidably at four points:

1. Allocating the costs of prevention
2. Allocating the costs of coping
3. The background allocation of resources and fair bargaining
4. Allocating emissions: transition and goal.

And in section B we have just now observed that besides these more difficult questions about identifying the bearers of responsibility who should be the sources of any necessary transfers, there is always in principle, and often in practice, a further question in each case about the appropriate recipients of any transfers.

Before attempting to sort out specific proposed answers to this array of questions, it is helpful, I think, to notice that individual principles of justice for the assignment of responsibility fall into one or the other of two general kinds, which I will call fault-based principles and no-fault principles. A well-known fault-based principle is: "the polluter pays;" and a widely accepted no-fault principle is "payment according to ability to pay." The principle of payment according to ability to pay is no-fault in the sense that alleged fault, putative guilt, and past misbehavior in general are all com-

pletely irrelevant to the assignment of responsibility to pay. Those with the most should pay at the highest rate, but this is not because they have done wrong in acquiring what they own, even if they have in fact done wrong. The basis for the assignment of progressive rates of contribution, which are the kind of rates that follow from the principle of payment according to ability to pay, is not how wealth was acquired but simply how much is held.

In contrast, the polluter-pays principle is based precisely upon fault or causal responsibility. "Why should I pay for the clean-up?" "Because you created the problem that has to be cleaned up." The kind of fault invoked here need not be a moralized kind – the fault need not be construed as moral guilt so much as simply a useful barometer or symptom to be used to assign the burden of payment to the source of the need for the payment. That is, one need not, in order to rely upon this principle, believe that polluters are wicked or even unethical in some milder sense (although one can also believe they are). The rationale for relying upon polluter pays could, in particular, be an entirely amoral argument about incentives: the polluter should pay because this assignment of clean-up burdens creates the strongest disincentive to pollute. Even so, this would be a fault-based principle in my sense of "fault-based," which simply means that the inquiry into who should pay depends upon a factual inquiry into the origins of the problem. The moral responsibility for contributing to the solution of the problem is proportional to the causal responsibility for creating the problem. The pursuit of this proportionality can itself in turn have a moral basis (guilty parties deserve to pay) or an amoral basis (the best incentive structure makes polluters pay). The label "fault-based" has the disadvantage that it may sound as if it must have a moral basis, which it may or may not have, as well as having a moral implication about who ought to pay, which it definitely does have.

An alternative label, which avoids this possible moralistic misunderstanding of "fault-based," would have been to call this category of principles, not "fault-based," but "causal" or "historical," since such principles make the assignment of responsibility for payment depend upon an accurate understanding of how the problem in question arose. This, however, has the greater disadvantage of suggesting as the natural label for what I call "no-fault" principles, "acausal," or "ahistorical" principles. That would, I think, be more misleading still because it would make the no-fault principles sound much more ethereal and oblivious to the facts than they are. "Payment according to ability to pay" does not call for an inquiry into the origins of the problem, but neither is it ahistorical or acausal. An historical analysis or a view about the dynamics of political economy might be a part of the rationale for an ability-to-pay principle, so it would be seriously misleading to label this principle "ahistorical" or "acausal" just because it does not depend upon a search for the villain in the not-necessarily-moralistic sense in which "fault-based" principles do depend upon identifying the villain, that is, in the sense of who produced the problem. So, I will stick

with "fault-based" for principles according to which the answer to, from whom? depends upon an inquiry into the question, "by whom was this problem caused?" and to "no-fault" for principles according to which "from whom?" can be answered on grounds other than an analysis of the production of the problem.

Principles for answering the second kind of question noted in section B, "to whom transfers should be made," also fall into the general categories of fault-based and no-fault. The principle, "make the victims whole," is ultimately fault-based in that the rightful recipients of required transfers are identified as specifically those who suffered from the faulty behavior on the basis of which it will be decided from whom the transfers should come: on this principle, the transfers should come from those who caused the injury or harm and go to those who suffered the injury or harm. Indeed, one of the great advantages of fault-based principles is precisely that their cause-and-effect structure provides complementary answers to both questions: transfers go to those negatively affected, from those who negatively affected them. This specific principle, "make the victims whole," embodies a perfectly ordinary view – and an especially clear one, since it also partly answers the third question, how much should be transferred, by indicating that the transfer should be at least enough to restore the victims to their condition prior to the infliction of the harm. The victims (to whom?) are to be "made whole" (how much? – minimum amount, anyway) by those who left them less than whole (from whom?). This principle does not completely answer the question of "how much?" because it leaves open the option that the victims are entitled to more than enough merely to restore them to their condition *ex ante*, that is, it leaves open the possibility of additional compensation.

An ordinary example of a kind of no-fault principle for answering to whom an allocation should go is: "maintain an adequate minimum." Naturally, the level of what was claimed to be the minimum would have to be specified and defended for this to be a usable concrete version of this kind of principle. It has the general advantage of all no-fault principles, however, in that no inquiry needs to be conducted into who was in fact injured, who injured them, how much they were injured and to what extent their problems had other sources, and so forth. Transfers go to those below the minimum until they reach the minimum; then something else happens (for example, they are retrained for available jobs). Quite a bit of information is still needed to use such a no-fault principle, both to justify the original specification of the minimum level and to select those who are in fact below it. Yet this information is of different types from the information needed to apply a fault-based principle: one does not need an understanding of possibly highly complex systems of causal interactions and positive and negative feedbacks and/or lengthy chains of historical connections among potentially vast numbers of agents and multiple levels of analysis. The information needed to apply no-fault principles tends to be contemporaneous

information about current functioning, which is often easier to obtain than the convincing analysis of fault needed for the use of a fault-based principle.

The evident disadvantage of a no-fault principle for specifying to whom transfers go is that it lacks the kind of naturally complementary identification of from whom the transfers should come that flows from the cause-and-effect structure of fault-based principles. In particular, it does not imply that the transfers should come from whomever caused those who are below the minimum to be below the minimum; in fact, it does not even assume that there is any clear answer or, for that matter, any meaningful question of the form, "who caused those below the minimum to be there?" The consequence of the absence of the convenient complementary answers implied by fault-based principles is that with no-fault principles the answers to the "to whom" question and the "from whom" question must be argued for and established separately, not by a single argument like arguments about fault. It might be, for example, that if the answer to the question "to whom?" is "those below the minimum," the answer to the question "from whom?" may be "those with the greatest ability to pay." The point, however, is that the argument for using ability-to-pay to answer the one question and the argument for using maintenance-of-a-minimum to answer the other question have to be two separate arguments.

III. COMPREHENSIVENESS VERSUS JUSTICE

With this framework in mind one can return to the choice between the recommendations of Stewart and Wiener, on the one hand, and Drennen, on the other. Stewart and Wiener make a kind of mistake that is often made by lawyers who take economics too seriously and equity not seriously enough. One of their chief arguments in favor of moving directly to a comprehensive treaty is that under a comprehensive treaty each nation could engage in what I will call homogenizing calculations of cost-effectiveness (Stewart & Wiener, 1992: 93–95). A major advantage of the comprehensive treaty is supposed to be that each nation could look at all uses of all GHGs and select the least-cost options. That is, one could begin the reduction of GHG emissions by eliminating the specific sources of specific gases the elimination of which would produce the smallest subtraction of economic value. The crucial feature of this approach to cost-effectiveness – the feature that leads me to call the approach "homogenizing" – is that all gas-sources (every source of every gas) are thrown into the same pot. Not a single distinction is made among gas sources, not even the distinction between essential and non-essential.

Now it may initially seem strange not to embrace a thorough-going least-cost-first approach, but I would like to try to argue not only that hesitation is not unreasonable but, further, that equity demands qualifications on that approach. First, I would like to explain my earlier slur against some

economics and expand a bit on the worry about "homogenization." For standard economic analysis everything is a preference: the epicure's wish for a little more seasoning and the starving child's wish for a little water, the collector's wish for one more painting and the homeless person's wish for privacy and warmth, all are preferences. Quantitatively, they are different because some are backed up by a greater "willingness to pay" than others, but qualitatively a preference is a preference. For a few purposes, perhaps, we might choose to treat preferences only quantitatively, in terms of willingness to pay. To choose, however, to discard all the qualitative distinctions built up during the evolution of human history is to deprive ourselves of a rich treasure of sophistication and subtlety. Some so-called preferences are vital, and some are frivolous. Some are needs, and some are mere wants (not needs). The satisfaction of some "preferences" is essential for survival, or for human decency, and the satisfaction of others is inessential for either survival or decency.

Distinctions like the one between needs and wants, or the one between the urgent and the trivial, are of course highly contested and messy, which is why we yearn for the simplicity provided by everything being a so-called preference, differing only in strength (willingness to pay). To ignore *these* distinctions, however, is to discard the most fundamental differences in kind that we understand. This is a general complaint against much mainstream economics. My specific complaint against Stewart and Wiener does not depend upon this stronger, more general one – I mention the general thesis because my specific thesis concerns a parallel form of clarity-abandoning homogenization.

To suggest simply that it is a good thing to calculate cost-effectiveness across all sources of all GHGs is to suggest that we ignore the fact that some sources are essential and even urgent for the fulfillment of vital needs and other sources are inessential or even frivolous. What if, as is surely in fact the case, some of the sources that it would cost least to eliminate are essential and reflect needs that are urgent to satisfy, while some of the sources that it would cost most to eliminate are inessential and reflect frivolous whims? What if, to be briefly concrete, the economic costs of abandoning rice paddies are less than the economic costs of reducing miles-per-gallon in luxury cars? Does it make no difference that some people need those rice paddies in order to feed their children, but no one needs a luxury car?!

It would be nuts not to follow the principle of least-cost-first as long as one was dealing with matters of comparable significance: to do otherwise would be to choose a more expensive means to an end that could be reached by a less expensive means – that *is* fundamentally irrational. While the elimination of *N* thousand hectares of rice paddy might well cost less in economic terms than the tightening of corporate average fuel efficiency (CAFE) standards enough to produce the same reduction in GHG emissions, however, the human consequences of reducing food production and of reducing inefficient combustion are far from comparable in their effects upon

the quality of life – indeed, in the case of the food, upon the very possibility of life. These are not two different means to the very same end. The ends of the two different measures could be the same in the amount of GHG emissions they eliminate, but the ends are otherwise as different as reducing vital supplies of food and making luxury a tad more costly. Consequently, to apply a homogenizing form of cost-effectiveness calculation, as if the two measures differed only in how much they each cost to produce the same reduction in emissions, is seriously to distort reality. This kind of comprehensiveness obscures distinctions that are fundamental, most notably the distinction between necessities and luxuries.

The central point about equity is that it is not equitable to ask some people to surrender necessities so that other people can retain luxuries. It would be unfair to the point of being outrageous to ask that some (poor) people spend more on better feed for their ruminants in order to reduce methane emissions so that other (affluent) people do not have to pay more for steak from less crowded feedlots in order to reduce their methane and nitrous oxide emissions, even if less-crowded feedlots for fattening luxury beef for the affluent world would cost considerably more than a better quality of feed grain for maintaining the subsistence herds of the poor.

It is of course a different story if *all* incremental costs for reducing emissions, wherever incurred, are to be allocated according to ability to pay. If the beef-eaters will pay for the better feed grain for the subsistence herds of the poor with *additional* funds not already owed for some other purpose like development assistance, it might, as far as the equity of the arrangements for reducing emissions goes, not be unfair to start with the least-cost measures. The least-cost measure paid for by those *most* able to pay is not at all the same as the least-cost measure paid for by those *least* able to pay. In terms of the framework laid out above, this would combine a no-fault answer to the question “from whom?” (ability to pay), with a no-fault answer to the question “to whom?” (maintenance of an adequate minimum).

If these two answers were fully justified – naturally, they require fuller argument – one or the other of two routes ought to be followed.⁴ The homogenizing form of calculation of cost-effectiveness could be neutralized if it were accompanied by a firm commitment that costs are to be paid according to ability to pay and the actual establishment of mechanisms for enforcing the necessary transfers. Otherwise the costs ought to be partitioned – perhaps more than once but surely at least once – into costs that impinge upon necessities for the poor and costs that only impinge upon luxuries for the wealthy.

Thomas Drennen has suggested one type of such a partitioning, and he has based it upon two kinds of considerations: centrally upon the consideration of equity, but also upon the difficulties in measuring agricultural and other biological emissions of methane and verifying any mandated reductions. (It is ironic that the U.S., which held up the control of nuclear

weapons for years with exaggerated worries about verification, now wants to plunge ahead with the much messier matter of methane.) Drennen has arrived at his partitioning between what should be within the scope of the treaty, and what should not, by combining type of gas and type of use. The gases that Drennen would have under protocol control are CO₂ and methane, presumably because they are the largest contributors to global warming that are subject to human control. (Water vapor is larger but not controllable.) The uses that he would like to see reduced are the "industrial-related" ones, not the agricultural ones. Drennen's strategy is to control non-biological anthropogenic emissions of CO₂ and methane. This is a much more sophisticated formulation than the much-discussed one that deals only with fossil-fuel CO₂. I would nevertheless suggest that a definition of the scope different from Drennen's, based even more directly on considerations of equity, would be preferable; although I also acknowledge that practical considerations may require that Drennen's pair, non-industrial-related CO₂ and non-industrial-related methane, still be used as proxies for, and as the nearest practical approximation of, the specifications that flow directly from attention to equity.

My main doubts – and they are relatively minor – are about the division into industrial-related and non-industrial-related. This division reflects quite well, as I understand them, the difficulties of measurement and verification of methane emissions. It is much easier to calculate (and change!) leaks from natural gas pipelines than to calculate (and change!) emissions from various varieties of rice and various species of ruminants. Precisely this division reflects less well, however, the concern about equity that Drennen and I share. Just as the methane emissions from beef feedlots are in service of the desires of the wealthy, many of the CO₂ emissions in China and India *could be* – I am not assuming that they all in fact are – in service of the needs of the poor. Some agricultural methane emissions are a luxury, and some industrial CO₂ emissions are a necessity. By the standard of equity we do not want to leave all the former uncontrolled, and control all the latter.

Now insofar as we really cannot measure, or even accurately estimate, biological emissions of methane, the lack of perfect fit with equity does not for now matter. Yet I am somewhat impressed by the contention by Stewart and Weiner that we should be able to arrive at accurate enough estimates for our purposes, especially if, as I contend, our purposes ought not to include the control of subsistence emissions. For the sake of scientific understanding we must eventually be able to measure all kinds of emissions, but the measurements of the kinds that we are not going to control can be rough in the beginning.

We should not have a homogenized – undifferentiated – market in emissions allowances in which the wealthy can buy up the allowances of the poor and leave the poor unable to satisfy even their basic needs for lack of emissions allowances. Drennen's partition between industrial-related and

non-industrial-related may be the best approximation we can in practice make: most agricultural emissions are probably for subsistence and many industrial emissions are not. Better still, if it is practical, would be a finer partitioning that left the necessary industrial activities of the developing countries uncontrolled (not, of course, unmeasured) and brought the unnecessary agricultural services of the developed world, as well as their superfluous industrial activities, under the system of control.

If there is to be an international market in emissions allowances, the populations of poor regions could be allotted inalienable – unmarketable – allowances for whatever use they themselves consider best. Above the inalienable allowances, the market could work its magic, and the standard of cost-effectiveness could reign supreme. But the market for emissions allowances would not be fully comprehensive, as Stewart and Wiener recommend. The poor in the developing world would be guaranteed a certain quantity of protected emissions, which they could produce as they choose. This would allow them some measure of control over their lives rather than leaving their fates at the mercy of distant strangers.

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NOTES

1. Less obvious, that is, than the issue whether the poor should have to sacrifice their own economic development so that the rich can maintain all their accustomed affluence. As already indicated, if someone honestly thought this demand could be fair, we would belong to such different worlds that I do not know what I could appeal to that we might have in common.
2. For imaginative and provocative suggestions about the final allocations of emissions themselves, see Agarwal and Narain (1991).
3. A serious attempt to deal with issues about a compromise transition is in Grubb and Sebenius's chapter, "Participation, Allocation and Adaptability in International Tradeable Emission Permit Systems for Greenhouse Gas Control" in *Climate Change* (1992).

4. I have provided some relevant arguments in Shue (1992). Justice, or equity, is also discussed in several chapters in the UNCTAD publication, *Combating Global Warming: A Study on a Global System of Tradeable Carbon Emission Entitlements* (1992).

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