

**Darrel Moellendorf**  
**Department of Philosophy**  
**San Diego State University**  
[dmoellen@mail.sdsu.edu](mailto:dmoellen@mail.sdsu.edu)

## **An Equal Atmospheric Rights Approach to Climate Change**

### **I**

In this essay I explore the morality of climate change on the working hypothesis that each person has an equal property right to the earth's atmosphere that is violated by total anthropogenic CO<sub>2</sub> emissions that are greater than the atmosphere's capacity to absorb without increasing concentrations.<sup>1</sup> I begin by discussing the plausibility of the hypothesis, which I contend has some merit insofar as it can be supported by three different political philosophies that contain serious commitments to rights. But I do not claim to offer a full justification of the hypothesis. In fact, in the final section of the paper I raise a doubt about it that will have some force on egalitarian liberals. After discussing the hypothesis of equal atmospheric rights, I pursue its implications for both the inter-generational and global (intra-generational) justice of anthropogenic CO<sub>2</sub> emissions and policies of climate change mitigation and adaptation. According to the hypothesis, current global emissions levels constitute unjust appropriation of the atmosphere both by persons in the present generation from the inter-temporal commons shared with persons in future generations and by persons in the industrialized countries from the global commons shared with persons in developing and underdeveloped countries. Avoiding the inter-generational injustice requires institutions that enforce emissions limits at the rate at

which the atmosphere can absorb CO<sub>2</sub> without disrupting the climate system or institutions that make compensatory transfers to future generations for the failure to limit emissions appropriately. And, the burden of avoiding this inter-generational injustice is distributed in a manner consistent with global justice only if each state emits in accordance with a formula that imposes uniform per capita emissions across states, unless it purchases the right to emit more from one that emits less.

## **II The Liberal Tradition as a starting point**

The claim that each person has an equal property right to the earth's atmosphere, which is violated by total anthropogenic CO<sub>2</sub> emissions that are greater than the atmosphere's capacity to absorb without an increase of CO<sub>2</sub> concentrations, is plausible in part because it can be defended from within three different traditions of political philosophy that take rights seriously: The orthodox interpretation of the Lockean tradition that conditionally permits private appropriation by assigning individuals a natural right to private property only if a Lockean proviso is satisfied; the egalitarian interpretation of the Lockean tradition that denies the justice of private appropriations of natural resources; and the egalitarian liberal tradition that abjures claims about natural property rights but is concerned that social and political institutions not create inequality on the basis of morally arbitrary differences between persons.

Orthodox Lockean accounts of the justified private appropriation of natural resources typically assume that original ownership of natural resources vest in humanity, but assign individuals a natural property right to that which they have appropriated only if they have satisfied conditions that typically ensure that similar value is available for

others to appropriate. For John Locke this takes the form of the well-known proviso that there be “enough, and as good left for others.”<sup>ii</sup> According Robert Nozick’s restatement, the proviso requires that “the position of others no longer at liberty to use the thing...[not be] worsened.”<sup>iii</sup> Now, one of the many things that the atmosphere is good for is the absorption of CO<sub>2</sub> emitted from energy production and use. Polluting activity in the form of emitting CO<sub>2</sub> is an appropriation of the atmospheric capacity to absorb CO<sub>2</sub>. As long as the threshold of the atmosphere’s capacity to absorb CO<sub>2</sub> without increasing concentrations has not been exceeded neither version of the orthodox Lockean proviso is violated, at least with respect to the absorption capacity of the atmosphere. But once the threshold of the absorption capacity of the atmosphere is exceeded, the proviso cannot be satisfied, and, according to orthodox Lockean accounts, the pollution violates the natural property rights of all persons who own the atmosphere in common.<sup>iv</sup>

This account might be challenged on grounds that it supports the judgment that there is a moral difference between two otherwise identical acts of pollution depending only upon what others have done, namely whether there has been sufficient pollution to reach the threshold beyond which the atmospheric system cannot absorb without increasing the overall concentration. That judgment does seem warranted by the account but, rather than being a dissimilarity, it seems to be an instance of a general feature of the orthodox Lockean proviso. For example, even if other persons have previously justly enclosed the same amount of land as a particular person is now enclosing, whether or not the present enclosure satisfies the proviso depends not on its similarity to other just enclosures, but on the cumulative effects of enclosing.

One might suspect a misapplication of the proviso, in any case, since polluting the

air is dissimilar to enclosing a piece of land insofar as the former does not prevent access to an identifiable area. Polluting does not, for example, empower the polluter to press a charge of trespass against others. Although it is the case that polluting does not deny access to a particular area, polluting and enclosing seem nonetheless relevantly similar insofar as both make a resource unavailable for common usage. There are, of course, differences between the two actions. For example, emitting CO<sub>2</sub> that exceeds the atmosphere's capacity to absorb additional CO<sub>2</sub> is a one time use that spoils part of the resource (the atmosphere) for the entire class of future users, [Is this actually the case for the ENTIRE class of future users? Or could the atmosphere recover over a period of time, somewhat as Lake Erie has recovered over time from past pollution.] including the polluter, not only other users. Moreover, polluting can be harmful to the well being of others. Neither of these differences, however, diminishes the moral force of the claim that emitting CO<sub>2</sub> that exceeds the atmosphere's capacity to absorb additional CO<sub>2</sub> is a violation of the Lockean proviso. On the contrary, both seem to elevate the moral importance of such emissions.

One way to appreciate the plausibility of the claim made by the egalitarian versions of the Lockean tradition that private appropriation of natural resources violates the natural rights of persons to common equal ownership is with reference to the matter discussed two paragraphs above: Permitting private appropriation to some according to the Lockean proviso, but prohibiting it to others who cannot satisfy the proviso because of the previous appropriations, would seem to violate the principle of equal assessment that Aristotle claims "commends itself to all without proof."<sup>v</sup> Persons who happen to be born later might emit the same as persons born earlier, but the latter might satisfy the

proviso while the former do not. The same activity is judged differently in light of conditions that the agents have no role in causing. Perhaps this provides a reason to reject the orthodox Lockean proviso generally, but I shall not argue that here.<sup>vi</sup> Instead I limit my discussion to property rights in the atmosphere. The counter-intuitive consequence of the Lockean proviso provides a reason to support the egalitarian Lockean claim that natural atmospheric rights are held equally by all, if held by anyone. On the basis of this claim, egalitarian Lockeans can endorse the more limited hypothesis that each person has an equal property right to the earth's atmosphere that is violated by total anthropogenic CO<sub>2</sub> emissions that are greater than the atmosphere's capacity to absorb without increasing concentrations.

Egalitarian liberal political philosophy does not, as a rule, include a commitment to natural property rights. John Rawls's view on property rights is illustrative. He rejects a basic right to private property in natural resources on grounds that it is "not necessary for the adequate development and full exercise of the moral powers [of equal citizens], and so...[is] not an essential social basis of self-respect."<sup>vii</sup> Whether individuals can have a private ownership right to the means of production generally, including natural resources, or whether society is the rightful owner does not depend on the nature of natural rights to property, but is contingent on what, given the circumstances, would best serve the development and exercise of the moral powers of persons. So, it does not follow necessarily from the basic moral commitments of this account that each person possesses an equal property right to the earth's atmosphere.

Why might an equal property right to the earth's atmosphere seem plausible on egalitarian liberal grounds? The first thing to note is that egalitarian liberals will not

typically be blocked from endorsing the claim by any basic commitment to private property rights in the atmosphere since, as noted, there is not any sort basic commitment to property rights in natural resources at all, whether individual or communal. A positive case for the claim, however, can perhaps be constructed from a concern to neutralize the influence of morally arbitrary properties of persons. Just as egalitarian liberals judge that institutions should not allow for a person's race, ethnicity, sex, gender, sexual orientation, religious commitments (or lack there of), and family wealth to be sources of significant social advantage, in accounts of global justice some egalitarian liberals have argued that the relationship between a state and its natural resource base is morally arbitrary. It is then the role of just global institutions to correct for this arbitrariness by globally redistributing the wealth generated by resource control and use.<sup>viii</sup> This amounts to a non-natural rights basis for the claim that all persons have equal property rights to the natural resources of the earth. Analogously, there might be plausible egalitarian grounds to claim that the fact that a person lives in a country or generation with high historic levels of CO<sub>2</sub> emissions cannot be the basis of a moral entitlement to emit. For this would be to base the entitlement to emit, which is instrumental to acquiring a number of highly important goods constitutive of human well being, on a morally arbitrary fact. Preventing that requires an institutional structure that ensures equal atmospheric rights, prohibiting—at least without compensation—emissions levels that cannot be generalized without increasing atmospheric concentration of CO<sub>2</sub>.

The equal atmospheric rights hypothesis contains at least *prima facie* plausibility because it is apparently endorsable from three well-respected accounts of social justice that include strong commitments to individual rights. Assuming that to be the case, I shall

next consider an application of the equal atmospheric rights approach to the matter of intergenerational justice., whichSuch an analysis is central to any full account of the morality of climate change.

### **III The atmosphere and intergenerational justice**

Intergenerational justice looms large in discussions of climate change largely because of two important time lags in the climate system. One is the lag between stabilizing CO<sub>2</sub> emissions and stabilizing CO<sub>2</sub> concentrations. The other is between stabilizing CO<sub>2</sub> concentrations and stabilizing the climate system, including arresting global mean temperature increase and sea level rise.<sup>ix</sup> The result of these time lags is that people who are not yet born, indeed who will not be born for a hundred or more years, will experience some the most important effects of our current energy policy. According to the Intergovernmental Panel on Climate Change (IPCC), “After stabilization of the atmospheric concentration of CO<sub>2</sub> and other greenhouse gases, surface air temperature is projected to continue to rise by a few tenths of a degree per century for a century or more, while sea level is projected to continue to rise for many centuries.”<sup>x</sup>

The inter-generational implication of the hypothesis under discussion is the following: If persons in the present generation emit CO<sub>2</sub> at levels, which increase the concentration of CO<sub>2</sub> and thereby produce negative climate effects for later generations and reduce the amount of CO<sub>2</sub> that later generations can emit, then they are violating the property rights of persons in the later generations. Members of the present generation must either reduce their emissions to a level that stabilizes concentrations or compensate

members of later generations for the failure to do so. Since the compensation is inter-generational it must involve a savings scheme, the proceeds from which could be used for future adaptation to climate change and to provide incentives for technological advances to reduce emissions.

There is a well-developed institutional proposal for common ownership of natural resources in the egalitarian Lockean tradition. The proposal by Henry George and subsequent Georgists includes a taxation scheme on natural resources that are privately controlled.<sup>xi</sup> The land tax involves taxing the person controlling the natural resource at the full market value of the resource. The tax revenue is then redistributed via payment or public works projects to every member of society. The result is the equalization of the value of the natural resource to all persons despite the private use.

There are two difficulties for such a scheme, however, in the case of the generational appropriation of the atmosphere by means of CO<sub>2</sub> emissions. The first derives from the fact that when a generation appropriates a portion of the atmosphere (or more precisely its absorptive capacity) by means of CO<sub>2</sub> emissions, with the result that CO<sub>2</sub> concentrations increase, the portion appropriated is not purchased. There is no basis upon which to assess its market value. Additionally, the portion appropriated cannot be re-circulated. Unlike, say, a privately appropriated piece of land, the atmosphere appropriated is not fungible. Hence, its market value cannot be assessed later.

This might not be an insuperable problem, however. An appropriately designed emissions-entitlement trading scheme might be able to provide a solution by introducing an element of fungibility. But in order to be acceptable in light of the equal atmospheric property rights hypothesis, any solution must observe a constraint that the public be



compensated for private appropriations that increase CO<sub>2</sub> concentrations. An acceptable market proposal must include a revenue stream to the public equal to the value of the atmosphere appropriated, if the appropriation increases CO<sub>2</sub> concentrations.

The second difficulty also involves a constraint on acceptable market approaches to compensation for atmospheric value that is privately appropriated. The atmosphere appropriated by CO<sub>2</sub> emissions is valuable not only to contemporary market agents, but to members of future generations who cannot express demand for it. Any valuation of the atmospheres—or its capacity to absorb—on the basis of current demand alone will dramatically undervalue it. This market failure exists because the good is valuable to future generations but can be consumed by prior generations. So, a second constraint on any acceptable emissions market is that the prices that generate public revenues must be high enough to correct for the market failure. Again, the problem might have a practical solution if the price at the initial sale of the entitlement to emit were set administratively rather than by market forces. It would be in the nature of the case, however, that price levels administratively set with the interests of future persons in mind would only imprecisely resemble the inter-generational value of the atmosphere.

Current emissions-entitlement trading schemes typically involve setting an overall acceptable emissions level and then parceling out the total number of emissions entitlements (within the overall level set) to agents. Agents who can meet their energy needs without using all of their entitlements may sell their credits to those who find it more cost effective to purchase additional credits than to operate within the constraints of their assigned credits. Schemes of this sort do not necessarily satisfy the two constraints identified in the preceding two paragraphs. They do not address the need for public

revenues to compensate for rights violations, if they occur; and they do not necessarily address the failure of the market to represent the demand of future generations.

The two constraints identified above are related. A scheme must compensate the public for private appropriations, and public compensation must be set at a level that includes the valuation of the resource to future generations. The latter can be satisfied if the cost of emitting is increased by lowering the overall level of acceptable emissions, the former by an initial sale of emissions-entitlements by a public body thus generating the funds for public compensation.

The inter-generational concerns of this section have, thus far, been directed towards the constraints on institution design. But any discussion of these matters would be incomplete without some attention to the non-identity problem. Consider the very plausible assumption that any energy policy we now pursue will play an important role in affecting who will exist several generations hence. This is because of the pervasive effects of our energy policy on our lives. Couples might or might not meet depending upon the transportation that they use to go to work and social events; settings might be more or less romantic depending upon the room temperature; and so on. If we also assume that our action harms a person only if it renders the person worse-off than she would have been had we not acted, it follows that our energy policy harms members of future generations only if it renders their living conditions such that it would have been better if they had never been born. This is so since for persons living in any condition marginally less bad than this, they would not have existed had we conserved more; hence they cannot claim to have been made worse-off by our profligate energy consumption.

Now, the equal atmospheric rights hypothesis seems to be able to bypass this

startling conclusion since it is concerned with the moral wrong of violating the rights of future generations, not with harming them. These are conceptually distinct matters. For example, if we suppose that a person who asks a question of some importance to her (say whether her spouse has been faithful) has a moral right to a truthful answer, it is easy enough to imagine that she could be made better off by a lie (what she does not know may not hurt her), even though the lie would violate her right. Derek Parfit, however, contends that a focus on the rights of future persons does not provide a viable way around the non-identity problem. He claims that future persons alive in part due to our generation's CO<sub>2</sub> emissions, which have increased concentrations, could simply choose to waive some of their rights.<sup>xiii</sup> In the case of the hypothesis under discussion, the waiver might cover their rights to an equal share of the atmosphere. Presumably, future persons might consider doing so after realizing that they would not have existed if we had emitted less. By so waiving their rights, our action is rendered permissible, just as a defendant who waives her right to trial by pleading guilty, is not wronged by not being tried. In both cases it is not merely that the persons do not complain; by waiving their rights they have no moral grounds for complaint.

In order to demonstrate that one cannot avoid the puzzle by appealing to the rights of future persons it is not enough, however, to claim that future persons *might* waive their rights since that would allow that they *might* not. In that case, a just energy policy, like a just trial policy, would have to be such that those who did not waive their rights did not have their rights violated. Parfit's argument requires that there is some sort of incoherence on the part of future persons who do not waive their rights. It would have to be the case that the fact they would not be alive but for the energy policy (assuming the

conditions of life are such that their lives are worth living) rationally commits them to waiving their rights. But this is implausible. As I noted with the lie example in the previous paragraph, it is possible for a person to be better off as the result of a rights violation. In such cases, it would be irrational for her not to waive her rights only if given a choice between a *prima facie* rights violation and being better off she rationally must choose being better off. It is implausible that this is *necessarily* the case. Suppose that the question concerns the fidelity of one's spouse and the truth would make her unhappy. It is implausible that she must choose to be told a falsehood because it would make her better off. In the energy policy case, a person would be rationally committed to waiving her rights only if given a choice between a *prima facie* rights violation and not existing she rationally must choose existing. Even if we assume that existence is a great good, as is the confident belief that one's spouse is faithful, it is implausible that one would *necessarily* be irrational to choose it. So, the equal atmospheric rights position seems to be able to avoid the conceptual puzzle generated by the fact actual future persons will in any case owe their existence in part to the energy policy that we now adopt.

Parfit also contends that we cannot violate the rights of persons who would not exist but for the actions that allegedly violate their rights since in that case it is impossible to fulfill their rights.<sup>xiii</sup> The inference seems to apply the familiar principle that ought-implies-can, or more precisely its contrapositive, cannot-implies-no-duty. But it does not actually apply that principle at all. Consider a case in which we have a duty not to violate a person's right, but the person's right can only be violated if we bring it about that she exists. If we do not bring it about that she exists, we have not violated her right and therefore have not done what we ought not to have done.

#### **IV The atmosphere and global justice**

The equal atmospheric rights hypothesis has implications for global justice as well. In this section I develop these by considering how duties to future generations to emit less overall CO<sub>2</sub> than would cause an increase in concentrations that would destabilize the climate system should be distributed intra-generationally. This is obviously a matter of global justice since CO<sub>2</sub> emissions up to the limit can originate in any geographic location. Adequately addressing the matter requires a global regulatory framework. The question for present purposes is what sorts of constraints on an acceptable global regulatory framework exist in virtue of the hypothesis of equal atmospheric rights.

I begin by assuming that an overall level of emissions has been established in conformity with the requirements of inter-generational justice and that state structures can be used to mediate at least some of the rights and duties of individuals across borders. Since I am taking all persons to possess equal atmospheric property rights, the entitlement to emit should be distributed equally by dividing the overall acceptable level by the global population indexed to a selected year. Each country could then be assigned an overall emission-entitlement in proportion to its population in the indexed year. As others have observed, making the entitlement a function of the population in a selected year avoids providing states with an incentive to develop a population policy that encourages population growth in order to increase their emissions entitlements.<sup>xiv</sup>

The international scheme of emissions-entitlements envisaged in the previous paragraph differs from the scheme that the Kyoto Protocol establishes in two important

ways. First, the assignment doled out to a particular state is in conformity with the underlying principle of the equal property rights of all persons and is not the result of the capacity of the state to elicit concessions in a negotiation process.<sup>xv</sup> Thus, in addition to conforming to the demands of equal rights, the scheme also possesses the virtue of transparency. Second, the system of entitlement limits is fully comprehensive and is not limited only to historic gross emitters, in particular not only to the states that industrialized first.

How well does the present scheme cohere with other considerations of global distributive justice? With twenty percent of the world's population living on less than \$1 PPP per day it would seem that a bare minimum moral requirement of the international community is to ensure that international arrangements not retard or inhibit the social and economic development of the developing and underdeveloped states.<sup>xvi</sup> The United Nations Framework Convention on Climate Change incorporates this minimum requirement by recognizing a moral principle of the differentiated responsibility of countries (on the basis of developmental level) for addressing climate change.<sup>xvii</sup> It might be thought that the comprehensive character of the scheme violates this principle. However, it does not. For in treating all states on a per capita equal basis it places a much heavier burden on states that are presently gross emitters. For example, according to the United States Energy Information Administration, the average per capita CO<sub>2</sub> emissions for the USA, Australia, and Belgium in 2004 (the latest date for which they provide comprehensive data) in metric tons were 20.18, 19.39, and 14.27 respectively. In comparison the average for China, Brazil, India, Nigeria, and Malawi respectively were 3.62, 1.83, 1.04, 0.75, and 0.06. The global average per capita emissions in 2004 were

4.24 metric tons.<sup>xviii</sup> Suppose we measure emissions reductions against the 2004 total level, index a country's emissions target to its 2004 population, and seek a very modest 50% reduction. This would require that each country's per capita emissions be not greater than 2.12 metric tons. Of the countries just surveyed, the burden would fall most heavily on the USA, Australia, and Belgium. Additionally, permitting emissions-entitlements trading would likely result in considerable capital inflow to underdeveloped countries as the wealthy industrialized countries would seek to purchase entitlements to emit in excess of their allocated limits.

In fact a 50% reduction in overall CO<sub>2</sub> emissions would not prevent an increase the atmospheric CO<sub>2</sub> concentration above the 2004 level. It is not, in other words, sufficient to meet the demands of intrainter-generational justice according to the equal atmospheric rights hypothesis, unless it is accompanied by intrainter-generational compensation for costs. According to the IPCC's 2001 *Third Assessment Report*, even a more dramatic decrease in emission over the course of the next two centuries commits us to permanent increased CO<sub>2</sub> concentrations.<sup>xix</sup> Bringing this proposal in line with the requirements of inter-generational justice then would require greater per capita reductions. This could be achieved by initial sale of CO<sub>2</sub> emissions credits that put limits on the maximum number of entitlements purchased by states at a level that would reduce overall emission by more than 50%.

Even the modest goal of a 50% overall reduction, however, will require not only significant per capita reductions in CO<sub>2</sub> emissions by several industrialized countries, but also by some developing countries. Presumably a 50% reduction would be implemented progressively. But eventually not only existing advanced industrialized countries, but also

China would have to reduce emissions. This simply affirms the idea that the development path taken by the industrialized countries cannot be sustainably generalized. But it also raises another important issue of global justice. Insofar as alternative—and presumably more costly—development paths are necessary in order to achieve inter-generational justice, how should the costs of financing such paths be assigned?<sup>xx</sup>

Consider this response: That China may not pursue the developmental path of the industrialized countries, and must pursue a more costly one, is the fault of persons in the industrialized world whose prior atmospheric appropriations require China to reduce emissions levels in order to comply with the demands of inter-generational justice. Since all persons have equal property rights in the atmosphere, any country whose atmospheric appropriations incur developmental costs for other countries (in order for them to comply with a regime of inter-generational justice) is responsible for fully compensating the countries incurring the additional costs. Therefore, the industrialized countries must fully compensate China for the costs it incurs in order to develop within the constraints of inter-generational justice. These compensatory costs should be assigned to countries in proportion to their causal role in establishing the constraints on China.

The above response might seem highly plausible but it is not without a problem, at least insofar as it relies on a fault-based account of moral responsibility. It is fairly common to conjoin fault-based accounts of responsibility with rights-based moral accounts.<sup>xxi</sup> The idea is that insofar as persons are rights-bearers action to hold them responsible for wrong doing is justified only if they are at fault for the wrong doing; otherwise it is violation of their rights, say, to require that they pay to remedy a violation of the rights of another person. A pure fault-based account of moral responsibility holds



that responsibility may be attributed to persons only if they are at fault. Such an approach is put under strain by the case under discussion. The present concentration of green house gasses in the atmosphere is the result of emissions building up since the beginning of the industrial revolution. The overwhelming majority of persons who are responsible for the emissions did not know that the results of the emissions would be anthropogenic climate change. And, more importantly for present purpose, these persons are no longer alive. Although persons now living in the industrialized world are often aware of the problem of anthropogenic climate change, they are a small fraction of those who have caused the problem. According to a pure fault-based account of responsibility, it is unjust to assign full responsibility for a rights violation to people who are not fully at fault for the violation. Therefore, full responsibility may not be assigned to current persons living in the industrialized world. This undermines the conclusion in the preceding paragraph.

The implications of the undermining argument are broader than I have drawn. According to a pure fault-based account of responsibility it would also be unjust to assign full responsibility for the costs of compliance with the demands of inter-generational justice to persons now alive in China since they are no more causally responsible for historic emissions in the industrialized world than are persons now living in the industrialized world. No group of persons now living is fully at fault for historic CO<sub>2</sub> emissions. Even dividing full responsibility, according to some formula, amongst those persons now living is unjust since all of the persons now living are not fully at fault. A pure fault-based account of responsibility, then, does not allow for the full assignment of the responsibility of complying with inter-generational demands. This is significant for the hypothesis of equal atmospheric property rights because of the nice fit between

rights-based accounts of justice and fault-based accounts of moral responsibility. For example, if there is an entailment relationship between the hypothesis of equal atmospheric property rights and a pure fault-based account of moral responsibility, the argument of the previous paragraph amounts to a *modus tollens* rejection of the hypothesis of equal atmospheric property rights.

Hybrid accounts of moral responsibility include both fault- and no-fault-based elements. One prominent candidate for a no-fault-based account of moral responsibility is the assignment of responsibility on the basis of ability to pay. But such an account is *prima facie* incompatible with a rights-based account of justice. Suppose that A's holdings have been unjustly diminished by B, and that B is no longer available to provide compensatory payment. The diminishment of A's holdings renders her much poorer than C, whose relative wealth is historically entirely independent of A's relative poverty; and there is no one else. An ability-to-pay account of responsibility would take from C to compensate A. This has a degree of plausibility in light of the fact that the maintenance of the status quo assigns the costs of the injustice to A. But whatever plausibility assigning responsibility to C has, it is incompatible with the claim that C has full property rights in her holdings, at least if we assume that full property rights protects C against takings of property by others, except when C has violated the rights of the others. Now, we can imagine a hybrid account of moral responsibility, applied to the case under discussion of CO<sub>2</sub> emissions and China, which holds that present generations of persons in the developed world are responsible for fully compensating China for the costs of complying with the demands of inter-generational justice in the course of their development. This account would have fault-based elements, based upon current unjust

levels of per capita emissions, and no-fault-based elements, based upon ability to pay. But such an account is *prima facie* incompatible with the claim that persons in the developing world have full property rights in their holdings (in this case, these are the fruits of social and economic development).

There would appear to be two ways to avoid incoherence by the conjunction of the hypothesis of equal atmospheric property rights and a hybrid account of moral responsibility. One is to argue that requiring persons in industrialized countries to cover the full costs of compensation is justified because their relative wealth is not historically independent of the poverty of developing and underdeveloped countries, thereby perhaps rendering it compatible with a fault-based account, and avoiding altogether the use of a hybrid account. The other is to argue that the property rights affirmed in the hypotheses of equal atmospheric rights are not full.

The first is most interesting to the hypothesis of equal atmospheric property rights since if successful it would not require any theoretical concessions. So, I focus here on it. It is relevant that the greater per capita GDP enjoyed by persons living in industrialized countries is due in significant part to many years of industrialization. Their relative wealth is the product of savings handed down from generations of persons who appropriated more than their fair share of the atmosphere. Consider the case of A, B, and C mentioned in the previous paragraph. If C's relative wealth were due to transfers from B, then she could not claim to have come to possess her wealth in a manner that was historically independent of A's deprivation. This is not to claim that C is at fault, but it nonetheless does entail that C is not entitled to all of her wealth. Some of it belongs to A not because C is responsible for A's deprivation, but because A is entitled to the wealth.,

So, even assuming a pure fault based account of responsibility, C may owe A more than she is at fault for.

Now imagine another case more closely analogous to our present concern. In this case, both A and B are previous generations. On the one hand, A's relative deprivation resulted in reduced savings to pass on to D. On the other hand, B's relative wealth resulted in increased savings to pass down to C. According to the line of argument just offered, C is not entitled to all of her wealth. But C's lack of entitlement does not entail D's entitlement. It is conceivable that there are no entitlements to the wealth that B took from A. Is D entitled to the share that she would have received, if B had not unjustly appropriated A's wealth? The affirmative answer does not seem to require heroic assumptions. She would have been entitled to her greater wealth if A had saved more and transferred it to her. Since A's not saving more was due to an unjust taking by B, she is entitled to what she would have had if B had not taken unjustly. The main problem for the argument would seem to be practical, namely determining what share would have gone to D if B had not stolen from A.

In the case of China's claim for compensation for the costs of development in accordance with the demands of inter-generational justice the practical problem is less acute. We get an approximate amount owed in compensation by subtracting the costs of business-as-usual development from the costs of environmentally sustainable development. This calculation serves the purpose of determining the compensation owed because it determines what the costs of conforming to the demands of inter-generational justice are to the Chinese that are due to past appropriations of the atmosphere resulting from CO<sub>2</sub> emissions in the industrialized world. The calculation works on the assumption

that atmospheric appropriations due to CO<sub>2</sub> emissions are morally significant because they can increase the costs to others of developing in a manner that is consistent with the demands of inter-generational justice. This has been the working assumption of the discussion of this section; and it seems highly plausible.

## **V Equality of rights or equality of costs**

The arguments of the preceding sections lend credence to two claims. The first is the hypothesis of equal atmospheric property rights itself. The second is that a coherent account of the justice (and injustice) of anthropogenic climate change, and institutional responses to it, can be developed on the basis of the hypothesis. I am more confident of the second of these claims than the first. For those who are committed to an egalitarian liberal account of justice, the plausibility of the hypothesis of equal atmospheric property rights depends in large part on whether equalizing property rights in the atmosphere is the sort of equality that is most appropriate to the moral context. Much of the current policy discussion on climate change, relating to its impact on humans at least, concerns the projected costs of adaptation for future generations and the costs of mitigation for the present generation. The rights-based approach seems entirely insensitive to these matters. An approach that takes these concerns as central would look at the inter-generational distribution of these costs. An egalitarian account might, for example, require equalizing the costs associated with anthropogenic climate change.<sup>xxii</sup>

What is the difference between an account that requires equalizing property rights in the atmosphere and one that requires equalizing inter-generational costs? There appears to be a fundamental difference in moral emphasis. A rights-based approach is

conceptually connected primarily with assuring the liberty of a person to act, to employ the resource protected by the rights. A cost-based approach is conceptually connected primarily with the manner in which persons are affected by the action of others. But one of the reasons to endorse limiting the actions of persons is the costs of the actions to others; and one of the reasons that costs to persons are important is because costs constrain what persons can do. With respect to the stock of supportive reasons, then, considerations of agency and consequences are available in both cases. So, what looks at first like a bright line distinction – the choice between taking the concern about justice in climate change as ensuring equal scope for agency, or equally distributing the negative consequences, - now seems dimmer and fuzzy.

Despite the overlap of basic moral concern in the two principles, their practical requirements are significantly different. Equalizing atmospheric property rights is a much more demanding moral principle than equalizing the inter-generational costs of CO<sub>2</sub> emissions. The requirement of equalizing property rights in the atmosphere limits CO<sub>2</sub> emissions of persons in a prior generation to levels no greater than what would increase concentrations and destabilize the climate system for persons in subsequent generations. In other words, the prior generation is required to assume the full (climate-change-related) costs of emitting CO<sub>2</sub> such that there are no adaptive costs for subsequent generations. The mitigation requirements of the equal-costs approach are fewer. The prior generation should not pass on greater costs to the subsequent in the form of adaptation, than it paid in the form of mitigation. The costs are shared inter-generationally, rather than fully assumed by the earlier generation.

Although the requirement to internalize the full cost of CO<sub>2</sub> emissions might be

regarded as appropriate upon initial consideration, this could change upon further reflection. For the externalities passed on to future generations by a prior generation's energy consumption are not wholly negative. The capital investments and the availability and quality of consumption goods made possible by energy consumption are benefits that can also be passed on. A principle of justice that requires the earlier generation to assume all of the costs, even though it passes on some of the benefits, assigns considerable advantages to persons born in later generations. Insofar as egalitarians are committed to correcting for the arbitrariness of generational membership, the equal atmospheric rights approach is inferior to the equal inter-generational costs approach.

I'll close now by drawing what I take to be a surprising inference from the present discussion and the one in section II, in which I considered the reasons that might support the hypothesis of equal property rights in the atmosphere. The natural property rights positions discussed in section II are often subsumed under libertarianism in either its right- or left-wing variety. It now appears that the libertarian position coheres best with the equal atmospheric property rights hypothesis and egalitarian liberalism with the requirement to equalize intergenerational costs. Hence, libertarianism appears to be committed to greater anthropogenic climate change mitigation, than is egalitarian liberalism.

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- i I would like to thank William Pierce Peirce for comments on an earlier draft of this paper and the Robert Schalkenbach Foundation for support while writing it.
- ii John Locke, *Two Treatises of Government*, bk. II (Cambridge: Cambridge University Press, 1963), 329.
- iii Robert Nozick, *Anarchy State and Utopia* (New York: Basic Books, 1974), 178.
- iv A similar argument is canvassed by Peter Singer in *One World: The Ethics of Globalization* (New Haven: Yale University Press, 2002), 27-34.
- v Aristotle, *Nicomachean Ethics* (1131a13), trans. by H. Rackham (Cambridge Mass.: Harvard University Press, The Loeb Classical Library, 1982), 269
- vi For a more general rejection of the orthodox Lockean proviso in favor of an egalitarian one see Michael Otsuka, *Libertarianism without Inequality* (Oxford: Oxford University Press, 2003), 22-29.
- vii John Rawls, *Justice as Fairness: A Restatement* (Cambridge, Mass.: Harvard University Press, 2001), 114.
- viii See for example Charles R. Beitz, *Political Theory and International Relations* (Princeton: Princeton University Press, 1979), 136-143, and Brian Barry, "Humanity and Justice in Global Perspective, in *Nomos XXIV, Ethics, Economics, and the Law*, edited by J. Roland Pennock and John W. Chapman (New York: New York University Press), 219-252. An explicit commitment to the atmosphere as a global commons can be found in Brian Barry *Why Social Justice Matters* (London: Polity Press, 2005), 264.
- ix Intergovernmental Panel on Climate Change, *Climate Change 2001: Synthesis Report, Summary for Policymakers*, 16. Available on line at: <http://www.ipcc.ch/pub/un/syren/spm.pdf>. Accessed 25 June 2007.
- x *Ibid.*
- xi Cf. Henry George, *Progress and Poverty* (New York: Robert Schalkenbach Foundation, 1962).
- xii Derek Parfit, *Reasons and Persons*, (Oxford: Oxford University Press, 1987), 364.
- xiii *Ibid.*, 365.
- xiv See for example, Singer, *One World*, 36.
- xv Under the Kyoto Protocol, for example, Australia is allowed an 8% increase above its 1990 emissions, whereas the EU is required to reduce by 8%. Figures available at the United Nations Framework Convention on Climate Change web page: [http://unfccc.int/kyoto\\_protocol/background/items/3145.php](http://unfccc.int/kyoto_protocol/background/items/3145.php). Accessed 25 June 2007.
- xvi \$1 PPP is a measure of the monetary equivalent, in terms of local prices, of what \$1 purchases in the USA. In the case of developing and underdeveloped countries this typically much less than the exchange value of \$1.
- xvii United Nations Framework Convention on Climate Change (21 march 1994), article 3, para. 1. Available on line at: <http://unfccc.int/resource/docs/convkp/conveng.pdf>. Accessed 25 June 2007.
- xviii Figures available on line at [http://72.14.253.104/search?q=cache:QhUl0a\\_6bpQJ:www.eia.doe.gov/pub/international/iealf/tableh1cco2.xls+per+capita+carbon+emissions&hl=en&ct=clnk&cd=4&gl=us&client=firefox-a](http://72.14.253.104/search?q=cache:QhUl0a_6bpQJ:www.eia.doe.gov/pub/international/iealf/tableh1cco2.xls+per+capita+carbon+emissions&hl=en&ct=clnk&cd=4&gl=us&client=firefox-a). Accessed 6 June, 2007.
- xix Intergovernmental Panel on Climate Change, *Climate Change 2001: Synthesis Report, Summary for Policymakers*, 17. See figure SPM-5. Available on line at: <http://www.ipcc.ch/pub/un/syren/spm.pdf>. Accessed 26 June 2007.
- xx I also discuss this, but not within the constraints of the hypothesis under discussion in *Cosmopolitan Justice* (Boulder: Westview Press, 2002), 97-100.
- xxi See, for example, Nozick's discussion of compensation in *Anarchy* chapter 4.
- xxii See my "A Just Savings Principle for Climate Change," unpublished.