Who Should Shoulder the Burden? Global Climate Change and Common Ownership of the Earth

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Abstract. A common and intuitively plausible approach to thinking about the distributional questions that arise about global climate change is that the atmosphere is a "global sink" whose use is subject to regulation in terms of an equal-per-capita principle: Each person should have the same entitlement to pollute. This view, however, is plausible only if one thinks the earth as a whole belongs in some sense to humanity as such. Drawing on the work of Hugo Grotius (and especially his famous reflections on distributional questions as they arise with regard to the *seas*), this essay develops that standpoint of collective ownership of the earth and applies it to the aforementioned distributional questions. In light of that standpoint some of the ethical dimensions of global climate change take on a particular shape. It turns out, however, that the philosophically most plausible understanding of collective ownership of the earth does not support an equal-per-capita principle. Nor does this approach support certain versions of a principle of accountability for past emissions, but it does provide us with a language in which we can make sense of "right" and "wrong" with regard to use of parts of the earth in the first place. Exploring the standpoint of collective ownership does not by itself take us any further in our quest for ethical principles governing the distribution of burdens from climate change. However, our results provide constraints on any plausible overall response to that problem. We conclude by offering one such plausible solution, which, however, will not only integrate our earlier findings but also draw on considerations that are independently plausible ("polluter pays" and "ability to pay" principles) rather than derived from the standpoint of collective ownership. Nevertheless, even those principles that cannot be directly derived from the standpoint of collective ownership presuppose that climate change is a genuinely moral problem whose burdens must be equitably divided. That view, in turn, obtains major support from the standpoint of collective ownership.

1. An intuitively plausible view on distributional questions that arise in the context of climate change --- one that, in the political debate, has for instance been taken by the government of India -- is that the atmosphere is a "global sink" whose use is subject to common regulation based on an equal per-capita principle (e.g., Singer (2002)): Each person has the same entitlement to pollute. If countries pollute more than their aggregate share, they should purchase entitlements from others. This approach presumably derives

what plausibility it has from the idea that original resources and spaces of the earth *as a whole* belong in some sense to humanity collectively, resources and spaces we need for survival but whose existence is nobody's accomplishment. In this regard, nothing should be true of the atmosphere that is not also true of other resources and spaces of the earth.[1]

Climate change lends itself to a discussion in terms of collective ownership of the earth. Changes in weather patterns occur at the *global* level, and so affect the very object that humanity arguably owns. To the extent that human contributions to climate change violate rights, it presumably is because the ownership status of the atmosphere is not compatible with greenhouse gas increases beyond a certain level. Unless we are consequentialists, we cannot simply assume that the harm done through climate change is a wrong. Competition thwarts interests, but this does not show any wrong was done. The ownership standpoint helps us understand what wrongs occur here, and more generally, delivers a plausible view of what it means to treat people *as equals* in moral assessments of climate change responses. Yet since there has been little interest in that standpoint, there has been no systematic development of its implications regarding climate change.[2]

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[1] Thanks to Axel Gosseries, Bill Hogan, George Pavlakos, Leif Wenar, as well as audiences at the University of Erfurt, the University of Antwerp, and University College London for helpful discussion.

[2] That humanity collectively owns the earth was a predominant idea in 17th century political philosophy: Grotius, Hobbes, Pufendorf, Locke, and others debated how to capture this status and the conditions under which parts of the Global Common can be privatized. (See Buckle (1991) and Tuck (1999).) An exception to the recent lack of interest in collective ownership of the earth is left-libertarianism (se.g., Vallentyne and Steiner (2000a) and (2000b)). The ownership approach, in some way or another, is taken up, in the context of discussions about climate change, in Singer (2002), Hurka (1993), Grubb et al (1992), Grubb (1995), Traxler (2002), and Gardiner (2004). Gardiner (2004) distinguishes between "the historical principle" and "the common sink principle," the former capturing the idea that those who have polluted in the past should be responsible for bearing the costs of mitigating or adapting to climate change, and the latter being the idea that the atmosphere is collectively owned by humanity. He goes on: (p 580):"It is worth observing two facts about these two approaches. First, they are distinct. On the one hand, the historical principle requires compensation for damage inflicted by one party on another and does not presume that there is a common resource; on the other, the sink consideration crucially relies on the presence of a common resource and does not presume that any (further) damage is caused to the disenfranchised beyond their being deprived of an opportunity for use. Second, they are compatible. One could maintain that a party deprived of its share of a common resource ought to be compensated both for that and for the fact that material harm has been

However, if what is collectively owned is the earth *as a whole*, rather than the atmosphere *in particular*, we must assess carefully what this status implies for the use of the atmosphere. Libertarians have tried to reduce the idea of collective ownership ad absurdum by claiming that this view entails that humanity as such owns every nugget of gold found on the ocean floor and every drop of oil extracted on the Arab peninsula.[3] Yet on a plausible view of this matter, there are no such implications. Nor, then, does humanity collectively own the atmosphere in virtue of the fact that it collectively owns the earth. More thought is required to spell out what it means for ownership of the atmosphere (and for distributional questions) that humanity collectively owns the earth.

Climate change arguably poses the most serious global policy problem of the 21st century. Naturally occurring greenhouse gases, such as water vapor, carbon dioxide, and methane, form a thermal blanket that traps the sun's energy inside the atmosphere of the earth and thereby makes our planet inhabitable. Over the last centuries, human activities have greatly increased greenhouse gas concentrations. Considerable quantities of carbon dioxide have resulted from burning fossil fuels (coal, oil, gas, which generate most of the world's energy), as well as from deforestation. Increasing evaporation of water amplifies the warming effects of these gases. Since climate impacts are self-magnifying in this way, small impacts can have severe consequences. The result is global climate change.

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inflicted upon it as a direct result of the deprivation." But one wonders why there would be an independent basis for complaining about harm that arises from pollution if the atmosphere is *not* owned in common anyway (a point also made by Hurka (1993)). If the atmosphere is for everybody to pollute as they please, there is no independent complaint about the harm thus caused. The ownership standpoint also helps with other questions in this context. For instance, Sands (2003), p 14, states: "While it is clear that under international law each state may have environmental obligations to its citizens and to other states which may be harmed by its activities, it is less clear whether such an obligation is owed to the international community as a whole." The ownership standpoint cannot answer any legal questions, but it does make clear why there are moral obligations to the international community.

[3] We revisit this point below.

Greenhouse gases disperse uniformly in the atmosphere: what damage they cause does not depend on where they were emitted. On average, global surface temperatures have risen by about 1.25 degrees Fahrenheit over the past 150 years. Most of the increase has occurred since 1970. Other actual or likely consequences of increasing greenhouse gas concentrations include changes in patterns of precipitation; thawing of permafrost; melting of glaciers and arctic summer ice; increases in sea levels; and changes in storm frequency and intensity. Depending on location, risks caused by climate change include decreases in the availability of water and productivity of farms, forests, and fisheries; a prevalence of oppressive heat and humidity; an increase in range and frequency of diseases and pests; damage from storms, floods, droughts, and fires, including increasing desertification; as well as losses from sea-level rises, and decreasing biodiversity. While these changes will not be uniformly bad, the speed at which they occur is troublesome even where they may otherwise be improvements. The Intergovernmental Panel on Climate Change has concluded that most of the increase in average temperatures since the mid-twentieth century is likely due to man-made greenhouse gas concentrations.[4]

There are three ways of responding to this problem: to let these changes happen and suffer the consequences; to mitigate climate change (i.e., take measures to reduce its pace and magnitude); or to adapt (i.e., take measures to reduce adverse impacts on human well-being). Possibilities for mitigation include a reduction of greenhouse gases (through

[4] Established in 1988 by the World Meteorological Organization and the United Nations Environment Programme, the Intergovernmental Panel on Climate Change (IPCC) is a scientific body charged with assessing the risks of climate change caused by human activities. The IPCC's main activity is the publication of (widely cited) reports. For the background about climate change, see IPCC (2007a-c). Gardiner (2004) is an excellent survey of the scientific, economic, and philosophical questions about climate change as of 2004. Aldy and Stavins (2006b) contains a good summary of the scientific state of the art as of 2007, as well as a survey of possible policy responses.

changing patterns of energy use, reforming agricultural practices, or limiting deforestation), as well as, conceivably, large-scale geo-engineering to remove gases from the atmosphere or to offset greenhouse heating. Possibilities for adaptation include developing crops resistant to climate change; improving public-health defenses against hardships arising from climate change; flood control and drought management; building dikes and storm-surge barriers against sea-level rises; and avoiding further development in areas that are at risk.[5] The task of finding a global policy architecture that addresses climate change and that is economically plausible and politically feasible in the present, as well as enduring (or adaptable) over time, confronts political obstacles that "may be every bit as real as the various natural constraints imposed by the laws of chemistry and physics" (Summers (2007), p xxiii).

Climate change also entails its share of philosophical problems, prominent among them - as we saw by taking a look at the "global sink" approach to the regulation of the use of the atmosphere -- the distribution of burdens that mitigation and adaptation entail. In addition to the economic and political feasibility of different policy approaches, there is the moral question of what would be a fair distribution of burdens that arise from adaptation and mitigation. To reformulate our goal in light of the sketch of issues arising from climate change: This essay helps to respond to the question of who should shoulder the burden of mitigation and adaptation by exploring what it means to treat people as equals, and does so from the standpoint of collective ownership.

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[5] The particular ways in which weather patterns change is not yet well understood, nor are the local effects of these changes. Scientific uncertainty exacerbates the task of assessing different response strategies. Also, mitigating climate change generates costs that must be born locally, by the present generation, and by countries in economically and technologically vastly different situations, but creates benefits that apply globally, to future generations, often to people who will be richer than their ancestors currently alive.

I begin by reacquainting readers with the standpoint of collective ownership by discussing a few themes from the work of Hugo Grotius. Grotius' ideas on the original ownership status of the earth will offer guidance throughout, especially his ideas about the possibility of owning the *seas* (the public goods problem of his day), which bear on the question of what entitlements there could be to the *atmosphere* (a topic he touches only in passing). Like no other work in the philosophy of international relations, Grotius' 1625 *De Jure Belli ac Pacis Libri Tres* (DJB), *Three Books on the Law of War and Peace*, makes ownership of the earth central to the relations among both individuals and political entities. His concern is with the "differences of those who do not acknowledge one common Civil Right whereby they may and ought to be decided" (I.1.I), differences he seeks to regulate non-parochially. By making collective ownership central, Grotius formulates a version of a standpoint of what one may call global public reason.

Since Grotius' view is tied to theological assumptions of his era, we need to update it in a way that does not turn on these assumptions. The resulting view of collective ownership of the earth I call *Common Ownership*. Within Common Ownership we can explore different types of ownership status parts of the earth may have, and so generalize and (in one central point) *revise* Grotius' reflections on the seas. These reflections allows us to explore what Common Ownership implies about the ownership status of the atmosphere, that is, about what legitimate use can be made of it. An important result is that, in light of Common Ownership, it is *morally required* now to create fair norms of access to the absorptive capacity of the earth. Common Ownership implies that distributive questions about climate change form a moral problem of a particular sort. This result contradicts those who (such as apparently Posner and Sunstein

(2007)) think that, as a normative matter (rather than a matter of political realism), national self-interest carries decisive weight in assessments of climate agreements.

We find in a next step that neither the aforementioned equal per-capita approach nor a principle of accountability for historical emissions are acceptable -- at least none that finds fault with past emitters, before a certain stage, and none that endorses a form of strict liability that turns on neither blameworthy faults nor moral wrongs. At the same time, however, we also find that the standpoint of collective ownership provides us with a language in which we can make sense of “right” and “wrong” with regard to use of parts of the earth in the first place. So Common Ownership rules out two prima facie plausible approaches to the distribution of burdens from mitigation and adaptation. This result might be surprising on both counts: An equal-per-capita approach may strike many as a natural way of assigning burdens from climate change according to collective ownership, whereas historical accountability seems to have little to do with that standpoint in the first place.

Above I said the standpoint of collective ownership provides us with an understanding of what it means to treat people as equals in moral assessments of climate change responses. The aforementioned findings follow directly from the conception of Common Ownership. But although significant, these findings only provide a *partial* answer to the question of what it means to treat people as equals in moral assessments of climate change responses, as far as the standpoint of collective ownership is concerned. We cannot yet formulate broad moral principles of access to the earths’ absorptive capacity to tell us who should shoulder the burden. Yet our findings *constrain* any plausible more complete answer that must then be developed in a second step. I conclude

by offering a proposal for such principles that integrate our findings. This proposal combines ideas about who is best able to pay with ideas in term of current per-capita emissions. Yet the main contribution of this essay is (a) to establish the partial answer to our guiding question that we can obtain directly by pressing the idea of Common Ownership, and (b) to show that a full answer consists of those two steps. What I cannot do here is to explore what other possible extensions to a full answer one could give. So my final proposal is only incompletely defended here.[6] Still, even those principles that cannot be directly derived from the standpoint of collective ownership presuppose that climate change is a genuinely moral problem whose burdens must be equitably divided. That view, in turn, obtains major support from the standpoint of collective ownership.

2. To introduce the standpoint of collective ownership, let me touch on a few themes from Grotius. Grotius offers this account of collective ownership of the earth:[7]

> Almighty God at the creation, and again after the Deluge, gave to Mankind in general a Dominion over Things of this inferior World. All Things, as Justin has it, were at first common, and all the World had, as it were, but one Patrimony. From hence it was, that every Man converted what he would to his own Use, and consumed whatever was to be consumed; and such a Use of the Right common to all Men did at that time supply the Place of Property, for no Man could justly take from another, what he had thus first taken to himself; which is well illustrated by that Simile of Cicero, Tho' the Theatre is common for any Body that comes, yet the Place that every one sits in is properly his own. And this State of Things must have continued till now, had Men persisted in their primitive Simplicity, or lived together in perfect Friendship. (DJB, II.2.II.1)

[6] One problem about which we will not talk at all here is how to fix the actual amounts of adaptation and mitigation that should be targeted. The considerations we will explore in this study could be adjusted to speak to any proposal that delivers a particular manner of fixing these amounts.

[7] I quote from DJB in the customary way, for instance " II.2.II.1." this means: Second volume; second book; second chapter; first section. The 2005 Liberty Fund edition is especially accessible. I also deal with Grotius' earlier work, *Mare Liberum*, *Free Sea*, which is part of a much larger work, *De Jure Praedae Commentarius, Commentary on the Law of Prize and Booty*, which, however, only became available in full in the 19th century. For *Mare Liberum*, I quote the pages from the 2004 Liberty Fund edition.

God's gift can rightfully be put to use without any agreement. But this only works under primitive conditions, and does not even include a right to recover things left behind. Agreement is needed to create further-reaching rights, at least according to the account in *De Jure Belli ac Pacis*. Still, God's gift makes clear that the earth is *for* the use of human beings. As Buckle (1991) puts it, "in using the world for their own ends, human beings are not strangers (or trespassers) on a foreign soil. They are at home" (p 95).

Once primitive conditions have been left behind, property arrangements are conventional. To be adequate, these conventions must mind the fact that the earth was originally given to humankind collectively. One implication of this point is the postulation of a "right of necessity;" for

> in a case of Absolute Necessity, that antient Right of using Things, as if they still remained common, must revive, and be in full Force: For in all Laws of human Institution, and consequently, in that of Property too, such cases seem to be excepted. (DJB, II.2.VI.2)

This right restricts private property rights as they could have been intended, or at any rate, their legitimate scope. After all, in addition to his account of the divine gift, Grotius also offer an account of natural rights that include "the Abstaining from that which is another's, and the Restitution of what we have of another's, or of the Profit we have made by it, the Obligation of fulfilling Promises, the Reparation of a Damage done through our own Default, and the Merit of Punishment among Men." Society was formed for the protection of what is one's own, the *suum* (DJB, I.2.I.5), and a sphere of what is ours exists prior to property arrangements. Whereas Hobbes thought the most basic insight one could make uncontroversial was that everybody had a right to self-preservation, Grotius started with a number of laws of nature that spell out what

individuals have a right to in ways meant *to be reasonable for everybody*. Guided by solidaristic assumptions, Grotius thinks of humanity as susceptible to moral motivation.

Some limitations to property are not rights of necessity but general restrictions of what may be claimed under any conditions. Others may avail themselves of innocent profits (e.g., sail on our rivers), or demand free passage (II.2.XI-XIII), rights that may also be claimed by force (II.2.XIII.3). People may rest ashore to recover, even build "a little Cottage" (II.2.XV.2) if they abide by local laws. Products must be sold at reasonable prices if the producers do not need them (II.2.XIX). If land is left unused, immigration must be permitted (II.2.XVII). All these rights are owed to all, not just a selected few (II.2.XXII). These cases make clear that the collective ownership status of earth, in conjunction with the additional natural rights Grotius postulates, puts considerable limitations on the possibility of privatization.

3. While Grotius took the biblical standpoint of the earth as a divine gift, like Locke he thought this view should be acceptable even if there had never been any revelations. Indeed, the idea that the earth originally belongs to humankind collectively is plausible without religious input. We have much to gain by revitalizing it. While reflections about personhood and how persons ought to relate to each other are foundational to moral theory, reflection about original ownership can help along moral arguments by appealing to the fact that resources and spaces we all need are nobody's accomplishment. This standpoint generates constraints on immigration policies (Blake and Risse (2007) and (forthcoming)); it also leads to a conception of human rights (Risse (2009a), (2009b)); and now we are exploring how this standpoint bears questions about climate change.

Two points are indeed obvious enough: first, the resources of the earth are valuable and necessary for any human activities to unfold; and second, those resources have come into existence without human interference. These points must be considered when individual accomplishments are used to justify property rights strong enough to determine use across generations.[8] *Egalitarian Ownership* is the view that the earth originally belongs to humankind collectively: all humans, no matter when and where they are born, must have *some* sort of symmetrical claim to it. ("Original" ownership does not connote with time but is a moral status.) This is the most plausible view of original ownership in light of the two points just made.

Egalitarian Ownership is detached from the complex set of rights and duties civil law delineates under the heading of property law (Honore (1961)). At this level of abstraction from conventions and codes that themselves have to be assessed in relation to views on original ownership, all Egalitarian Ownership states is that all humans have a symmetrical claim to original resources. One may say that the term "ownership" is misleading here, but I use it since there is this connection to the familiar, thicker notions of ownership in civil law; and we are, after all, concerned with what sorts of claims individuals have to resources. To be sure, the considerations motivating Egalitarian Ownership speak to raw materials only, not to what human beings have *made* of them. The distinction between what "is just there" and what has been shaped by humans is blurred, say, for land human beings have wrested from the sea, or for natural gas

[8] Much has been written on foundations of property; see Becker (1977), Reeve (1986), or Ryan (1987).

harnessed from garbage deposits. But by and large, we understand well enough the idea of what exists without human interference.[9]

We must now assess different *conceptions* of Egalitarian Ownership. Such conceptions differ in how they understand the symmetry of claims individuals have to original resources. There are, roughly, four types of ownership-status an entity may have: *no* ownership; *joint* ownership -- ownership directed by collective preferences; *common* ownership – in which the entity belongs to several individuals, each equally entitled to using it within constraints; and *private* ownership. Common ownership is a right to use something that does not exclude others from also using it. If the Boston Common were held as *common* ownership when it was used for cattle, a constraint on each person's use could be to bring no more than a certain number of cattle, a condition motivated by respect for co-owners and the concern to avoid the Tragedy of the Commons. Yet if they held the Common in *joint* ownership, each individual use would be subject to a decision process to be concluded to the satisfaction of each co-owner. Joint ownership ascribes to each co-owner property rights as extensive as rights of private ownership, except that others hold the same rights: each co-owner must be satisfied on each form of use.

So there are various interpretations of Egalitarian Ownership: resources could be jointly owned, commonly owned, or each person could have private ownership of an

[9] A more difficult question is under what conditions man-made products, including improvements of original resources, should no longer be accompanied by special entitlements of those who made them or their offspring. See Blake and Risse (forthcoming) for discussion. Egalitarian Ownership formulates a standing demand on all groups that occupy parts of the earth to inhabit the earth in a manner that respects this symmetrical status of individuals with regard to resources. That Egalitarian Ownership operates in this way should be intelligible and acceptable even within cultures where individuals are not seen as property owners. Nothing about Egalitarian Ownership precludes such cultures from being acceptable to their members even if they do not treat individuals themselves as property holders. Yet even cultures that do not see individuals themselves as property holders must indeed be acceptable to those who live in them especially because all individuals have symmetrical claims to original resources.

equal share of resources (or a value equivalent). These conceptions carve out a pre-institutional space of natural rights that constrain property conventions which in turn regulate what natural rights leave open. I submit that Common Ownership is the most plausible conception. While I cannot offer a complete argument for this proposal here, I offer elaboration on what common ownership means and what it entails. At any rate, as far as their bearing on substantive response to questions about climate change are concerned, it does not much matter which of these conceptions we adopt as the philosophically preferred one. Nevertheless, we need to have one of them in place to carry on our discussion in its terms.[10]

The core idea of common ownership is that all co-owners ought to have an equal opportunity to satisfy their needs to the extent that this turns on obtaining collectively owned resources. This formulation, first, emphasizes an equality of status; second, it points out that this equality of status concerns opportunities to satisfy needs (whereas there is no sense in which each co-owner would be entitled to an equal share of what is collectively owned, let alone to the support of others in getting such a share, any more than any co-owners of the Boston Common had a claim to such a share or to the support of others to obtain it); and third, it does so insofar as these needs can be satisfied with resources that are collectively owned (that is, nothing at all is said about anything to which the original intuitions motivating Egalitarian Ownership do not apply).

[10] In capital letters, "Joint Ownership" and "Common Ownership" are names of interpretations of Egalitarian Ownership and hence views about ownership of the earth, whereas in small letters "joint ownership" and "common ownership" are general forms of ownership of anything. I continue to say that humanity "collectively" owns the earth if the precise form of ownership does not matter. Risse (2005) offers supportive arguments, showing why other conceptions are problematic. I develop all of this in my forthcoming book on *The Grounds of Justice*. See also Risse (2009a) and Risse (forthcoming).

To put this in the Hohfeldian rights terminology, common ownership rights must minimally include liberty rights accompanied by what Hart (1982) calls a "protective perimeter" of claim rights (p 171).[11] To have a liberty right is to be free of any duty to the contrary. Common ownership rights must include at least rights of that sort; that is, co-owners are under no duty to refrain from using any resources. But the symmetry of claims postulated by Egalitarian Ownership demands more than liberty rights. In light of the intuitions supporting Egalitarian Ownership, to count as an interpretation of it, Common Ownership must guarantee minimal access to resources, that is, impose duties to refrain from interference with certain forms of use of resources. Therefore we must add that protective perimeter of claim rights to the liberty rights. We obtain enough mileage from the original intuitions to require that common ownership rights (for Common Ownership to serve as an interpretation of Egalitarian Ownership) be conceived of in sufficientarian terms, in the sense that no co-owner should interfere with actions of others if they serve to satisfy basic needs. These intuitions cannot be pressed beyond that. Equal Division and Joint Ownership both press them too far.

Yet we do have to add one more right. We must also make sure individuals can maintain their co-ownership status under more complex arrangements. A necessary condition for the acceptability of such arrangements is that the core purpose of the original rights can still be met. That core purpose is to make sure co-owners have the opportunity to meet their basic needs. In Hohfeldian terminology, co-owners have an *immunity* from living under political and economic arrangements that interfere with the ability of those subject to them having such opportunities.

[11] For the Hohfeld terminology, see Jones (1994), chapter 1; Edmundson (2004), chapter 5; Wenar (2005).

4. One question that arises on Grotius' account of collective ownership (mutatis mutandis for all such accounts) is whether *all* of the divine gift can be occupied at the exclusion of others. Grotius famously responds negatively, arguing that the *seas* could and should not be so occupied. After arguing that there can be no individual property claims to the sea, he states: "The same might be alleged of the Air too, could we put it to any Use, without being posted on the Surface of the Earth" (DJB II. II. III. 1). Nowadays we *can* put "the Air" to use. We will apply what we learn from Grotius' account of the seas to that scenario and derive lessons for distributional questions that arise about climate change.

Grotius' work contains two accounts of private property, so two ways of generating the question of whether *everything* can be appropriated. According to *De Jure Belli,* common property is divided ever more, in response to changing socio-economic arrangements (II.2.II.5). People realize that adjustments are necessary, make agreements to that effect, or accept them tacitly. First occupancy decides who gets to privatize what.[12] In DJB II.2.III, following his views about privatization, Grotius explains that the sea is excluded from privatization because it is big enough for everybody's use. This emphasis relates to his point in II.2.II, that the arrangement of common use served *the same purpose* as the introduction of private property. For the sea no new regime was *needed* to ensure arrangements under different conditions serve the original purpose.

The earlier *Mare Liberum* (ML) also explains the process by which things became "proper." Again we read that at the earliest stage there merely exists a right to use. But

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[12] See DJB, II.2.II.5, but also II.3.1 and II.3.IV.1, and in II.8.VI.

Mare Liberum does not turn on agreements to explain what happens next. Grotius distinguishes between two stages of private acquisition (ML, pp 22f). First, acts of use create special relationships between things and certain individuals. Sometimes *use* amounts to consumption, thus to *abuse*: the apple I eat is no longer left for others to use similarly. Other things are made worse by being used. A form of private ownership is then inseparable from use. At the second stage, Grotius explains that something similar also occurs in other cases. The passage speaks of "a certain reason" (the Latin word being "ratio"). The value of assigning objects to specific people is realized: the "ratio" was that occupation often changes objects of use. Instead of compacts *modifying* common use, private ownership arises through *natural extensions* of use.

Grotius next assesses the limitation of appropriation, especially regarding the seas (p 24). The centrality of occupation as basis for private ownership becomes clear again.[13] One reason why Grotius rejects the idea that some people can lay claims to the seas here is that the seas *cannot* be occupied. The mechanism that explains which individual would be the owner at the exclusion of others does not apply to the seas. Even if occupation were possible, it would be wickedness because gains for occupiers do not depend on excluding others. There appears to be a tension between *De Jure Belli* and *Mare Liberum,* as only one of them gives an important role to convention. Yet the point in both is that the earth belongs to everybody, but that it is left to the will of men to develop this gift. Precisely how particular arrangements come about is inessential, as long as the changes

[13] On the importance of occupation, see ML, p 24, p 34.

continue to make sense of the original situation of equity, and are reasonable adjustments to new circumstances given Grotius' starting points.[14]

What is lasting about Grotius' arguments? Parts of the sea can now be patrolled by air and by water, so differences between the ability to occupy land and water are a matter of degree. Nor is it still true that use by one party leaves intact what others could do with areas of the sea: that much holds for ships traveling through, but not for fishing and seabed exploitation. Writing in the late 19th century, Sidgwick realized that Grotius' argument with regard to fisheries had expired (Sidgwick (2005), p 228). In light of these changes, on Grotius' own terms, complete freedom of the seas is no longer called for.

The most durable of Grotius' ideas here is that, first, given a certain state of technology, the original purpose of natural ownership rights, in the case of the sea, can be preserved without new property arrangements; and that, second, this point entails that no such new property arrangements *should* be made, barring changes in technology. Behind this idea, in turn, is a conservative principle of occupation at the exclusion of others: unless there is a good reason to exclude people from parts of the earth by occupation, they should not be excluded. Collective ownership, although consistent with occupation at the exclusion of others under certain conditions, also imposes obstacles on the occupation of parts of the collectively owned planet. We should see these constraints in connection with other constraints on private property rights, and thus as aspects of an overall coherent development of collective ownership. The founding of communities presumably is a good reason for exclusion – Grotius takes no issue especially with the existence of states. But that reason, given the conditions under which he wrote (and under

[14] See also Buckle (1991), p 43.

which we still live), has no bearing on the seas. The burden of proof, at any rate, is on those who wish to legitimize occupation. As Grotius saw it (as we may add, in light of the technological accomplishments of his age), that burden could not be met for the sea.[15]

5. Our non-theological account interprets Common Ownership in terms of a Hohfeldian liberty right, an elementary claim right, as well as an immunity right not to have to live under arrangements that fail to preserve the purpose of these liberty and claim rights. On this approach too we must ask: does this view entail that each part of the commonly owned earth is subject to occupation at the exclusion of others? This question assumes a more general shape, given that we are exploring the connection between the ownership status of the earth and that of its parts. Generally, there are *three* (rather than two) ways in which parts of the earth can be owned, or three different ownership statuses parts of the earth may have, in light of Common Ownership. First, parts of the earth could be owned in accordance with conventions that allow for occupation at the exclusion of others (in a manner that still has to respect the original natural rights, and as well as constraints, e.g. on immigration policy, see Blake and Risse (forthcoming), Blake and Risse (2007)). Second, parts of the earth could remain in common ownership.

Only these two sorts of ownership status were present in Grotius. Questions about ownership status reduce to a binary choice: the seas, say, either could be appropriated by some at the exclusion of others, or be left in common ownership. Yet, importantly, there is a third, intermediate ownership status that Grotius never considers although this would be a suitable ownership status to ascribe in particular to the seas, at least given *current*

[15] For the more recent development of the law of the seas, see Malanczuk (1997), chapter 12.

technologies and the problem they raise for Grotius' argument for a free sea. Parts of the earth may be owned in such a way that common ownership gives way to specific property conventions, alas not conventions that provide for occupation at the exclusion of others. These conventions may imply different regulations for different goods generated by the same area. As far as the seas are concerned, the ability of ships to travel through may remain unregulated, while fisheries and exploitation of seabed resources may not. Our more general question then becomes: under what conditions do these manners of owning parts of the earth respectively apply?

In light of the political and economic concerns and technological possibilities of his age, Grotius was interested primarily in the seas, but regions that do not readily lend themselves to being governed by property conventions that allow for appropriation by some at the exclusion of others also include "the skies," that is, the air space, or the atmosphere, as well as Antarctica and outer space. In Grotius' day, those areas were largely untouched by human activities, although we saw above that Grotius also acknowledges an application of his ideas to "the Air." Yet after technological changes triggered human interest in these regions, each has become the subject of international law. The term "common heritage of mankind" has been applied to all these areas.[16]

Within our non-theological approach, we can regain Grotius' conservative principle of occupation, and apply it to these areas. Under Common Ownership, the presumption is that parts of the earth can be used by some at the exclusion of others. Yet it takes a good reason to claim regions in such a way. One such reason, again, is the founding of communities that would not be viable otherwise. Collective ownership

[16] See Buck (1998) for the background to that term; also Attfield (2003), pp 169-172.

generates constraints that make communities acceptable to both members and non-members (considerations regarding immigration, or human rights). Within communities, additional considerations determine what property arrangements are acceptable to members. (For instance, the existence of coercive and cooperative structures matters for questions of distributive justice within states.) The burden of proof for the acceptability of appropriation at the exclusion of others is on those who wish to do so.

Sometimes there are reasons not to subject parts of the earth to appropriation at the exclusion of others, and thus this burden of proof cannot be met. To continue with the formulation of that point (at the general level, no longer tied to the seas), let me introduce some vocabulary. Capturing distinctions common in the public goods literature, Buck (1998), chapter 1, for instance distinguishes among different categories of goods, depending on two criteria: excludability and subtractability. Goods may allow more or less readily for the exclusion of people from use; moreover, use by some prevents similar use by others to more or less considerable degrees.[17] Combining this terminology with the earlier considerations regarding communities, a *clear case* for leaving an area in common ownership is if: first, the area does not lend itself to the founding of durable communities (where the paradigmatic case of such a scenario is that conditions of human

[17] We can combine these criteria in four different ways, which, according to Buck, render particular property arrangements appropriate (especially for parts of the earth): If there is little difficulty in excluding others, and use subtracts from the value of the goods, a private property regime suggests itself. If there is little difficulty in excluding others, but use by others does not subtract from the value of the goods, a toll regime suggests itself. If there are difficulties in excluding people, and use subtracts from the value of the goods for each user, a common pool regime suggest itself. And if there are difficulties in excluding others and use does not diminish the value of the goods for each user, these goods should be kept as public goods. These distinctions map onto the three-fold distinction among ownership statuses I introduced above: the private property regime corresponds to the ownership status that allows for appropriation at the exclusion of others; the public goods regime to the ownership status that denies the appropriateness of property conventions that go beyond the original common ownership rights; and the toll regime and common pool regime to the ownership status that allows for conventions that go beyond the original ownership rights without being focused on occupation at the exclusion of others. For discussion of public goods and common pool regimes from an institutional perspective, see also Ostrom (1990) and Bromley (1992).

species functioning do not allow for such a founding); second, the area is characterized by low degrees of excludability and subtractability. For such areas, nobody could sensibly be expected to respect any proposed new property convention.

At some stage, these conditions were satisfied for each area in the common heritage, trivially so when lack of technology rendered their use impossible. Yet technological progress has rendered each of these areas interesting for human purposes. These areas still do not lend themselves to the founding of lasting communities,[18] but exclusion has become easier, and new ways of exploiting goods create a higher degree of subtractability than before. These changes apply differently to the four areas, and took effect first with regard to the seas, prompting Grotius to write *Mare Liberum*. If such deviations occur from what above I called the clear case for leaving areas in common ownership, we must revisit what Common Ownership entails for the respective areas.[19]

What common ownership rights imply for such areas depends on the state of technology, and may change over time: Such change might lead to a situation where the reasons why certain areas should remain in common ownership lapse. Appropriation at the exclusion of others may then be acceptable. Or we may then need property conventions that replace common ownership rights without allowing for appropriation at the exclusion of others. Such conventions are appropriate whenever neither the clear case for leaving areas in the original common ownership, nor conditions for the founding of lasting human communities apply. If such a change of conventions is appropriate, what

[18] There are space stations, research stations in Antarctica, submarines, and planes, but none of these should count as serious counterexamples to the claim just made.

[19] Buck's (1998) discussions about Antarctica, the open seas, the atmosphere, and outer space make clear how complex the legal history of all this is.

counts as "right" and "wrong" with regard to the use of the relevant parts of the earth also changes. The ownership status of given areas is conventional, alas not in the manner in which, say, driving on the right side versus driving on the left side is. That choice is arbitrary, whereas the choice of conventions regulating access to certain parts of the earth is subject to criteria of reasonableness and appropriateness.

6. Let us turn to the atmosphere. The skies are a paradigmatic case of a part of the collectively owned earth that should neither be left in common ownership, nor be subject to private appropriation. Different conventions should be adopted for different public goods provided by the skies.[20] Before the invention of airplanes, the skies did not play much of a role in human activities. Yet this invention created a new good to be allocated: control of airspace. Since the invention of planes made aerial bombing possible, this is a precious good indeed. This good is highly subtractable, and technological advancements have increased possibilities for exclusion. The norm quickly emerged that each country would control its airspace. Since such control is crucial to security, this norm is supported by whatever arguments support the existence of states.[21] A good that was not created by technological advances, but that only became perceived *as* a good through such advances is the *absorptive capacity* of the atmosphere, its capacity to absorb greenhouse gases in a manner that leaves basic climate conditions unaffected. Absorptive capacity too is highly subtractable: there are limits to how much greenhouse gas there can be in the atmosphere

[20] As Sands (2003), p 13, explains, according to the legal understanding of these terms, airspace above land ends at the point at which the legal regime of outer space begins.

[21] See Buck (1998), chapter 5.

without triggering climate change. Unlike airspace, it is a good of low excludability: how much greenhouse gas is emitted depends on individual states, but known technologies cannot prevent emissions from dispersing throughout the atmosphere.

According to the ownership approach, there is now a *great moral urgency to regulating access* to the absorptive capacity, to make sure individuals can continue to exercise their natural rights – to make sure, as Grotius would say, that the original rights continue to serve their purpose. The absorptive capacity of the earth as a good makes clear that the skies are not just an area where it is *appropriate* to adopt property conventions that replace common ownership rights without allowing for appropriation at the exclusion of others. The adoption of such conventions is *morally required*, given that regulation of access is needed to preserve original ownership rights, but no plausible case for private ownership is available. This point objects to those who (such as apparently Posner and Sunstein (2007)) think that, as a normative matter (rather than a matter of political reality), national self-interest should carry considerable weight in assessments of climate agreements. Self-interest can carry such weight if we are looking for agreement regarding airspace control (following what we said about such control). But we are asking about the absorptive capacity, relevant is not what is mutually rational, but what burdens states can reasonably be expected to bear. It is now wrong to leave that particular part of the earth in common ownership and thus leave access to it unregulated.

How, then, should we regulate access to the absorptive capacity according to Common Ownership? What does it mean, according to this conception, to treat everybody as an equal with regard to the burdens of climate change? This question takes us to theories of fair division. Such theories deal with the arbitration of competing

claims, which may not always literally "divide" anything, but may for instance regulate access. Theories of fair division provide resources to reach decisions under circumstances of persistent disagreement that allow for claims to be accommodated proportionately. A difficulty is that there often is no solution under the typical circumstances that call for fair-division solutions in the first place, conditions of persistent disagreement.[22]

Yet the ownership standpoint rebuts two common approaches to the regulation of access to the absorptive capacity. The first is the idea that each person has a claim to an equal per-capita share of the atmosphere, the second is a principle of accountability for historical emissions -- at least those versions of it that finds fault with past emitters, before a certain stage, or endorse no-fault-based strict liability. We can derive this much directly from Common Ownership. But these findings will only provide a partial answer to the question of what it means to treat people as equals in moral assessments of climate change responses, as far as the standpoint of collective ownership is concerned. Yet our findings do constrain any more complete answer, to which we will then later also turn.[23]

[22] (1) Shue (2001), p 450, thinks it is "slightly odd" to treat the absorptive capacity as a vital resource, but does it anyway, because it is, as he says, a necessity, and an increasingly scarce one. Buck (1998), pp 125-128 is reluctant to talk about a common pool regime in the case of the atmosphere (a property regime she thinks should apply for goods of low excludability but high subtractability). Her point is that atmospheric resources are not analogous to resources in other domains (fisheries or seabed resources), and that therefore this terminology does not apply. Clean air, for instance, does not lend itself to ideas of "resource flow" in the same way in which other resources do. Instead, we should think about the atmosphere in terms of a protective regulatory regime charged with the regulation of externalities. But these considerations should not be problematic for our discussion. Within the literature that Buck (1998) is part of, a common pool regime has a rather specific meaning, and thus its applicability to the atmosphere might not be straightforward or even sensible. Similar problems might arise with regard to the absorptive capacity of the earth (not a term Buck uses), but nevertheless, within the approach we have adopted, we can still say everything we want to say about absorptive capacity and its regulation. (2) For more on the difficulties involved in applying fair division (by way of contrast with aggregation methods), see Risse (2004a). For introductions to fair division, see Young (1995), Brams and Taylor (1996).

[23] Grubb et al. (1992) discuss various ways in which the burden of global warming can be split. They also mention various ways of thinking about how to allocate emissions to countries, but area, GDP, population, etc. But their goal is to come up with a politically realistic solution, and none of these methods meets that test. (See also Grubb (1995)) Traxler (2002) also discusses several ways of dividing the burdens of climate change, and, mostly for practical reasons, settles for a principle of equal burdensomeness. Neumayer

Let us begin with the per-capita approach. Singer (2002) and others have asserted that humanity collectively owns the absorptive capacity of the earth. From there Singer derives a per-capita approach as the principle of regulating access to it. Each person should be allowed to use up the absorptive capacity to the same degree, thus possess the same entitlement to pollute. One could implement such an approach via a "cap-and-trade" system. A global limit on greenhouse gas emissions would be set, and each country obtain an amount of permissible emissions (its "cap") based on population size. A country that wishes to generate more pollution has to purchase additional rights.

One way of assigning these caps is to argue that each person, say, since the beginning of the industrial revolution has the same entitlement to pollute, and determine what amount of pollution that would be in light of bearable concentrations of greenhouse gases. Another approach is to think of the distribution in terms of current populations. Variations are conceivable: one could index the relevant population sizes to a year before which public actors could have been reasonably expected to design environmental policies to combat pollution. Or one could do indexing to a future year, to avoid perverse incentives for population policy or to accommodate countries with young populations.[24]

The equal per-capita approach allows us to regulate access to the absorptive capacity in a manner that does not depend on existing political structures. This approach draws its prima facie plausibility from the view that, between any two people, neither has done more than the other to create the absorptive capacity of the earth. Alas, at this stage,

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(2000), p 187, states: "That emission rights should be allocated on an equal per-capita basis and that historical differences in emissions should also be accounted for is (…) the shared view of almost every scholar and policy maker from the developing world."

[24] Grubb et al. (1992) make clear that the per-capita allocation approach may take a contemporary or historical form, depending on who is counted. Singer (2002) too discusses both possibilities.

we have a response to this appeal. Assuming the idea that humanity collectively owns the atmosphere will be plausible only to those who also endorse collective ownership of the earth,[25] the argument in Singer (2002) is the sort of move that right-libertarians have employed to lead the collective ownership approach ad absurdum. Can somebody seriously claim, asks for instance Murray Rothbard, that a newborn Pakistani baby has a claim to a plot in Iowa that Smith just transformed into a field?[26] If one ponders such implications of collective ownership, says he, one realizes its implausibility. Yet no sensible conception of Egalitarian Ownership endorses the idea that collective ownership *of the earth* implies such ownership of any particular object on, or part of, the earth. This inference especially does not hold for the absorptive capacity of the earth, or the "global sink." It is because this inference fails that we had to discuss the ownership status of parts of the earth the way we did above. The idea that any two people are symmetrically located with regard to the atmosphere does not lead to the equal per-capita approach.[27]

However, by way of contrast with the ex ante argument just considered, one may think of the equal per-capita approach as the ex post solution to the problem of how to

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[25] This seems straightforward enough. There is nothing distinct about the atmosphere in a way that would justify restricting the domain of collective ownership in this way.

[26] Rothbard (1996), p 35; Hospers (1971), p 65, makes a similar point.

[27] (1) One might think that Equal Division would give rise to the equal-per-capita proposal. But that is not the case: that view is concerned with an equal division of the whole of the earth's resources and spaces, not the atmosphere in particular. In fact, no plausible conception of Egalitarian Ownership licenses the inference from collective ownership of the earth to a per-capita approach with regard to greenhouse gas emissions. (2) Jamieson (2001) also advocates the equal per capita proposal, as does Baer (2002; see also Athanasiou and Baer (2002). One curious feature of the equal per-capita approach is the following: Singer (2002) argues largely on pragmatic grounds that such an approach to the division of the burdens of climate change would be appropriate, suggesting that this would let the industrialized countries off lightly, compared to ideas such as accountability for past emissions. As opposed to that, Frankel (2007) dismisses this idea as unrealistic, but he in turn is being criticized by other contributors to Aldy and Stavins (2007a) as making an unrealistic proposal, being a defender of a an international institutional framework within which emissions quotas are set. Appeals to pragmatism play interestingly different roles in these debates.

regulate access to the absorptive capacity of the earth *in accordance with Common Ownership.* But note some implications of the equal-per-capita approach. Countries would obtain emission contingents regardless of how this affects their economy, how rich they are, how they use the contingents, what importance they have for people's lives, and whether countries take any measures to reduce emissions. A world-wide "cap-and-trade" system may allocate payments to countries although such payments would be disconnected from all these issues.[28] Such effects would be innocuous if there were an *ex-ante entitlement* to an equal share of pollution. Alas, without such entitlements, these implications render the equal per-capita approach implausible. "[E]veryone has the same claim to part of the atmospheric sink, at least as a starting point for discussion," says Singer (2002), p 35, "and perhaps, if no good reasons can be found for moving from it, as an end point as well."[29] But we have now articulated a good reason for moving from it.

7. So the equal per-capita approach is implausible. Let us look at the idea that past emissions ought to be taken into account when we regulate access to the absorptive capacity of the atmosphere, where for now I mean by "past emissions" emissions before 1990. (I also talk about "the principle of historical accountability.") The point of this approach is that, regardless of how we spell this out, the fact that industrialized nations have already used up some of the absorptive capacity should matter for what access they

[28] Singer (2002) addresses the concern that not every country might be able to put such payments to good use, or might have a government that should be trusted with them. He suggests a solution to that problem (a form of trusteeship). However, the objection formulated above is of a different nature.

[29] Neumayer (2000) captures a similar thought: "The natural absorptive capacity of the planet earth (…) truly belongs to nobody and should therefore be equally assigned to everybody in order to give everybody equal opportunity to benefit from emissions" (p 188).

obtain now. Conceivably, even emissions should matter that occurred before human activities were tied to the greenhouse effect, or before that effect was understood.[30]

The following considerations support the view that past emissions should be *disregarded*:[31] First, past emitters, at least in earlier stages of industrialization, did not know, and (in any relevant sense of "could") could not have known, the effects of greenhouse gas emissions. Nor could they have known that fossil fuels would remain essential to the economy for centuries to come: their emissions only became part of a problem because economies continued to depend on fossil fuels. One should also not forget that, as documented for example in Polanyi's *Great Transformation* and illustrated in Zola's *Germinal*, the earlier stages of industrialization were traumatic for the lower social classes. Thinking of that age, one should not cherish an image of happy consumers.

Second, it is unclear who precisely caused what damage. Nor is it clear who should be accountable: is it only states, or also companies or individuals? Such questions create difficulties for assigning responsibilities for past emissions.[32] Third, the benefits of industrialization have spread across the world. Developing countries that wish to industrialize benefit from inventions of earlier industrialization efforts, which had to use

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[30] One version of the equal per-capita approach can be developed in terms of historical per-capita assignments, but one can take historical emissions into account without endorsing an equal per-capita approach. Historical accountability is also known under the name "natural debt," or "ecological debt;" see Gruebler and Fujii (1991), Smith (1991), Simms (2005), Neumayer (2000). The most recent decades have contributed disproportionately to climate change: According to the 2007 IPCC mitigation report, there was a 70% increase of greenhouse gas emissions between 1970 and 2004, 24% between 1990 and 2004 (p 3). Marland et at. (2006) report that "[s]ince 1751 roughly 305 billion tons of carbon have been released to the atmosphere from the consumption of fossil fuels and cement production. Half of these emissions have occurred since the mid 1970s."

[31] There has been a good deal of discussion of historical emissions. See Shue (1996), (1999), Gardiner (2004), Caney (2006), Grubb et al (1992), Gosseries (2004), Singer (2002).

[32] See Caney (2006) and (2008) for a discussion of these difficulties. Following Houghton (2004), p 150, he illustrates the difficulties of ascribing amounts of harm to climate change by pointing out that, for instance, the sea level in Bangladesh would have risen to a certain extent anyway, because of soil erosion.

inferior technology.[33] Countries other than those where most emissions have occurred have benefited from those emissions via trade, as well as via the spread of technologies and science whose development became possible only in industrialized societies.

I grant that the second point above fails: one cannot block demands for the integration of past emissions into future-directed regulation on the strength of difficulties in assigning responsibilities. Granting this makes my argument more difficult since I seek to rebut historical accountability, so I will not dwell on it. Roughly speaking, questions about an assignment of responsibilities cannot be answered uniquely, so choices have to be made that one cannot uniquely support above other possible choices. But this is a common phenomenon in thinking about moral problems. The amount of arbitrariness involved here does not entirely undermine ideas about responsibility for past emissions.[34]

There has been much controversy about the third point, that developing countries too have benefited from industrialization, and that therefore the economic changes of the last centuries have seen a global economic development that has benefited everybody. Shue (1999) responds that developing countries have paid for the benefits they have obtained. Singer (2002) points out that at any rate most goods and services produced in

[33] This should be kept in mind in reference to statements such as this in Neumayer (2000): "To ignore historical accountability would mean to privilege those who lived in the past in the developed countries and to discriminate against those who live in the present or will live in the future developing countries" (p 188).

[34] I also grant that one cannot object to accountability for past emission by insisting that past emitters are indeed *past* emitters and that contemporaries should not be burdened with accountability for what people did whom they never knew or on whose actions they had no impact whatsoever. Not only do I think that there are political (or often only societal or economic) continuities within countries – including many countries that are held accountable for climate change -- that create accountability; it is also true that actions in the past shape the prospects of contemporaries that by themselves render this objection implausible. It should be clear, though, that this standpoint of contemporaries just not being accountable for the deeds of past generations has important defenders in the philosophical literature, such as Otsuka (2003). (For reservations regarding that view in a context in which one also wishes to take seriously the standpoint of collective ownership of the earth, see Risse (2004b).) On such a view, one might then treat both the burdens and the benefits left behind by past generations as windfalls, and think of moral entitlements to them accordingly.

the US (89%, p 39) are for domestic consumption. Yet life quality has improved across the world since the beginning of the industrial revolution, in terms of income, longevity, child mortality, or literacy. These benefits are impossible to detach from industrialization and have been of global reach, no matter how differentially they have taken effect.[35] Still, not all past emissions can be accounted for in this way. Although we should not think of at least the early stages of industrialization as happy days, a fair amount of past activities that contribute to climate change cannot be seen as benefiting most people.

Crucial is the first point above. If past early emitters did no wrong, it is irrelevant that these emissions cannot all be regarded as necessary elements of an overall beneficial economic development, as well as that we have granted to the opponent that we can find a plausible assignment of responsibilities for past emissions. Past emissions could then not factor into regulation of access to the absorptive capacity. Consider an objection to the relevance of the wrongfulness of past emissions. Tort law in some countries endorses strict liability, accountability without fault or wrong-doing. Could we not hold people accountable for past emissions even if nobody was at fault? Yet strict liability must overcome a presumption of unfairness. It should not be applied without the affected individuals being aware of its applicability. Only then can they make a choice whether to participate in the relevant activities, and otherwise it is unfair to hold them accountable.[36]

So did past emitters do any wrong? According to the standpoint of Common Ownership, in addition to areas that are subject to private appropriation, there are areas

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[35] For elaboration of this claim, see Risse (2005a), and (2005b).

[36] On strict liability, see Murphy and Coleman (1990), pp 126-130. I take strict liability to be opposed to both a fault-based principle and a principle that restricts liability to cases in which people would be accountable if they committed a moral wrong even though they might not be to blame for it. It in this strong version of that I am setting aside strict liability. The distinction between (blameworthy) faults and moral wrongs matters below.

that should be left in common ownership or be governed by conventions that go beyond common ownership without allowing for appropriation by occupation. What the ownership status of these areas ought to be depends on available technology, and may change over time. So the ownership status of these areas, again, is conventional, but not in the manner in which driving on the right side versus driving on the left side is. The choice of conventions regulating access to certain parts of the earth is subject to criteria of reasonableness and appropriateness. Technology has turned absorptive capacity into a good in need of regulation. Yet at earlier stages of using technologies that increase greenhouse gas concentrations it was not and (in any relevant sense of "could") could not have been known that they had this effect. At that stage, people were not expected to adopt any regime of access other than to leave the absorptive capacity unregulated.[37]

But *does* this mean, then, that early emitters did no wrong? On both Grotian accounts of the emergence of private property regimes, changes in ownership status are reasonable adjustments to new circumstances. But now we arrive at a distinction between what people, objectively speaking, ought to have done by way of adopting new conventions, and what they could reasonably have been expected to do. In moral theory this situation is familiar. We often appeal to what individuals had reason to do by way of assessing when they should be *blamed*, or *excused*. Yet we think of *rightness* and *wrongness* differently, in terms of what objectively speaking, all things considered, ought to have been done. In light of this distinction, we cannot conclude that early emitters did no wrong. In hindsight, all things considered, the right course was to adopt conventions

[37] We can remain non-committal with regard to the question of what such a "regime of access" actually might have amounted to. But the spectrum of possibilities is not limited to international treaties. Such a regime might amount to no more than the emergence of certain international practices.

of access to the absorptive capacity that would have limited emissions. Objectively speaking, technological abilities in early stages of industrialization were *already* such that a new regime of access to that capacity was required.

Still, a set of conditions of *maximally excusatory force* applied to early emitters. The standpoint from which it is correct to say that decision makers in the past ought to have adopted different norms sets aside scientific limitations. People could not have been expected to accept different conventions at those early stages. "[A]ttempts to apply fault-based standards are virtually guaranteed to become embroiled in more or less irresolvable controversy about historical explanations," says Shue (1996), p 16. "Yet never to attempt to assess fault is to act as if the world began yesterday." We can *assess* fault, but there *was* no fault in the past. The world did not begin yesterday, but what was right and wrong with regard to the absorptive capacity, as well as what people could reasonably be expected to do, has changed over time. It was indeed wrong of earlier emitters not to take precautions, but they cannot be blamed.

What is the relevant time such that emitters should not be blamed for emissions before that stage? Gosseries (2004) mentions various sensible dates,[38] among them 1896 (the publication of an article by Arrhenius on the greenhouse effect, "the first warning of global warming" (Neumayer (200), p 188)); 1967 (the publication of the first serious modeling exercise on the matter); 1990, and 1995 (the publication of the first and second IPCC report). Neumayer (2000), a defender of historical accountability, thinks the public and the decision-makers did not become aware of the greenhouse effect before the mid-1980s. The 1992 UN Framework Convention on Climate Change would also set a

[38] See also Simms (2005), chapter 2, for the history of the discovery of climate change.

plausible date. The years of the publication of the third and fourth IPCC report (2001, 2007) would be possible dates as well, as both provided more clarity on climate change.

As far as blame is concerned, the decisive question is from when on decision makers could reasonably be expected to take measures in response to climate change. Picking any particular year is bound to be unsatisfactory. With that limitation in mind, 1990 strikes me as the latest sensible date: after all, the 1990 IPCC report was already summing up a body of insights gathered over the years. At the same time, in light of the relevance and visibility of that report, and in light of persistent doubts that would otherwise remain about what decision makers may be expected to have thought about, 1990 also is a sensible choice, *provided* the proposal for the distribution of burdens acknowledges reasons other than rectification of blameworthy past emissions as reasons for demanding support. In that case, the importance of 1990 can make us neglect the fact that it is the *latest* sensible choice. (The proposal below acknowledges such reasons.) With some hesitation I adopt 1990 as the relevant date, which is why I have stipulated all along that past emissions are those made prior to 1990.

I do not seek to absolve rich countries from responsibility. But they should shoulder burdens primarily because they *are rich*, not because they *have made past emissions*. Suppose country X polluted heavily, but fell into decline following World War II. Since then emissions too have much declined. Should X be accountable for past emissions? If one answers “no” (as I think one should), one presumably does so guided by the idea that the rich should pay, rather than past emitters. Often the rich are past emitters, but we should keep apart these reasons. But while past emitters should not be

blamed, the fact that they did do a wrong has to enter any sensible proposal for the allocation of burdens.

8. So how should we regulate access to the earth's absorptive capacity, to the extent that this is a matter of treating all people as equals in accordance with Common Ownership? To take stock: We have established first that, according to the ownership standpoint, regulation of access to the absorptive capacity of the earth is not a matter of asking what is mutually rational for states – politically speaking it might well be, but the ownership standpoint introduces a moral perspective from which we have to ask what burdens states can reasonably be expected to bear. We have explored two proposals for the regulation of access to the absorptive capacity, the equal per-capita approach and the approach in terms of historical accountability. We have rejected the equal per-capita approach. We have also seen that the ownership standpoint allows us to make sense of talk about "right" and "wrong" with regard to uses of parts of the earth in the first place, which is a rather important contribution of the ownership standpoint to this debate. Past emitters did do a moral wrong, but no plausible version of historical accountability can turn on the fact that past emitters are to be blamed for their emissions, nor on strict liability that disregards concerns about blameworthiness and moral wrongdoing.[39] Finally, we have argued that 1990 is a sensible year for determining the stage before which emitters cannot be blamed – tentatively, in the sense that a proposal for the distribution of burdens must

[39] Both results may be surprising, for different reasons. An equal-per-capita approach would strike many as a natural way of assigning burdens from climate change according to the standpoint of collective ownership, whereas historical accountability at first seems to have little to do with that standpoint.

acknowledge reasons other than rectification of blameworthy past emissions as reasons for which disadvantaged countries can demand support in dealing with climate change.

What we have argued so far has been drawing on the conception of Common Ownership directly (except for the tentative argument for the year 1990 as the aforementioned cut-off year). But these considerations do not lead to a full answer to our question about how to regulate access to the absorptive capacity, to the extent that this is a matter of treating all people as equals in accordance with the standpoint of collective ownership. What we have argued provides a partial answer, and thus a *list of constraints* on any full answer. I now make a proposal for principles that regulate access to the absorptive capacity, that are designed to treat people as equals, as far as ownership approach is concerned, and that integrate our findings. This proposal combines ideas about who is best able to pay ("ability to pay" principle) with ideas in term of current per-capita emissions ("polluter pays" principle).

This proposal will be more tentative than what I have argued so far. My main concern is to show how our results can be extended into an overall plausible proposal for regulating access to the absorptive capacity. What I cannot provide here is a careful argument why particularly this *rather than other* extensions of our findings into an overall proposal ought to be adopted. Nevertheless, the applicability of the "polluter pays" and "ability to pay" principle, even though they cannot be directly derived from the standpoint of collective ownership, presupposes that climate change is a genuinely moral problem whose burdens must be equitably divided. That view, in turn, obtains major support from the standpoint of collective ownership

The focus on the "polluter pays" principle and the "ability to pay" principle is sensible *partly* because of the weaknesses in other approaches we have established (the equal-per-capita approach and historical accountability). It is common in arguing for a particular solution to fair division problems that certain principles gain plausibility from deficiencies of other prima facie plausible candidates. But *partly* this focus is sensible also because the "polluter pays" and "ability to pay" principles are prima facie plausible by themselves. This is clear for the "polluter pays" principle: the reason why we need to deal with problems of climate change is that there *are* greenhouse gas emissions, and who produces them should matter to the distribution of burdens. The "ability to pay" principle is supported by two plausible ideas stated succinctly by Shue (1999):

> Among a number of parties, all of whom are bound to contribute to some common endeavor, the parties who have the most resources normally should contribute the most to the endeavor. (p 537)

> When some people have less than enough for a decent life, other people have far more than enough, and the total resources available are so great that everyone could have at least enough without preventing some people from still retaining considerably more than others have, it is unfair not to guarantee everyone at least an adequate minimum. (p 541)

In addition to the four principles that have already entered our discussion (per-capita equality, past emissions, polluter pays, ability to pay) there are relatively few others that even ought to be considered. The "willingness-to-pay" principle asks those to share the burdens who are most willing to pay, where this willingness is presumably an expression of the extent to which they expect to be harmed by climate change. Yet this principle disregards both considerations of causal involvement with the problem and capacity to deal with it, and is ruled out for these reasons. The principle of "comparable burdens" is ruled out for the same reasons, as is the view that the land area should be decisive.

Sometimes one finds the argument that burdens from climate change ought to be assigned in ways that consider broader distributional implications. The proposal I am about to present does so, and needs to do so to justify the choice of 1990 as the date before which emitters cannot be blamed. Pushing this point further strikes me as unjustified. An approach that is rather common in the political debate about climate change is "grandfathering:" that is, it takes the emissions of a particular year as given and asks countries to reduce their emission by a percentage of those emissions that is fixed across countries. But this criterion basically suspends moral inquiry and has little to offer beyond political expediency.[40] Finally, in immediate competition with the polluter-pays principle there is a consumer-pays principle, according to which greenhouse gas emissions that occur in the process of producing a good should not be ascribed to the producing country, but to the country where they are consumed. But this idea is implausible as long as it makes sense to say that the producers sell their products voluntarily on the world market. For in that case that share of the emissions can plausibly be said to be under their control, rather than under the control of potential buyers. Perhaps it is not plausible to say this much about very poor countries, but as long as those are not asked to contribute to a solution to climate change, the consumer-pays principle is implausible.

Recall the distinction between burdens from adaptation and burdens from mitigation. I consider these burdens separately because burdens from adaptation raise (at least also) questions of *rectificatory* justice (turn on backward-looking questions about

[40] The term "grandfathering" derives from the post-civil war American practice of exempting white voters from poll tax and literacy test requirement for voting if they could prove that their father or grandfather had already had the right to vote. See Gosseries (2005), pp 297ff.

culpability and wrong-doing for which compensation may be due) whereas burdens from mitigation raise questions of *distributive* justice (turn on forward-looking questions about how to assign sacrifices vis-à-vis projected business-as-usual trajectories).[41] Among burdens from adaptation we can distinguish burdens that arise because of emissions that occurred after people could be expected to regulate access to the absorptive capacity, and those from emissions that occurred before that, at a time before which individuals can be blamed for emitting. These distinctions are impossible to draw practically without some arbitrariness. Yet we seek ethical principles that broadly guide envisaged treaties that regulate emissions and possibly also financial transfers, by offering an idea of what it means to treat people as equals from the standpoint of collective ownership. Inevitably, the path from there to allocations, obligations of aid, or penalties is thorny, and involves matters beyond the scope of our inquiry (e.g., political and economic considerations).

I assume that two general obligations apply. First, there is a generic obligation (at the level of the global order) to help states realize human rights, and thus to help them create conditions under which the realization of these rights is possible. Second, and related, there is a generic duty of assistance with building institutions. These particular obligations give a shape to a general duty of aid, one that is prima facie plausible enough and sufficiently present in the literature to be introduced without argument. The details do not matter, as long as the reader is willing to endorse some specifications of a general

[41] The idea here is this: We are envisaging a climate change treaty, or a set of such treaties, that would determine emissions from then on. Assuming this treaty is fair and all countries are acting in accordance with it, there would then be no further wrong-doing in emissions, as far as the standpoint of Common Ownership is concerned. So for emissions from then on, questions of rectificatory justice would not arise. They only arise for the period before then, but at the same time, it is also true that countries cannot be blamed for emissions before 1990. It is then plausible to think that demands of rectification are classified as demands for support in adaptation, to make up for the damage causes by unfair emissions.

duty of aid.[42] One sensible way of making good on these obligations is the sharing of technology and other support to mitigate or adjust to climate change. It is because of the presence of these generic duties that the choice of the latest sensible date before which emissions are not blameworthy is not too worrisome. A reader unwilling to grant such generic duties has to reassess the choice of 1990 as the relevant date for that purpose. For then more depends on that choice. (Ensuring the choice of that date is not too worrisome is one in two tasks of this appeal to a general duty of aid; I flag the other task below.)

Consider burdens from adaptation. Here we can draw on the results of our discussion of historical accountability. As a matter of rectificatory justice, countries that did not take considerable measures to reduce emissions *after* 1990, at any rate the wealthier among them, have a duty to compensate those that have been harmed because of this, with a priority on the poorer ones among them. Such compensation could amount to financial or technological aid, and be adjusted to whatever is needed. To the extent that adaptation becomes necessary because of emissions before 1990, no duty of rectification applies. As we saw, past polluters (i.e., those who emitted prior to 1990) cannot be blamed. They should therefore not be subject to duties of rectificatory justice, regardless of their present wealth. We will see shortly, however, that the fact that past polluters did after all commit *a wrong* enters this proposal as well, alas in a smaller manner than if they owed rectification.

Consider next burdens from mitigation. In this case, we are talking about burdens of distributive, rather than rectificatory, justice. The goal is to assess which countries

[42] I have argued for these in Risse (2009a) and (2005c), respectively. Risse (2009a) argues for a conception of human rights that is itself derived from the standpoint of collective ownership. So an appeal to such rights is not even extraneous to our discussion.

need to make how much of a sacrifice, as compared to their projected business-as-usual trajectories. This now is where the "polluter pays" and "ability to pay" principles enter. My proposal is that those should modify their production who, in terms of their per-capita wealth, are best able to afford the changes ('ability to pay"), and in whose case it makes the most difference ("polluter pays"). These principles have to be combined in a plausible manner. To illustrate, consider Michaelowa (2007)'s proposal. Michaelowa combines per-capita wealth and per-capita emission rates, and groups countries into categories depending on their combined index (weighing both criteria equally). The amount of emissions reduction for which a country is responsible, by reducing its own emissions or by making trade or transfer arrangements to get other countries to do it, is a function of this index. On this approach, a good number of countries would not incur any obligation, because they are ranked too low according to either one or both of these criteria).

Yet Michaelowa's proposal should be supplemented in such a way that for roughly equal index levels, countries should be expected to make more sacrifices that continue to benefit from emissions before 1990. No blame would be assigned for these emissions. Nevertheless, gains from such emissions would be *ill-gotten* (thus benefiting from them would amount to *free-riding* on ill-gotten gains), and the fact that such emissions continue to benefit countries should enter into the distribution at least in such a way that they differentiate among countries with roughly equal index levels. Countries would not be accountable for blameless but wrongful past emissions if they no longer benefit from them. This approach falls short of acquitting early emitters entirely while also falling short of holding them accountable to an extent required by strict liability.[43]

[43] Gosseries (2004) argues that if one considers ignorance an excuse, one would in fact condone an unacceptable form of wat he calls transgenerational free-riding. (What he calls intergenerational free riding

Note that there will be costs of adaptation that cannot be accounted for by rectificatory justice as sketched above, namely, costs of both adaptation that is necessary due to emissions that occurred before 1990 and adaptation that is necessary because of emissions that occur after an agreement has been concluded. As far as these costs are concerned, I submit that no demands to international transfer arise beyond what is required anyway by a general duty of aid. (This is the second appeal to that duty.) We do not now generally acknowledge international obligation merely because of the fact that some countries are located in less temperate time zones than others, beyond a general duty of aid and other more specific obligations that may arise, say, because of trading. Similarly, not all costs of climate change should trigger international redistribution.[44]

The proposal I have sketched brings into reflective equilibrium the ethically relevant considerations for regulating access to the absorptive capacity of the atmosphere. Thus brought together, these considerations offer a view of what it means to treat people as equals as far as moral assessments of climate change agreements are concerned. I have not explored in detail what other possible extensions to a full answer one could give by

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is free-riding of one generation on another within the same community, whereas trans-generational free-riding is free-riding of one generation in one community on another generation in another community.) Baer (2006) too argues that there is something problematic about contemporary's benefiting from harmful activities in the past.

[44] Caney (2008) proposes a qualified version of the polluter pays principle where this holds that "persons should bear the burden of climate change that they have caused so long as doing so does not push them beneath a decent standard of living." However, he also argues that the polluter pays principle cannot cover all aspects of the problem (non-anthropogenic climate change, the emissions of the poor, and the emissions of past generations – what he calls "the Remainder"). This leads to a second principle, namely, that "the duties to bear the Remainder should be borne by the wealthy but we should distinguish between two groups -- (i) those whose wealth came about in unjust ways, and (ii) those whose wealth did not come about in unjust ways -- and we should apportion greater responsibility to (i) than to (ii)." This is quite similar to what I have proposed. By way of contrast: Panayotou et al. (2002) argue that each country should be expected to make sacrifices to the extent that it has contributed to the problem, and should be compensated to the extent that it suffers from the problem. So countries that contribute more to the problem than they suffer should be net-payers, and vice versa. They argue that the net-payers will be countries in temperate zones, and net-recipients countries in tropical zones.

way of completing the partial answer to the question of the distribution of burdens we have derived directed from ideas about Common Ownership – again, my main point in this last section has been to show how to extend this partial answer into a full one that is prima facie plausible. One other thing I have not done is to assess how these fairness considerations would actually enter into an overall climate change policy architecture (see Aldy and Stavins (2007a) for proposals). There is not only a moral concern with a fair distribution of burdens arising from climate change; there is also a moral concern with taking measures to adapt to and mitigate climate change in the first place. Here considerations such as environmental impact, flexibility-over-time and compliance also matter. Fairness considerations will have to be integrated appropriately into such proposals.

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