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Intergenerational Justice, Human Needs, and Climate Policy

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1. Environmental Change and Intergenerational Justice

Because present actions will shape the world inherited by our children and by later generations, we can influence their lives for good or for ill. Anthropogenic climate change and the resultant environmental damage presents an especially pressing instance of this influence. There is now no room for serious doubt that human activities, especially those that have occurred over the past fifty years, have warmed the earth and influenced the global climate. Evidence of this influence is not difficult to find: data indicate that the surface temperature of the earth is rising, as are sea levels. Recent decades have seen dramatic increases in the rate of retreat of glaciers and polar ice and permafrost. Biologists record the migration of species up the slopes of mountains and farther from equatorial latitudes as their environment has changed as a result of global warming. In addition to these indicators of change, we have substantial data documenting increased levels of CO₂ and other greenhouse gases in the earth's atmosphere, and good evidence that these increases are the result of human activities. Finally we have a plausible hypothesis linking warming trends to the presence of these gasses in our atmosphere. Under the circumstances, it would be surprising if we found that anthropogenic emissions were *not* influencing global climate.¹

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I would like to thank an anonymous reviewer who provided generous comments on an earlier draft of this paper. I would like to extend special thanks to Axel Gosseries, who read successive drafts of this paper and whose penetrating comments prevented many errors. I alone am responsible for those that remain.

¹ See for example the reports from the Intergovernmental Panel on Climate Change (2001) and (2007), as well as the Millenium Ecosystem Assessment (2005a, 2005b). Flannery (2005) and Maslin (2004) both discuss the mechanisms involved in climate change and some of the likely effects.

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It is difficult to predict the effects of climate change, but there is reason for serious concern that global warming may be disastrous for the environmental systems of the earth, with consequent disastrous effects on human welfare. When climate patterns shift, this destabilizes environmental systems on which people depend, putting human lives and human welfare at risk. Global warming increases the risk that people in equatorial regions will suffer from drought, and that higher temperatures will further compromise agricultural self-sufficiency in less developed countries of the global south. Global warming may also result in an increase in the rate of extreme weather events, including hurricanes, tornados, floods, and droughts. While it is sometimes urged that those most urgently at risk are the poor inhabitants of less developed countries in the global South, hurricane Katrina clearly demonstrated in 2005 that the risks associated with extreme weather events threaten those in developed nations as well.² In sum, global warming increases the risk of famine and misery for those who will live in the warmer world we cede to later generations. This paper will take these empirical facts as *given* since they are well confirmed, and since, in any case, they could not be settled by *a priori* philosophical inquiry. I will assume that anthropogenic climate change significantly increases the risk that many future people will be unable to meet their most basic needs. As I will urge, this makes the problem of global climate change, and environmental change in general, a central problem for a theory of intergenerational justice.

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The intergenerational effects of present policies often raise important questions of fairness and justice. When present choices influence the distribution of burdens and benefits born and enjoyed by people who will exist at different times, we may reasonably ask whether the resultant distribution is equitable, fair, or just. Questions of fairness may arise if present activities impose unfair costs on the future, but they may also arise if our choices place unfair burdens on present generations. For example, policies and treaties designed to mitigate the effects of climate change, like the Kyoto agreement, have sometimes been rejected on the ground that they cost too much, and that those who pay for them will not reap any of the benefits. There is a generational lag between the present cost of implementing mitigation policy, and the much later benefits that such a policy would generate: those who pay are not likely to live long enough to see the benefits of their investment. Can we justify imposing these costs on present people for the benefit of future people? In most contexts, it is reasonable to ask why some people should pay for others' benefits. On the

² While weather events like hurricane Katrina can be somewhat indiscriminate in their ability to distribute misery, it is noteworthy that those who were unable to escape were mostly the poor, powerless, and the disabled. Wealthy New Orleanians were mostly able to leave the city before the storm arrived.

other hand, we might reasonably ask whether an appropriate climate policy imposes *costs* on present people. We might instead understand such policies as a way to prevent present generations from unfairly taking advantages for ourselves by imposing the costs of our own behavior on to future people who are not yet here to defend themselves. If we frame the choice in the first way ('Must we accept the cost of climate policy?'), then it appears that we must overcome a presumption against shifting burdens to the present from the future. But if we frame it in the second way ('May we shift costs to future generations by failing to adopt a climate policy?'), then we are forced to ask whether we are justified in imposing these costs on the future.

To find the appropriate way to frame the decisions we face, we need to situate these choices within broader considerations of justice. This paper offers an account of intergenerational justice that provides guidance in circumstances where present choices will influence the intertemporal distribution of burdens and benefits as they do in the case of climate policy. Sections 2 through 5 develop an account of justice, including intergenerational justice, built from elements of the theory articulated by John Rawls. Rawls's work has become a touchstone for discussions of distributive justice in general and intergenerational justice in particular. But while I begin with Rawls, the account I develop here is Rawlsian only by extension, and is very much at odds with the usual understanding of his view. I do not assume that Rawls would agree. The evaluation of the view as a theory of justice must depend on its philosophical merits, and not on what some might regard as a tenuous connection to Rawls's work. Sections 6 and 7 take some steps to apply this theory to the special problems presented by global environmental change, and climate policy in particular.

2. Liberalism and Intergenerational Justice

Rawls on intergenerational justice

John Rawls's account of justice among contemporaries is familiar, but his account of intergenerational justice has received considerably less attention. This is surprising, since Rawls incorporates the intergenerational aspect of justice into the foundational description of his project: principles of justice, he writes, are those that will support a 'fair system of cooperation over time, from one generation to the next.'³ In his well known account, Rawls argues that a theory of justice is constituted by the principles we would choose

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³ Rawls (1993) p. 14.

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from an original position behind a veil of ignorance that blinds each person to any facts about him or herself that might introduce bias. The purpose of the veil is to prevent bias, prejudice, or unequal bargaining power from distorting the choice of principles. According to Rawls, parties to the original position will select what he calls the ‘conception of justice as fairness’ as the theory best suited to protect their rights and interests. This conception of justice includes two principles. The first principle, the ‘equal liberty principle’, specifies that each person is to have an equal right to the most extensive total system of equal basic liberties compatible with a similar system for all. It is lexically prior to the second principle, which governs social and economic inequalities. This second principle is itself composed of two sub-principles: the ‘open offices’ principle, which stipulates that social and economic inequalities must be attached to offices and positions open to all under conditions of fair equality of opportunity, and the ‘difference principle’ which specifies that social and economic inequalities must be organized so that they are maximally advantageous to the worst off members of society. Rawls argues that the equal liberty principle must be lexically prior to equal opportunity (the open offices principle) which is itself prior to the difference principle.⁴

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In his discussion of justice between generations, Rawls restricts his attention to the problem of just *saving*. He asks, ‘When is it <permissible or required or impermissible> for a generation to save for the benefit of later generations?’ In his answer to this question, Rawls adopts a two-stage view. If people live in circumstances in which there are inadequate resources to implement just institutions, they have an obligation to save so that later generations will not be in the same predicament. In this first ‘accumulation stage’, saving is required since it is necessary to secure justice for later generations. Just institutions protect basic rights and liberties as required by the equal liberty principle, and to secure fair equality of opportunity and distributive justice as required by the second principle of justice.⁵ Once just institutions have been established, Rawls argues, there is no need for further accumulation of wealth just to make later generations richer. It is simply necessary to preserve the existing stock so that subsequent generations will also be able to live under institutions that are stable and just. This second stage in Rawls’s account of intergenerational justice is sometimes called the ‘steady state’ stage.⁶ As Rawls writes:

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The purpose of a just (real) savings principle is to establish (reasonably) just institutions for a free constitutional democratic society (or any well-ordered society) and to secure a

⁴ Rawls (1971) Ch. II.

⁵ Gosseries (2001) offers the clearest account of Rawls’s two-stage view.

⁶ For instance, by Gosseries (2005a, 2005b), Rawls (1999b) p. 107.

social world that makes possible a worthwhile life for all its citizens. Accordingly, savings may stop once just (or decent) basic institutions have been established. At this point, real saving may fall to zero; and existing stock only needs to be maintained or replaced, and nonrenewable resources carefully husbanded for future use as appropriate.⁷

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While he does not expressly state the assumption, it would seem that Rawls's model assumes zero population growth at the steady-state stage. He assumes that maintaining a stable stock of capital will ultimately be sufficient to secure justice over time and effectively to protect liberties. But it is easy to think of circumstances under which this assumption would be unjustified. For example, if later generations are simply more numerous, then increasing capital reserves might be necessary to guarantee appropriate institutions for them all.⁸ In addition, even after the necessary steady state capital stock was achieved, it might be possible to predict that later generations will face serious challenges that will put the institutions of justice at risk. In such a case additional protective saving might be necessary for the maintenance of just institutions over time.

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Rawls and the priority of basic needs

In his later works, Rawls considered and briefly proposed incorporating an additional principle in the theory of justice, requiring that basic needs must be met. Surprisingly, he claims that such a principle should have lexical priority over the other two principles of justice. He writes:

... the first principle covering the equal basic rights and liberties may easily be preceded by a lexically prior principle requiring that citizens' basic needs be met, at least insofar as their being met is necessary for citizens to understand and to be able fruitfully to exercise [their] rights and liberties. Certainly any such principle must be assumed in applying the first principle.⁹

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This remarkable passage proposes a *needs principle*, and assigns it lexical priority over the other principles of justice. If this proposal were taken seriously, it would constitute a major change in Rawls's theory. While Rawls never developed this suggestion, I propose to take it very seriously in my discussion here.

The view Rawls indicates in this last quotation might be described as a form of *moderate sufficientarianism*. Rawls justifies it, in part, by its association with the liberties and rights discussed in the other two principles of justice. *Extreme*

⁷ Rawls (1999b) p. 107.

⁸ It is worthwhile to note that it may not be possible to restrict population growth in a way consistent with justice. Sen (1994) urges that population control policies are likely to violate basic rights and liberties.

⁹ Rawls (1993) p. 7. For further discussion of this needs principle, see pp. 166 and 228–9.

sufficientarian theories hold that justice requires that peoples basic needs be met so that they are provided with a sufficient minimum, but do not incorporate additional requirements of justice. *Moderate sufficientarian* views similarly hold that justice requires that people be provided with a sufficient minimum. Where resources are too scarce to meet needs, it might require that we minimize unmet needs. But *moderate sufficientarians* would regard this as only one principle within a broader account of justice.

If justice includes other requirements in addition to a sufficiency principle, then priority rules are needed to provide direction when different requirements conflict. Rawls indicates a reason why a needs principle should have priority over the principle protecting equal liberties: only if people have sufficient means to satisfy basic needs will other rights and liberties have any significance for them. Where needs come into conflict with the other principles of justice, the obligation to meet needs will take priority.

Since it has priority over the equal liberty principle, the needs principle will *a fortiori* take priority over the principles governing tolerable inequalities. Still, one might wonder whether a needs principle could ever come in conflict with the difference principle. While both principles oblige concern with those who are very badly off, it turns out that there are circumstances in which they systematically diverge. A needs principle may be fully satisfied even where vast inequalities persist, but the difference principle will continue to generate requirements even where all needs are met. If a needs principle is formulated to require minimization of unmet need, then there are even circumstances where a needs principle will generate requirements that are inconsistent with the difference principle. Sometimes we will most effectively minimize unmet need by focusing our efforts on those needy people who will benefit most, instead of focusing on those who are worst off. While the difference principle would direct us to give priority to those who are worst off, the requirement to minimize unmet need, in such circumstances, would require us to engage in triage. Since the needs principle and the difference principle can conflict, we need higher-level rules to arbitrate conflicts between them. Priority rules settle such disputes by giving the egalitarian focus of the difference principle second place to the requirement to meet people's basic needs.

Four arguments for a needs principle

What reasons might be given for the claim that parties to the original position would choose a needs principle and give it lexical priority over other principles of justice? And more broadly, what additional justification (if any) can be given for including such a principle within Rawls's theory or any other liberal conception of justice? There are several arguments that might be given on

the principle's behalf: First, the suggestion that basic needs should be a high priority of justice is broadly consistent with the underlying concern that social institutions must be defensible to every member of society. Those who are worst off and those whose basic needs are unmet are the most likely to have a legitimate complaint against the institutions of society, and are the least likely to have sufficient reason to accept the principles that animate those institutions. If satisfaction of basic needs is the first priority of justice, then institutions that conform to the requirements of justice can be defended to the needy on the ground that their needs are not merely a high public priority but the first public priority. If scarcity dictates that some people's needs cannot be met, just institutions will still be defensible to those who suffer deprivation: no alternative institutions would serve the fundamental needs of the worst off any better than the existing institutions. This argument may be stated in brief: Liberal theories of justice are distinguished, in part, by the view that public institutions and the conception of justice animating these institutions must be justifiable to every person who is subject to them. Institutions that avoidably leave some peoples most basic needs unmet cannot be justified to those whose needs are avoidably unmet. Thus only institutions that satisfy a needs principle will be publicly justifiable to all. So liberal conceptions of justice must satisfy the needs principle.¹⁰

Second, a needs principle gains support from many other considerations that can be used to motivate and justify the difference principle. The needs principle may be understood to reinforce the difference principle, especially its highest priority requirements.¹¹ For example, Rawls describes parties to the original position as making their choices under circumstances that satisfy the conditions for the rationality of maximin reasoning. These conditions are three: (1) the downside risk is great if the outcome is bad; (2) the upside benefit is relatively small if the outcome is optimal; and (3) the parties have no basis to assign probability values to alternative outcomes.¹² One can easily imagine parties in such a situation acting to choose a principle that would put a 'floor' on the downside

¹⁰ A version of this needs principle might be made consistent with 'luck egalitarianism' (see Gosseries 2005b). For example, one might regard those whose present needs are unmet because they have squandered their opportunities to have relinquished their claims on basic institutions. Their deprivation is not the result of simple bad luck, since their own choices are involved. On the other hand, one might plausibly urge that people's most fundamental needs should be met, when possible, even if their present deprivation *is* the result of bad choices and not bad luck. I will not investigate here the details of these alternative interpretations of the needs principle, but either of them should be consistent with the discussion that follows.

¹¹ Note that this argument, if successful, might give a needs principle priority over the difference principle, but not over other prior principles.

¹² Rawls (1971) pp. 154–5.

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risks, especially the very serious risk that one's basic needs might not be met. The prior choice of a needs principle would neatly accomplish this. Once a needs principle has been selected, however, one might argue that the parties are *no longer* in circumstances that satisfy the conditions for maximin reasoning. It will be important to consider how this might change other aspects of Rawls's view, including especially the argument for the difference principle itself.

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A third justification for a needs principle (and its priority) is implicit in the insight that having ones needs met is 'necessary for citizens to understand and to be able fruitfully to exercise [their] rights and liberties.'¹³ Satisfaction of basic needs is a precondition for the significance of the equal liberty principle and the value of the rights and liberties it guarantees. Without prior satisfaction of basic needs, rights and liberties would be valueless to those who possess them, but who would lack any ability to exercise or understand them. Within Rawls's framework, this consideration gives parties to the original position a strong reason to choose a needs principle first. It should also be a compelling argument for those who may be skeptical of Rawls's project. We have good reason to accept that the objective to meet basic needs must be a fundamental priority for any plausible theory of liberal justice.

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But this argument may raise a special kind of concern: since the argument makes the justification of the need principle depend, at least in part, on the values protected by the equal liberty principle, it might be thought to support the notion that the needs principle should be subsequent, not prior, to the equal liberty principle.¹⁴ But there is an important distinction to be made between practical priority and justificatory priority. The reasoning behind this argument would not make the needs principle subsequent to the equal liberty principle in any practical sense: where the two conflict, the needs principle would be prior. In fact, in practice the needs principle would be *lexically* prior, since needs must be met first, before equal liberties can be secured. This practical lexical priority of needs is fully consistent with Rawls's suggestion that the justification of the needs principle may depend, in part, on the relationship between needs, liberties, and rights.

Fourth and finally, it is plausible to think that a liberal theory of justice should place high priority on meeting basic needs simply because having basic needs met is a very important objective from the moral point of view. Meeting basic needs has a higher moral significance than most other values that can be secured and protected by public institutions. It is easy to see why Rawlsian contractors, interested to protect their most fundamental and most general

¹³ Rawls (1993) p. 7.

¹⁴ I thank Axel Gosseries for calling this concern to my attention.

interests, might agree to such a principle from behind Rawls's veil of ignorance as a first principle of justice, and why such a principle should have a high priority within any liberal conception of justice. In what follows I will consider some of the implications of a lexically prior needs principle for a theory of intergenerational justice.

Theoretical costs

However plausible it may be in the abstract, it is not at all clear that the addition of this principle can come without cost for Rawls's theory, and Rawls himself may not have considered all of the implications of this change. In particular, an important argument for the difference principle may be substantially altered by the inclusion of a needs principle among the basic principles of justice. As Rawls describes the choice behind the veil of ignorance, the choice of lexically prior principles takes place first, and the implications of prior principles change the context in which later choices are made. If the choice of a distribution principle is made after the choice of a lexically prior needs principle, as well as the equal liberties principle, this eliminates a significant portion of the 'downside risk' associated with the choice of alternatives to the difference principle. This in turn undermines the claim that the original position choice meets the conditions for maximin reasoning. This is especially important since the argument from maximin is often regarded as a central justificatory foundation of the difference principle.

Perhaps Rawls recognized this. It may partly explain why his later discussions (for example, in Rawls (2001)) place much less emphasis on the argument from maximin reasoning, and offer alternative grounds for the difference principle. As I will interpret Rawls's proposal, it implies that meeting people's basic needs should be the first priority of justice. I find this to be a very plausible view. But I am also convinced that the insertion of such a principle will imply further changes in Rawls theory, some of which I cannot investigate here. Given the moral significance of needs, and the changes that a needs principle would seem to imply for the rest of Rawls's project, one could wish that he had said more about it.

3. Formulating a Needs Principle

Generation neutrality

What form might a lexically prior needs principle take? I will urge that such a principle should be *generation neutral*. That is, it should not give special

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weight to the needs of the members of any particular generation, including the present generation. If future needs are less predictable or less certain than present needs, this will give us some reason to discount the needs of future people when we might otherwise serve the more certain and predictable needs of present people. But other things being equal, a needs principle should not discount the needs of future persons simply because they are future. This form of neutrality is sometimes controversial, since economic models typically include a temporal or generational discount rate. But there are few defenses (and no good ones) of pure time discounting, which is widely regarded to be morally unjustifiable. The view under consideration would not prohibit discounting for uncertainty, and discounting for the rate of interest will still be justifiable and appropriate in many contexts where resources are growing over time. This form of generation neutrality is thus consistent with the defensible uses of discounting in economic theory, though specifically inconsistent with ‘felicity discounting,’ which has few contemporary defenders in any case.¹⁵

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Maximin v min-deprivation

I will consider two alternative formulations of a generation neutral needs principle. The *Maximin Formulation* [MM] would require satisfaction of the needs of the worst off members of society first, and would permit satisfaction of the needs of those who are not worst off only after the needs of those who are worst offs have been met. An alternative formulation which we might call *Min-Deprivation* [MD] would require minimizing deprivation with respect to basic needs.

The *Maximin Formulation* may have appeal for Rawlsians, since captures the spirit of the difference principle. Some of the same arguments used to motivate the difference principle might be adduced to motivate a needs principle with this form. But this formulation is subject to what is sometimes called the ‘black hole’ problem: the principle affording strict priority for those who are

¹⁵ Some economic models assume a felicity discount rate (sometimes called a ‘pure time discount rate’) without argument. Since ‘defence’ requires argument, I do not include those who merely *assume* that we may permissibly engage in felicity discounting among those who *defend* the practice. Harrod (1948) and Ramsey (1928) famously argued that discounting is irrational and morally wrong. Arrow (1999) asserts his acceptance of pure time discounting, but acknowledges that he provides no argument in defence of the practice. Sen (1982) and Lind (1982b) both provide nuanced discussions of discounting that effectively distinguish among different currencies of discount and alternative reasons one might have for discounting. Excellent discussions of the economic and philosophical aspects of discounting the future can be found in Lind (1982a) and in Portney and Weyant (1999). Broome (1992) and Parfit (1982) offer decisive practical and moral arguments against felicity discounting.

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worst off may come in sharp conflict with the objective to minimize unmet needs.¹⁶ Under some circumstances, it might take all of our resources to create only a marginal improvement in the situation of the worst off person in society, while those resources might otherwise make a large difference in the lives of many other people who are very badly off, but who aren't quite in the worst-off class. In such circumstances, the principle of priority for the worst off would hold society hostage to the predicament of the very worst-off member. Within the 'official' reading of Rawls's view, the obligation to promote the needs of the worst-off members of society is moderated by the *Equal Liberty* and *Open Offices* principles, but if a needs principle is made the first priority of justice, the 'black hole' problem becomes even more pressing.

This problem militates strongly in favor of formulating a needs principle as a requirement to minimize deprivation with respect to basic needs [MD] instead of giving priority to the worst off [MM]. In extreme circumstances where not all needs can be met, MD will permit or require a form of *triage*, in which the needs of the very worst off are left unmet since meeting those needs would make it impossible to address other urgent needs. Where minimization of deprivation is best accomplished by addressing the needs of those who are not in the very worst-off class, MD will recommend that we minimize deprivation anyway. The maximin formulation MM would instead require that we address the needs of the worst off-individual even if that individual would glean few benefits if all our resources were directed to her benefit, and where those resources might otherwise have been used to provide great benefits for other seriously needy people. MD will not hold us hostage to the predicament of the worst-off members of society, but will instead require that we structure institutions so that as few people as possible will suffer from unmet needs.

Min-deprivation and liberal anti-consequentialism

MD is an essentially consequentialist principle: it focuses our attention on the needs-indexed welfare consequences of alternative choices we might make. In considering whether a negative welfarist principle like MD can be included within an acceptable liberal theory of justice, however, we need to consider whether it violates the spirit of liberalism to give lexical priority to a consequentialist principle like MD. An express aim of Rawls and many liberal theorists was to develop an alternative to utilitarian and consequentialist conceptions of

¹⁶ Allen Buchanan called this the 'black hole' problem in his lectures in political philosophy at the University of Arizona in 1991–92.

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justice. By re-inserting a consequentialist principle as a first priority of justice, have we sacrificed the essential element of a liberal conception of justice?

In response, note that needs-consequentialism, and especially a *negative* needs consequentialism like that embodied in MD, will not be subject to the objections that led Rawls and other liberal theorists to reject consequentialist accounts of justice. Positive consequentialist principles require that we maximize good consequences, while negative principles require minimization of bad consequences. The objective to minimize deprivation with respect to basic needs will not justify the oppression of the needy few in order to promote the happiness of the majority. And unlike positive consequentialist views, negative consequentialist theories are satiable. They cease to generate requirements once the relevant bad consequences (in this case, deprivation) have been eliminated. Positive consequentialist views are *insatiable*. They imply a *prima facie* obligation to increase the goodness of consequences without limit: more goodness is always better.¹⁷ MD is thus significantly less demanding than conventional consequentialism, and would focus our attention on people whose predicament is very plausibly regarded as a first priority of justice.¹⁸

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Finally, note that MD may be essentially bound to the rights many regard as the defining characteristic of liberalism: liberal theorists, Rawls included, often argue that certain rights are so fundamental that they must be included among the basic needs. Those who are concerned that rights might be violated in the effort to minimize deprivation must argue for the importance of the rights in question. But any argument capable of showing that certain rights should have such a high priority will also be an argument in favour of including those rights on any plausible list of fundamental needs. Thus, while a needs principle like MD may be consequentialist in an important sense, it is unlikely to come in conflict with the most fundamental liberal rights, and is still a plausible principle for a liberal theory of justice.

Which needs?

But this response raises another concern: which are the basic needs? And among the basic needs, how should we prioritize when we face opportunities to address *different* needs. In formulating a needs principle, it will be crucial to specify which needs are basic. It will also be valuable to specify priorities among needs, since we may often be faced with alternatives that address different needs,

¹⁷ See Wolf (2004) for a discussion of these issues.

¹⁸ For further discussion of positive and negative consequentialist views, see Wolf (1997) and Wolf (2004). For a defence of a negative consequentialism as a component of a larger theory of justice, see Wolf (1999).

each of which may be fundamental. While some items on the list of ‘basic needs’ may be relatively uncontroversial, others at the margin between ‘basic’ and ‘non-basic’ may be essentially contestable. Some conceptions of need, like that specified by the *Human Development Index*, are exceptionally spare. Others, like that offered by David Braybrooke (1987), or the complex lists of functional capabilities developed by Nussbaum (2000) and by Sen (1993) are far more generous.¹⁹ All proposed lists of basic needs are controversial, but if a needs principle is made a first priority of justice, there is good reason for such controversy. Because of the priority of the needs principle, arguments from need will support claims to entitlement. This gives us good reason not to adopt too expansive a list of basic needs, since doing so risks expanding the set of entitlements, and thus the burdens on others. But we also have good reason to insure that all needs that are truly basic should be covered. A more expansive list of basic needs will make the needs principle much harder to meet, while a more constrained list will render its satisfaction less significant.

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Instead of specifying the set of basic needs in a list, we might identify them with a membership criterion like the one suggested in the discussion above: on this view, the basic needs include just those things that are necessary ‘for citizens to understand and to be able fruitfully to exercise [their] rights and liberties.’²⁰ This criterion gives focus to the question which needs are basic, and what needs to be shown in order to argue that some specific need should be on the list. We may be able to prioritize among needs by considering the extent to which they are necessary for the values emphasized in this membership criterion. For the balance of my discussion here, I will assume that the set of basic needs can be identified as those that satisfy this criterion.

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4. Intergenerational Saving and Intertemporal Distributive Justice

Intergenerational saving and accumulation under the difference principle

Rawls specifies a two-stage process for intergenerational saving, requiring that earlier generations should save until just institutions can be put in place. After that point, capital stocks simply need to be maintained to insure that justice can

¹⁹ For a brief discussion that places the human development index in the context of other lists of basic needs, see also Wolf (1998).

²⁰ Rawls (1993) p. 7.

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be maintained. But it has sometimes been objected that this process requires those who are worse off (the earlier generations who do not have sufficient resources) to make sacrifices for those who are better off (the later generations who are wealthy enough to implement just institutions). Such sacrifices run contrary to the spirit of justice that animates the difference principle, but Rawls was convinced that they were necessary to make economic growth possible. This is his expressed reason for abandoning the difference principle in his account of intergenerational distributive justice. He writes:

[W]hen the difference principle is applied to the question of savings over generations, it entails either no savings at all or not enough savings to improve social circumstances sufficiently so that all the equal liberties can be effectively exercised.²¹

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Rawls was convinced that the difference principle would make it impossible, under some adverse circumstances, ever to implement just institutions. The implementation of just institutions typically requires saving and accumulation during early stages of development. So the poorer early generations must simply bear the cost for the sake of the wealthier generations that follow. This ordering of priorities is quite consistent with Rawls's project, since the protection of rights and liberties, in his view, is prior to the distributional requirements of the difference principle. Where the difference principle comes in conflict with the protection of fundamental rights and liberties, or the institutions that protect them, the difference principle must give way.

But the idea that those who are poor should not be required to make sacrifices for those who are wealthy still holds considerable force, and one might regard Rawls's solution as unfair where it violates this principle. Rawls sees this as a dilemma. If the economic growth described in the first stage is justified, then we must abandon the principle that those who are poor should not be required to make sacrifices for those who are better off. But if we cannot sanction sacrifices made by the relatively poor for the sake of the relatively wealthy, then we must abandon the first 'accumulation stage' of Rawls's account. The dilemma can be avoided entirely if intergenerational economic growth, in the sense of real capital accumulation, can be accomplished without burdening the badly-off first generations. Rawls may simply have been wrong to assume that an intergenerational application of the difference principle would make economic growth and accumulation impossible. Intergenerational accumulation cannot be ruled out *a priori* by the difference principle, because

²¹ Rawls (1999a) p. 254. See also Arrow (1973) p. 325 and Dasgupta (1994) p. 105. For a more thorough treatment of this problem, see Wolf (forthcoming). Wall (2003) also points out the tension between the difference principle and Rawls's remarks on intergenerational justice, and argues that we should replace the difference principle with a less egalitarian principle for distributive justice.

the possibility for growth depends on the rate at which capital resources grow from one generation to the next, as well as on the rate of consumption.

To see that this must be so, consider a Plentiful World in which capital resources grow independently, like plants, but at a rate far faster than they can be used or consumed. This might be the case either where the growth rate is very high, or where consumption rates are very low. In this world no one must experience deprivation with respect to physical needs: everyone's material needs are fully satisfied, and material goods are so oversupplied that they are free. In such a world, economic growth would not conflict with the difference principle because well-being (including the well-being of those who are worse off) would not depend on the distribution of scarce physical goods, but on the non-material primary goods. One might urge that inhabitants of the Plentiful World are not in the Circumstances of Justice, since 'moderate scarcity' is usually included among the conditions that make justice necessary and injustice possible. But the argument here seeks only to show that capital growth is sometimes consistent with the requirement that the relatively poor earlier generations should not be required to make sacrifices for the sake of the relatively wealthy. And one might argue (against both Rawls and Hume) that justice is an important virtue even in circumstances of unmanageable resource abundance. Even in the Plentiful World fundamental rights and liberties and democratic liberties will require protection, and inappropriately described property rights might leave some people's needs unmet. And some needs are not material: Rawls lists such things as 'the social bases of self-respect' among the primary goods. Thus the difference principle would still have work to do in a Plentiful World, but its operation would not stand in the way of spontaneous material accumulation.

Obviously, we don't live in a Plentiful World. But consider another possible world that may be closer to our own: in this Sufficient World basic well-being is very cheap, and it is quite inexpensive to meet people's needs. The rate of economic growth is not astronomically high, but it is quite high enough to keep pace with people's needs and to keep the price of necessities low. Once material needs are met, personal well-being in this world is a function of such things as community engagement, public equality, and the existence of worthwhile creative outlets. In the Sufficient World, economic growth is the result of free, creative, voluntary, and mutually advantageous interactions among people who find their efforts intrinsically fulfilling and rewarding. In this world, it would violate the difference principle to *prevent* economic growth and capital accumulation. Since there are possible worlds in which capital accumulation will not violate an intergenerational difference principle, Rawls was wrong to rule out such a principle *a priori*.

In the Sufficient World, economic growth *need* not come at cost to the worst off. Evidently, we don't live in the Sufficient World either. But what about the Actual World? Perhaps Rawls was right to think that economic growth must come at cost to the worst off in the Actual World, though this would then be a contingent feature of our world. To judge whether our world is like this, we would need to consider the rate and causes of economic growth, and the rate of per capita consumption. We would also need to factor in the rate of population growth and resultant increase (or decrease) in consumption over time. In considering whether economic growth must violate the difference principle in the Actual World, it will be important to notice some of the differences between the Actual World and the Sufficient World. In the Actual World, there are many people who are poor and destitute and whose fundamental needs are not met. Much of what passes for economic accumulation in the Actual World results from our extraction and consumption of nonrenewable resources. Apparent economic growth resulting from this process may not really be 'accumulation' at all, since the process may deprive future generations of resources without replacing them with anything of enduring value. In the Actual World, a significant proportion of measured economic growth is the result of exploitation and oppression, in which the wealthy and powerful appropriate the goods of others, or squeeze wealth out of the labour of those who lack the power to resist. One need only consider the process of production within repressive authoritarian regimes to find examples of such exploitation. Like the extraction and insufficiently productive consumption of resources, economic 'growth' due to exploitation is only apparent growth, not real accumulation. Such exploitation is simply a form of coercive redistribution from the weak to the powerful.

But as in the Sufficient World, in the Actual World we have more than enough *stuff* to meet the basic needs of everyone, and needs provision is shockingly inexpensive. In the actual world, the rate of measured economic growth has been quite high enough to keep pace with human needs, though those who are in need may have no institutional entitlement to the things they need.²² As in the Sufficient World, quite a significant amount of economic growth is the result of spontaneous creativity and mutually advantageous cooperation that is costly to no one. Perhaps we could expect the rate of spontaneously productive activity to increase if fewer people were exploited and oppressed, struggling to meet their basic needs. The difference between

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²² One would need, of course, to subtract that portion of economic growth that is only *apparent* growth, like the varieties discussed in the paragraph above.

the Actual World and the Sufficient World may simply be that the Actual World contains so much injustice.

Rawls abandoned the difference principle as an intergenerational principle of distributive justice because he was convinced that it would prohibit the economic growth that he believed to be necessary for the implementation of just institutions. Alternately, one might be tempted to abandon Rawls's two-stage account of intergenerational justice and accumulation in order to accommodate an intergenerational difference principle. But if mutually advantageous growth is possible, as argued above, then both of these moves are precipitous. Rawls was too quick to abandon the intergenerational difference principle as a principle for intergenerational distributive justice, and he did so for the wrong reasons. While this does not constitute an argument in *favour* of an intergenerational difference principle, it would imply that the difference principle should be reconsidered as a principle of intergenerational justice. In reconstructing Rawls's theory below, I will include an intergenerational version of the difference principle that requires maximal advantage for the worst-off person, regardless of what generation or at what time that person will live. However, the addition of a lexically prior needs principle will have additional implications for the problem of saving and accumulation necessary for the implementation of just institutions.

Intergenerational saving and accumulation under the needs principle

Principle MD requires minimization of deprivation with respect to basic needs. It should also be given a generation-neutral interpretation, since the importance of needs provision does not depend on the generation in which a needy person may live. MD implies that saving and capital accumulation will be required by justice whenever they are a necessary and an effective means to minimize deprivation and unmet needs. Since the needs principle is prior, saving will be required, in such circumstances, even when the only feasible saving plan would violate the difference principle. This is the other side of the 'black hole' problem described above: while negative welfarism will not always hold us hostage to the predicament of the very worst off, it will sometimes permit or require 'triage'. If saving and sacrifice are necessary in the early stage of institutional development for the creation of just institutions capable of meeting needs and satisfying the other requirements of justice, then that is what the principle requires.

This implication forges a link between Rawls's two-stage account of intergenerational justice, and his remarks concerning the lexically prior requirement to meet basic needs. For Rawls also believed (wrongly, as I have argued) that such accumulation would necessarily come at cost to the worst-off earlier

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generations. Rawls took himself to be abandoning, in the intergenerational case, the principle that worse-off people should not be required to make sacrifices for the sake of others who will be better off. Still, he was willing to make an exception to the difference principle in this special case, where difference-principle-violating growth was necessary for the implementation of just institutions. Perhaps Rawls's reasoning reflects his conviction that just institutions are necessary to meet people's basic needs, and his willingness to make other priorities of justice subsequent to the prior requirement that basic needs must be met. Rawls was willing to make an exception to the difference principle in the context of intergenerational distributive justice, and he was willing to do so because he believed that intergenerational saving is sometimes necessary for the implementation of just institutions. This constitutes some support for the claim that Rawls really did accept a lexically prior need principle.

5. A Generation-neutral Theory of Justice

In the discussion above, I have considered some of the implications of taking seriously Rawls's passing suggestion that meeting basic needs might be prior to other priorities of justice. The resultant theory of justice can now be stated, specified by three basic principles and a priority rule:

Needs Principle [NP]: The first priority for just institutions is to minimize deprivation with respect to fundamental needs.

Equal Liberty Principle [ELP]: Each person has an equal right to the most extensive total system of equal basic liberties compatible with a similar system for all.

Principle of Tolerable Inequalities [TI]: (two parts)

Open Offices Principle [OOP]: Social and economic inequalities are to be attached to offices and positions open to all under conditions of fair equality of opportunity.

Difference Principle [DP]: Social and economic inequalities are to be arranged so that they are both to the greatest benefit of the least advantaged, regardless of the generation in which the least advantaged exist.

Priority Rule: The needs principle, suitably constrained, is prior to the equal liberty principle, which is in turn prior to the principle of tolerable inequalities. The open offices principle is prior to the difference principle.²³

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²³ See Rawls (1971), Ch 2, Section 11, pp. 60–5. Casal (2007) offers powerful arguments against narrowly sufficientarian theories of justice that do not incorporate additional distributive requirements. But if I understand her arguments properly, they do not constitute an objection to a view such as this one, which gives special *priority* to sufficiency, but which includes further requirements as well.

The changes between this view and the standard or ‘official’ version of the Rawlsian view include the addition of a negative welfarist needs principle, and the removal of the generational restriction on the difference principle.

Although I have given a generation-neutral interpretation of the difference principle, I have otherwise left its structure intact. Still, I would like to mention three reservations about that principle both in the generation-neutral form given above, and as it exists in Rawls’s own works. First, as mentioned in section 2 above, the addition of a needs principle calls into question Rawls’s claim that the original position choice meets the conditions for the rationality of maximin reasoning. The addition of this principle diminishes the ‘downside risk’ associated with the choice of alternate principles, undermining what many have taken to be Rawls’s primary argument for the difference principle. Second, one might reasonably urge that the importance of inequality will diminish as the worst-off members become increasingly better off, and that a more satisfactory principle would recognize and accommodate this inverse relation. In particular, the importance of inequality will be quite different when the worst off members are *well* off than when they are *badly* off, and may even diminish to insignificance within communities where everyone is extravagantly well off. If so, then the principle governing tolerable inequalities should be variable, sensitive to the absolute position of those who are worst off. But third and finally, there are reasons why inequalities among contemporaries may be problematic for reasons that simply will not apply intergenerationally. For example, material inequalities among contemporaries can often undermine democratic equality, since those who have more may be able to use their resources unfairly to influence the democratic process. But it is not at all clear that material inequalities between generations will undermine democratic equality. While I am not able to articulate a succinct principle that accommodates these complex considerations, it seems quite clear that Rawls’s difference principle is not able to take them into account.²⁴

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One further reservation should be mentioned, concerning the problem of conflict among principles. Rawls himself is very quick to resolve such conflicts by assigning lexical priority rules. I follow Rawls here, in giving principles their role in a lexically ordered hierarchy. But there are alternatives to lexical priority that should be considered: we might instead assign principles varying weight, or define a function that would assign different proportional weight to different principles depending on context. There are reasons why priority rules, or some comparably simple arrangement, might be especially appropriate

²⁴ But see Casal (2007) for powerful arguments against the view that distributive justice may be restricted to considerations of sufficiency or needs provision.

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in the context of institutional justice, even if ideal principles would be more complicated and sensitive to the circumstances in which they are applied: these principles are intended to define the structure of society's basic institutions. But where such principles are very complex, the institutions whose structure they define may themselves be more complex and less transparent. Since it is important not only that public institutions conform to the relevant conception of justice, but that these institutions must be seen and known to conform to the requirements of justice, it is crucial that institutions be as transparent as possible.

For the balance of my discussion here, I will set aside these reservations for two practical reasons: The difference principle will not play a central role in the discussion that follows, so it is not necessary to adjust that principle here. Further, there are a number of other independent arguments that may be used to motivate and justify the difference principle. Some of them provide strong alternative grounds for the difference principle, and they must be taken into account in any attempt to develop an alternative principle to govern tolerable inequalities.

Ironing out the kinks in a theory of value?

Sufficientarian theories of justice have other features that will be regarded as counterintuitive to some people: they imply a value theory that has 'kinks' instead of being continuous. An example makes this clear. Suppose Alph is just below the threshold at which his needs would be met, while there are millions of people who are just at the threshold. We can either help Alph by improving his situation marginally so that his needs will be met (just barely!), or we could benefit the millions of other people tremendously. Sufficientarianism implies that we should forego the tremendous benefits we might provide for the many, and that we should instead bring Alph to the threshold. In this respect, sufficientarianism is still subject to a version of the 'black hole' objection discussed above.²⁵ This is indeed an implication of the view I have been describing here, and of its near relatives.

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Those who find the objection compelling might soften the priority rules that provide guidance when principles conflict. Lexical priority rules imply strict trade-offs with sharply kinked indifference curves, but a similar alternative might soften the kinks to permit some marginal tradeoffs. On the other hand,

²⁵ I am grateful to Lukas Meyer for pressing me with this important objection. For further discussion, see Valentynne (2000), Arneson (2000), Crisp (2003), and Roemer (2004). Roemer usefully distinguishes alternative principles, including one like the sufficientarian principle recommended here, and discusses their formal implications. The sufficiency principle discussed above is closer to Roemer's 'universal decency' principle (p. 274) than to his 'sufficientarian axiom' (p. 278).

the argument for the priority of NP over ELP is strong, since the value of the liberties protected by ELP depends on prior satisfaction of NP. Where a theory of justice incorporates plural values, and where the importance of some values essentially depends on the satisfaction of others, we should expect the resultant theory to have kinks. It may be less surprising to find such kinks in a theory of justice, which must be complex and must be part of an overlapping consensus among many (permissible) conceptions of the good. Those who reject a 'kinky' conception of the good might still be able to accept a sufficientarian priority rule as a component of the theory of justice.

Needs sufficientarianism, intergenerational justice, and sustainability

The articulation of a needs principle with lexical priority over the other principles of justice has especially important implications for Rawls's discussion of intergenerational justice. In particular, such a principle implies a strict limit on the kinds of intergenerational trade-offs justice will permit when the interests of present and future persons are in conflict. If needs have priority over other human interests, then it must be impermissible to promote the less basic interests of some at the expense of the needs of others. A generation-neutral needs principle would prohibit such trade-offs between generations as well as among contemporaries. Thus it will be impermissible to promote the less basic interests of members of the present generation if this would compromise the needs of future generations. This is a natural way to apply the needs principle to the intergenerational case, and would commit Rawls to the view that institutions must be intergenerationally sustainable in what has become a standard sense: while we should strive to meet the needs of the present generation, we should do so in a way that does not compromise the ability of future generations to meet their needs. This conception of sustainability is usually associated with the so-called Brundtland Report, issued by the World Commission on Economic Development in 1987, and has become a centrepiece in the literature on institutional sustainability and economic development.²⁶ On the interpretation I have developed here, the Brundtland Report's conception of sustainability is simply a special case of a more general first principle of justice. As I will urge, this special case has important practical implications in the context of policies designed to mitigate greenhouse gas (GHG) emissions and to address the problem of global climate change.

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²⁶ World Commission on Economic Development (1987), p. 43.

6. Climate Change and Climate Politics

Global environmental change and climate policy

The problem of global environmental change, and climate change in particular, is an obvious context for the application of a theory of intergenerational justice. Our present actions will influence the lives of future generations for good or for ill, and we need to decide whether we are prepared, or obliged to bear burdens or endure costs for their sake. A sufficientarian account of intergenerational justice has important implications concerning climate change and climate policy. In particular, the sufficientarian theory sketched here will prohibit us from satisfying our own relatively trivial needs at cost to future people's ability to satisfy basic needs. Rawls's two-stage account of saving and sustainability also has a direct corollary in the context of climate policies designed to reduce or mitigate greenhouse gas emissions. But the application of Rawls's theory to the problem of climate change will make it clear that the theory is limited and that it incorporates several important but unjustified assumptions. The theory will need to be expanded and generalized before it can be used to choose among alternative policies we might adopt.

Intergenerational cosmopolitanism

One limitation of Rawls's theory must be briefly addressed from the start: Rawls's theory was designed to apply within a nation, but the problems of climate and environmental change are global and international. No single nation can unilaterally regulate global GHG emissions. Still, we need standards to judge and select among alternative policies and international treaties the world community might adopt. Rawls's account of international justice in the *Law of Peoples* (1994) offers little help in this regard, since in that work Rawls is primarily concerned to show limitations on the theory of justice as it might be used to regulate international relations among reasonably just regimes. Rawls's work on the law of peoples offers no resources at all for evaluating international treaties or policies—but among policy choices that will influence the lives of future generations, many of the most important involve international agreements. Clearly we need to be able to apply an account of intergenerational justice more broadly, for guidance in the practical realm of policy choice.

In my discussion here, I will simply assume that it makes sense to ask whether international agreements and global policies may be unjust because of their likely effects on the lives of members of distant future generations. I employ considerations of justice in the evaluation of policies and

international agreements designed to address the problem of climate and global environmental change. This is, I believe, a plausible but risky extension for a theory of liberal justice. It is plausible because so many of the same terms and political values that we use to evaluate domestic policies can be used to judge international agreements, and because many of the arguments we might use in defense of a theory of domestic justice seem quite general and unrestricted in their implications. In both domestic and international contexts we may reasonably consider whether policies are exploitative, whether they disproportionately distribute benefits to the wealthy and powerful at the expense of the poor and weak, whether they effectively protect rights and liberties, and whether they appropriately respond to people's basic needs. These are paradigmatically considerations of justice. We can also consider whether our international policies or treaties unjustifiably sacrifice the fundamental needs of future generations for the sake of less central interests or mere 'wants' of present generations. As I have urged above, this is a central concern for a theory of intergenerational justice.

But applying norms of justice internationally is risky. In international and intercultural judgments, people often mistake their own parochial norms for universal standards. The risk of arrogant ethnocentrism should be a conscious consideration whenever we consider the international application of evaluative norms. But if the values employed in the account of justice under consideration are not narrowly parochial in the relevant sense, then it seems quite appropriate for an account of justice to apply internationally. I hope, though I do not take for granted, that this risk of ethnocentric application of parochial norms will not present a problem in my discussion here.

GHG emission reduction as a saving problem

The most obvious way to mitigate the effects of climate change would be to implement policies that reduce the rate of GHG emissions. This might be done via a tax on emissions, or by determining in advance the acceptable rate of total global emissions and distributing them (cap and trade) or by auctioning them off on an open market. The Kyoto agreement was specifically designed to limit GHG emissions through a 'cap and trade' system.²⁷ The

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²⁷ While this was the main intent of the Kyoto agreement, there are many good reasons to doubt that the agreement accomplished its aim. The emission allowances granted by Kyoto were, in some cases, unreasonably generous, permitting some nations (Russia, for example) far more than they need. And the 'flexibility mechanisms' included in the Kyoto agreement may actually increase GHG emissions, by promoting the export of carbon-intensive technologies to developing countries. For reasons I cannot explain here, I would argue that there are good reasons to prefer an open auction over a cap-and-trade system.

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idea behind such a policy is simple. There is a more or less fixed rate at which the global environment can digest and eliminate such emissions. If net global emissions are greater than this level, then our activities are *degrading* the resource by making the problem of global warming worse. In the long run, it is extremely risky to degrade a global resource on which we depend, and long-term degradation of environmental systems necessary for human welfare implies correlate degradation of human welfare.²⁸

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If global emissions could be reduced so that they were no greater than the level at which the atmosphere and global environment can process and rid itself of them, then our activities would be *sustainable* in an important sense: they could then be continued over time without exacerbating the problem. In the long run, reducing emissions to this state would result in our passing on to later generations a climate resource that would be in no worse shape than it is presently. But we are already in trouble. The earth's atmosphere has already been exploited at an unsustainable rate by the present and immediately past human generations. In order to avoid progressive degradation and to avert the risk of future harm and misery, it would now be necessary to reduce GHG below the sustainable level until the atmosphere can recover from the assaults that it has already suffered. Many GHGs like CO₂ have a long life in the earth's atmosphere, so this recovery period may be centuries long. While existing climate agreements like the Kyoto Protocol aim to mitigate the effects of global warming by reducing the level of GHG emissions, it is unlikely that the emission reductions they propose are near the sustainable emissions level, let alone a level that would allow the atmosphere to recover from existing emissions.²⁹ In this sense, we should understand existing policies as pursuing the aim to reduce the rate at which we are presently imposing harms and costs on future generations, not as an effort to provide benefits. Since existing international agreements are not sufficient to protect future generations from serious harm, and since many existing emissions are unnecessary for satisfaction of present needs, justice requires much stricter limitations.

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Global climate change and human interests

Our failure to implement an appropriate climate policy places the basic interests of future generations in serious peril. Global climate change and consequent changes in ecosystems around the world have put at risk the environmental

²⁸ The fact that climate policy can be modelled in this way shows that the problem of emission reduction is closely related to the problem of just saving discussed in Arrow (1973), Solow (1974), Dasgupta (1974a, b), Gosseries (2001), and Wolf (forthcoming).

²⁹ Gardiner (2004) includes a sober assessment of the Kyoto Protocol and argues that it is unlikely to have any significant effect at all on greenhouse emissions.

systems on which people depend for life and well-being. In environmentally sensitive parts of the world, people are already experiencing serious hardships because the rate of global warming has been so unexpectedly swift. Risks associated with climate change include consequent loss of biodiversity, a dramatically increased risk of violent weather events, and increased incidence of drought and famine in many parts of the world. Many of the most serious of these risks fall on poor people in the global 'South', but no one is immune. Since climate and global environmental change implicate the needs of future generations, and the prospect that they may live in reasonably favorable circumstances under just institutions, climate policy should be a paradigmatic context for the application of a theory of intergenerational justice.

Climate sustainability: a two-stage strategy

In order to recover a sustainable relationship between human communities and the earth's atmosphere, it would be necessary to implement a long-term plan for the reduction of GHG emissions. The simplest such plan would involve a two-stage strategy similar to the two-stage saving program described by Rawls. During the first stage, the 'austerity' stage, we would need to respond to the fact that past and immediately present anthropogenic GHG emissions have been unsustainable, and would need to adopt policies to reduce emissions so that the atmosphere could recover to a relatively stable 'equilibrium'.³⁰ This would involve net emissions reduction below the rate that would otherwise have been sustainable, if historical atmospheric emissions had not taken place. The austerity stage could end once the atmosphere and climate ceased to degrade as a result of past emissions. At that point, we could enter a second stage, the 'sustainable' stage, at which point emissions could resume at a sustainable level—that is, emissions would be capped at a level consistent with maintenance of stable levels of atmospheric GHGs over time.

Within the first stage, emission reductions might be eased gradually. There is concern that mandated emission caps could impose a shock to the global economy, and that an inappropriately designed policy might impose more

³⁰ The description given here is a simplification in several important respects. In particular, the description of climate stability as an ecological 'equilibrium' may trade on an excessively simple account of climate and atmosphere as an environmental system. There is a clear sense in which environmental systems are not naturally in equilibrium in the long run, and some regard the notion of an ecological equilibrium as a discredited scientific paradigm. (See Tarlock (1994).) A more accurate and economically viable model of climate sustainability may be somewhat more complex than the two-stage strategy described here, but will have many of the same properties. For the present purposes, I will adopt simplifying assumptions and will regard the atmosphere's ability to absorb emissions as described above: a system that would need time to recover before the earth's human population could achieve a sustainable relationship with the atmosphere.

hardship than it would eventually prevent. Thus a policy to reduce emissions might begin more modestly, by reducing the rate at which present emissions are *increasing* over time. Then further restrictions might be gradually implemented, balancing the risk to the economy against the prospective benefits to be achieved by reducing emissions. We may hope that there is a feasible development path along which emissions can be reduced swiftly enough to move toward a dynamic environmental equilibrium, but along which emission restrictions are not so sudden or so severe that they cause serious economic hardship in the short term. It cannot be assumed *a priori* that there is a possible development path that meets these competing requirements.³¹

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Turning a moving freighter

In spite of the obvious similarity between the two-stage strategy described above and Rawls's two-stage model for saving and development, there is also an important difference: climate change is already underway, and the processes involved have a momentum of their own. A number of different physical processes that lie behind this momentum: Global warming is expected to cause an enormous increase in the release of methane, a powerful greenhouse gas, as northern permafrost melts. Reduced ice cover in polar seas reduces their reflectivity and increases the rate at which they collect and preserve the heat of the sun, which in turn increases the rate at which ice floes melt. As a result of these and related processes, events caused by global warming are expected to increase the rate of global warming. Because these processes are already well underway, even the most aggressive present efforts to implement an appropriate climate policy cannot be expected to reverse the current trend for many years. Like the pilot of a barge or freighter, we can turn the wheel now by implementing policies to reduce GHG reduction, but there will be a significant lag time before these policies have any perceivable effect on the system. Our present efforts to turn back the process of damaging environmental change may reduce the rate of destruction, but even on the most optimistic projections it will be decades or even centuries before the global climate and the environmental systems of the earth will begin to recover.

³¹ I would like to thank an anonymous reviewer who made this suggestion. This reviewer writes 'Stabilizing greenhouse gas concentrations at (say) twice the pre-industrial norm would require carbon dioxide emissions reductions of 60–80%. Achieving this goal, however, is consistent with a time path in which emissions rise slightly in the short-term (10–20 years) with continuing reductions in the more distant future. The idea is to phase in policies over time to avoid imposing a sharp shock on the economy.' As noted, we may hope that such a policy is feasible, but it cannot be assumed. Another reviewer, Axel Gosseries, has similarly suggested that one might consider a one-stage approach with decreasing levels of investment toward the achievement of sustainability.

Rawls's account of intergenerational saving is not designed for a world where things are getting worse as a result of a process with its own momentum. But like other plausible liberal theories of justice between generations, Rawls's view will not permit the present generation to compromise the needs of later generations merely to satisfy present adventitious needs. Present investment to mitigate climate change does not aim to make later generations better off than earlier ones. Instead, it aims to protect later generations from risks that might make them much *worse* off than earlier ones. Climate policy is a present investment to protect future generations from serious harms including those suffered when people are unable to meet their basic needs.

7. Conclusion: Climate Policy and Priorities of Intergenerational Justice

Since protection from harm is a matter of basic need, and since significant climate mitigation can be accomplished without compromising the needs of present persons, climate policy is an urgent priority of justice. Unless our efforts to mitigate the effects of climate change will cause more misery and deprivation than they will relieve, we have an obligation of justice to undertake them. Considerations of justice cannot by themselves tell us which practical alternative will best satisfy the needs principle. But where our present activities are not necessary for satisfaction of present fundamental needs, and put at risk the basic needs of future generations, then they are unjust. The first priority for a just climate agreement should be to prevent activities that involve this kind of regressive trade-off between present and future persons.

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Queries in Chapter 13

Q1. Please Check whether any text needs to be added in this place.

