

CLIMATE CHANGE AND THE CHALLENGE OF MORAL RESPONSIBILITY

STEVE VANDERHEIDEN
UNIVERSITY OF MINNESOTA DULUTH

ABSTRACT: The phenomenon of anthropogenic climate change—in which weather patterns and attendant ecological disruption result from increasing concentrations of greenhouse gases released into the atmosphere through human activities—challenges several conventional assumptions regarding moral responsibility. Multifarious individual acts and choices contribute (often imperceptibly) to the causal chain that is expected to produce profound and lasting harm unless significant mitigation efforts begin soon. Attributing responsibility for such harmful consequences is complicated by what Derek Parfit terms “mistakes in moral mathematics,” or failures to correctly assess the various individual contributions to collectively produced harm. Combined with the difficulties in attributing responsibility to agents for spatially and temporally distant harmful effects and that of holding agents culpable for effects (resulting from socially-acceptable acts) about which they may be ignorant, this paper attempts to sort out several ethical problems surrounding the identification of responsible parties contributing to climate change.

The phenomenon of anthropogenic climate change—in which weather patterns and attendant ecological disruption result from increasing concentrations of greenhouse gases released into the atmosphere through human activities—challenges several conventional assumptions regarding moral responsibility. Multifarious individual acts and choices contribute (often imperceptibly) to the causal chain that is expected to produce profound and lasting harm unless significant mitigation efforts begin soon. Persons, that is, through various individual acts, *cause* climate change (i.e., they are *causally* responsible for the phenomenon), but are they *morally* responsible for the harm that is expected to result? Anthropogenic climate change

is a problem that cries out for ethical evaluation, but poses two serious challenges to standard accounts of moral responsibility, which this paper surveys.

Attributing responsibility for these predicted harmful consequences is complicated by what Derek Parfit terms “mistakes in moral mathematics,” or failures to correctly assess the various individual contributions to collectively produced harm. In addition, agents causally responsible for contributing to climate change are often ignorant of both their individual contributions and the larger effects they cause. Whether or not this ignorance about causal responsibility diminishes or excuses moral responsibility shall be the second ethical challenge examined within the paper.

Given the costs inherent in an effective international climate change mitigation regime, a necessary (but insufficient) condition for the willing participation of relevant parties (e.g., nation-states) is the perceived fairness of the allocation of greenhouse gas abatement burdens, and the most obvious criterion of fairness in distribution involves some conception of responsibility. To wit: insofar as some nation-states bear greater responsibility for creating the problem, fairness demands that they bear proportionally greater responsibility for its remedy. Thus, assessing moral responsibility in a philosophically defensible manner is a necessary first step in designing an effective remedy. Given the complexities involved in establishing causation and disaggregating individual contributions from epiphenomenal problems like anthropogenic climate change, the devil is, so to speak, in the details. The necessary first step in designing a response to climate change is to sort out these details.

INDIVIDUAL RESPONSIBILITY AND “IMPERCEPTIBLE EFFECTS”

Supposing that anthropogenic climate change will, as is predicted, cause significant harm to persons (in both the near and distant future), to what extent can that harm be attributed to individual offenders (that is, to individual emissions of greenhouse gases, through such mundane activities as driving, using electrical appliances, and eating beef raised in deforested subtropical areas)? Connecting effect to cause is complicated by the countless tiny point sources of GHG emissions, threshold considerations, and problems of disaggregating large cumulative consequences into apparently negligible discrete acts. Given the nature of an aggregative harm like air pollution, there exists a kind of paradox of small effects: it appears to be true of no one that their acts (by themselves) cause any palpable harm to anyone, and yet the combined acts of many cause significant harm. In view of consequences, it seems paradoxically true that a morally significant harm has resulted from a series of morally insignificant acts. That is, some bad outcomes have been caused by entirely blameless acts.

The problem of attributing responsibility to individual polluters is similar in form to the *voter's paradox*: given the vanishingly small chances of a single vote altering the outcome of a national election, participation by each is thought to be irrational

(that is, given the expected costs of voting outweigh any expected benefits from the activity); yet, in combination individual votes may make a difference. As Parfit has shown, however, such accounting involves not so much a paradox as a “mistake in moral mathematics”—it consists (he argues) in “ignoring small chances” of a single act. The *effects* of altered electoral outcomes may not be small (as in the case of climate change), but the *chances* of a single vote altering those effects certainly are. Nonetheless, we must consider those very small chances against the large potential effects. Parfit here argues by analogy: we would ordinarily treat a one-in-a-million chance of killing a person as an acceptable level of risk, but would not so readily dismiss the same odds (faced by a nuclear engineer) of killing a million people. “When the stakes are very high,” he suggests, “no chance, however small, should be ignored.”¹

The case of minute and multifarious individual contributions to climate change is not identical, however, in that it is not the small *chances* of individual acts causing significant harm that creates the apparent paradox, but instead the very small (or imperceptible) *effects* of individual actions causing (in combination with other like actions) significant harm. A great many actions have small, almost immeasurable effects on environmental quality, and yet no single one of them may have a perceptible effect on any person. Taken collectively, though, billions of tiny point sources of pollution do cause perceptible harm.

May we conclude from this aggregative effect that each contribution to pollution is an act which indeed causes harm (albeit a tiny fraction of a significant problem, and one that may be both spatially and temporally distant from the agent), and which can be so treated by a regulatory regime? Must we treat these micro-offenses as constituting palpable harm, therefore (following Mill) warranting state interference?² If so, the likely result is a ban on nearly all human activity, including breathing, insofar as it requires the emission of greenhouse gases into the atmosphere. Such a conclusion, obviously, would be absurd. Does the rejection of this absurd conclusion justify its opposite: that we should not regard any small act of pollution or resource degradation as an act of harm? It doesn't follow necessarily (although this conclusion is often adopted by policymakers nonetheless), and such an inference would at least require further argument before its implication for environmental regulation could be accepted.

One obvious mistake in the above inference concerns threshold effects: given a smaller global population, many of the present activities that contribute to increasing concentrations of atmospheric GHGs could safely be assimilated into the environment without any discernable effects upon climate. For 10,000 years, atmospheric GHG concentrations remained remarkably stable, and only began increasing during the early stages of industrialization, and more recently began a more rapid ascent. Thus, some act that—even in combination with other like acts—*once* was entirely benign (and would still be, given smaller global population), *became* harmful once some threshold level of population or emissions was exceeded. Literally, the wrongness of some act may depend upon how many other people are able to benignly commit that same act.

Parfit refers to the difficulties surrounding this threshold problem as the mistake of “ignoring the effects of sets of acts.” Since many desirable outcomes require cooperation among groups of people, and in the absence of such cooperation individual acts fail to bring about even a fraction of the desired outcome, some notion of the role of individual participation in a group endeavor, he rightly argues, is needed. Likewise, some kinds of actions don’t appear to cause harm individually (small sources of pollution being an example), but taken together with other similar acts they do cause measurable harm. The principle that Parfit offers for overcoming this mistake in moral mathematics is: “Even if an act harms no one, this act may be wrong because it is one of a *set* of acts that *together* harm other people. Similarly, even if some act benefits no one, it can be what someone ought to do, because it is one of a set of acts that together benefit other people.”³ The benefit or harm of a cooperative endeavor must be disaggregated so that individual acts can properly be assigned responsibility for their contributions to the overall outcome, and the above principle does just that.

A similar mistake involves “the belief that imperceptible effects cannot be morally significant.” Even if a person’s share of a collective act that causes either harm or benefits is so small that the effects of each individual contribution cannot be perceived by a beneficiary or sufferer, those effects, Parfit claims, matter morally. Environmental harm is especially prone to this mistake in moral mathematics, because of the very small contribution that individual point sources of pollution have on aggregate pollution levels. Likewise with the depletion of natural resources, individual contributions to larger aggregate problems appear to be trivial (as in cutting down a single tree), and yet the countless occurrences of such seemingly trivial acts together add up to quite serious harms. As Parfit puts it, “each of our acts may be *very* wrong, because of its effects on other people, even if none of these people could ever notice any of these effects. Our acts may *together* make these people very much worse off.”⁴

To illustrate, he proposes a “commuter’s dilemma” in which persons commuting into a city must decide whether to drive (thus contributing a small amount of pollution) or take public transportation (yielding a much smaller share). The latter option has a convenience cost that most people are unwilling to bear, at least not in the absence of a significant countervailing benefit. Like many other coordination problems involving groups, the commuter’s dilemma leaves each potential driver weighing the trivial cost of pollution (shared by all) against the seemingly more significant convenience cost of using public transportation (borne by each). Even though they may recognize air pollution as a significant public health issue and acknowledge that automobile emissions are a prime cause of such pollution, each commuter regards their own contribution to the problem as insignificant, and further reasons that their own “sacrifice” in taking public transportation will have an imperceptible effect on the overall pollution problem (given the likelihood that others will continue to drive). As game theory predicts in such dilemmas, they all choose to drive. But should they (or, more to the point, can the state legitimately discourage them from doing so)?

Parfit, rejecting the mistaken intuition that holds imperceptible effects to be insignificant, answers that they should not. In the past, he notes, when most people lived in small communities, the consequences of making these mistakes in moral mathematics were far less serious. A relatively small group of persons each making trivial contributions to air pollution may never harm anyone, insofar as that pollution remains dispersed and falls within the capacity of the natural environment to cleanse itself (known as its carrying capacity). With urbanization, these mistakes began to take on far more serious consequences when carrying capacity was exceeded, and many more trivial contributions to aggregate problems like pollution became more insidious.

Increasingly concentrated populations dramatically intensify individual contributions to problems of pollution, especially once carrying capacity is exceeded, but large populations do nothing to disperse those harms or diminish their effects. Each person may contribute only a tiny fraction of the overall levels of pollutants in the environment, but each bears the full cost of that pollution. A single person inhaling carbon monoxide does almost nothing to cleanse the air of that pollutant. While perhaps true that society at the time could safely ignore small or imperceptible harms, such is no longer the case. “It now makes a great difference whether we continue to believe that we cannot have greatly harmed or benefited others unless there are people with obvious grounds for resentment or gratitude,” Parfit urges. “If this is what we think, what we do will often be much worse for all of us.”⁵

IGNORANCE, NEGLIGENCE, AND CULPABILITY

Given the nature of individual contributions to aggregative problems like climate change, and given also the massive public relations effort designed to discredit the scientific basis for the causal link between fossil fuel combustion and deforestation, increased atmospheric concentrations of GHGs, and their predicted consequences, it should not be surprising that many Americans do not feel at all responsible for the consequences of their GHG emissions-producing acts. That is, people do *cause* climate change through a wide variety of otherwise innocuous acts, but they are largely ignorant about the effects on these acts. Does this ignorance in any way diminish their culpability?

At issue here is not whether or not the many small contributions of GHGs into the atmosphere *cause* the problems of climate change—the Intergovernmental Panel on Climate Change has established this causal link with a high level of certainty⁶—but whether or not (and under what circumstances) persons might be held *morally responsible* for their contributions to the problem. The relevant distinction, then, is between *causal responsibility* (where effects are linked to particular causes) and *moral responsibility* (or culpability, where agents are blamed for consequences for which they are causally responsible. In at least some cases, persons may be held causally but not morally responsible, and the problem of assessing culpability for anthropogenic climate change might begin with two of those.

The first kind of case in which causal responsibility does not entail moral responsibility concerns thresholds: *ought* implies *can*, so it cannot be the case that *any* emission of GHGs triggers moral blame unless persons could plausibly be expected to refrain from exhaling carbon dioxide. This problem is relatively easy to address. Though absurd to blame a person for exhaling (thereby contributing GHGs into the atmosphere), it hardly follows that any individual emission is morally blameless. As suggested above, some threshold (perhaps calculated from *carrying capacity*, or the ability of carbon sinks to absorb or recycle GHGs without deleterious effects upon climate) sets the limit for blameless individual emissions, where further emissions beyond the threshold constitute a morally blameworthy failure to within the bounds of sustainability. It may not be wrong to produce carbon dioxide, but it is wrong to produce an excessive amount of it.

The second problem is more difficult, and involves the reasonableness of ignorance concerning the likely effects of one's intentional acts. For one reason or another, most Americans do not regard their everyday acts of GHG production to be causally related to global climate change, despite the oft-observed fact that U.S. *per capita* emissions well exceed the threshold of sustainable GHG emissions and the widely disseminated reports linking fossil fuel combustion, changing land use patterns, and climate-related problems. Though based on a mistake, it nonetheless complicates attributions of moral responsibility to observe that harmful acts result not from individual malevolence but from adherence to widely accepted social norms, which offer no prohibitions against such acts. Can we attribute moral responsibility to persons (or to entire nations of such persons) for harm that results from acts that they neither think to be wrong nor violate existing ethical norms?

Ordinarily, we do not blame persons for bad consequences that result from accidents, where an accident is defined as a consequence that could not reasonably be anticipated to follow from some act. Notice that accidents involve causal responsibility; people do, in fact, *cause* the consequences of accidents (and so they are responsible for them in one sense), although they are not held to be culpable for those unintended consequences (hence are *not* responsible in another sense of the term). This divergence between causal and moral responsibility, however, only applies to a subset of acts that produce unintended consequences. That is, agents are assumed to be *morally* responsible (as opposed to merely being *causally* responsible) for their acts (or omissions) insofar as they can reasonably be expected to anticipate the consequences of those actions (or inactions), whether or not they do, in fact, anticipate them.

The obvious exception to this gap between causal and moral responsibility involve *negligent* acts, where agents fail to adequately consider the possible bad consequences of their actions, and thus subject others to undue risk. In cases of negligence, we say that although some agent did not in fact anticipate that her act might cause morally significant adverse consequences for someone, a reasonable person would have done so. The problem with defining negligence in terms of what a reasonable person would anticipate, however, is that it relies upon societal

norms, and a “reasonable” North American may well commit the same “mistake in moral mathematics” of which our agent stands accused. The common law tradition from which negligence has conventionally been defined is confounded by problems like anthropogenic climate change, in which once-permissible actions become impermissible at some point, once thresholds are crossed and empirical knowledge establishes the causal link between particular acts and future harm. In such cases, social norms lag behind the factual bases of our obligations.

Nonetheless, in assessing the mitigating effects of ignorance concerning our causal responsibility for climate change upon the moral responsibility that might be attributed to us for excessive emissions of GHGs, a conception of reasonable ignorance is instructive. In order to avoid cognitive dissonance and thereby to continue upon our current trajectory of greenhouse gas production, a strong temptation to ignore reports about the effects of everyday actions may be psychologically understandable, but this does not make it morally defensible. Twelve years after the Rio Declaration committing developing nations to GHG abatement, and with three scrupulously researched and widely disseminated IPCC Assessment Reports, claims to reasonable ignorance concerning anthropogenic climate change are fully implausible, despite the uncertainties that remain in climate science. Even if the predictions about the harmful consequences of climate change turn out to be overstated, ignoring the considered recommendations of the vast majority of the world’s scientific community can only be described as willful ignorance, and cannot exonerate one from moral responsibility for resultant harm.

As citizens of the nation that continues to both lead the world in per capita greenhouse gas emissions and to lead the effort to subvert or undermine any global effort to reduce these emissions, we cannot any longer invoke ignorance as a defense against acknowledging our causal and moral responsibility for this potentially devastating global problem, nor can we plausibly continue to deny the seriousness of anthropogenic contributions to climate change or commit the fallacy that views individual contributions as trivial and therefore unworthy of moral scrutiny. Insofar as we continue to fail to adequately address this problem, we shall do so irresponsibly.

NOTES

1. Derek Parfit, *Reasons and Persons* (Oxford: Clarendon Press, 1984), p. 75.
2. Mill famously argues for interference in individual liberty if (and only if) the act in question causes harm to others, but rejects the application of his harm principle to acts that produce “imperceptible” effects. John Stuart Mill, “On Liberty,” from *Utilitarianism, On Liberty, Considerations on Representative Government*, ed. by H. B. Acton (Rutland, Vt.: Everyman’s Library, 1972), pp. 78–83.
3. Parfit, *Reasons and Persons*, p. 70.
4. *Ibid.*, p. 83.

5. Ibid., p. 86.
6. Intergovernmental Panel on Climate Change, *Climate Change 2001: A Synthesis Report*, ed. R. T. Watson and the Core Writing Team (New York: Cambridge University Press, 2001).

BIBLIOGRAPHY:

Intergovernmental Panel on Climate Change. 2001. *Climate Change 2001: A Synthesis Report*, ed. by R.T. Watson and the Core Writing Team. New York: Cambridge University Press.

Derek Parfit, 1984. *Reasons and Persons*. Oxford: Clarendon Press.

John Stuart Mill. 1972. "On Liberty." In *Utilitarianism, On Liberty, Considerations on Representative Government*, ed. by H.B. Acton. Rutland, VT: Everyman's Library.