


ARTICLE

Indeterminacy in Global Warming: A Supervaluationist Response

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Abstract

Global warming is a very complex collective harm. While various models have been proposed to assign moral responsibility in such cases, global warming presents an additional problem. The complexity of the climate system gives rise to ineliminable indeterminacy, which makes it impossible to determine the extent to which any particular emissions contribute to this collective harm. This indeterminacy poses an obstacle to assigning moral responsibility to individuals. To overcome this obstacle, I propose adopting a supervaluationist approach. This approach has several benefits. Among other things, it supplies a framework for assigning moral responsibility that handles indeterminacy that commonly arises when dealing with complex, global collective-harm scenarios.

1. Introduction

Global warming is increasingly responsible for significant harms, for example, increases in wildfires, droughts, and tropical storms, that continue to negatively impact the well-being of persons. Given the immense scale and complexity of the problem, it serves as an important case study in moral responsibility. It appears to be a textbook example of a collective harm. That is, it has the following features: (a) to produce the bad consequences it requires that enough people act in a certain way and (b) no single act makes a substantive difference. One challenge with collective-harm cases is that it appears that each individual contributor can reasonably deny moral responsibility for any harm. Since their individual action(s) made no substantive difference, they did not do anything wrong. Much attention has been given to addressing this challenge, and various models have been proposed to assign moral responsibility to the individual participants in collective-harm cases. However, whatever one thinks of these models (which are, admittedly, controversial), global warming presents an additional challenge, one that is often overlooked.

The problem with global warming is not merely that it is a very complex collective harm. Were this the extent of the problem, we might reasonably expect to assign moral responsibility to contributors using our preferred model of collective harm, but global warming presents an additional complication. Practically speaking, there is ineliminable indeterminacy regarding whether and to what extent an individual's particular GHG emissions contribute to global warming. This indeterminacy appears to make it impossible for standard consequentialist accounts to assign moral responsibility to

individuals. How can we hold individuals responsible for their contributions if we cannot trace those consequences to any actual harms? In this article, I propose a method for assigning moral responsibility to individuals that overcomes this indeterminacy.

Towards this end, the structure of the article is as follows. I begin in Section 2 with some background assumptions and clarifications. In Section 3, I consider models of collective harm discussed in the literature, the indeterminacy challenge that global warming presents, and two widely discussed approaches that aim to address this challenge. In Section 4, I consider why these approaches are unsatisfying and suggest an alternative based on a popular approach to resolving indeterminacy in metaphysics, supervenientism. In the balance of the article, I consider some benefits that come with adopting a supervenientist approach to moral attributions. It provides much-needed conceptual clarity when assigning moral responsibility in complex collective-harm cases, overcomes what initially appears to be a devastating obstacle to assigning moral responsibility, and suggests a new way of looking at individual moral responsibility in these cases.

2. Preliminaries

Before considering how global warming presents a special challenge to models of collective harm, it is worth spending a moment to lay out some background assumptions and clarifications. While I shall often talk as if global warming itself is ‘the harm’, this way of talking is a convenient simplification. Global warming results in climate change. This results in severe disruptions of weather patterns and the exacerbation of natural disasters, which negatively impact the well-being of sentient creatures. Rather than global warming itself being the harm, perhaps it is more sensible to refer to the resulting climate change damages as the harm. Or we might go even further down the causal chain and talk about the negative impact on the well-being of sentient creatures as the harm. For simplicity, I shall often talk about global warming itself as the harm, but the reader can substitute any of these further consequences as the relevant harm.¹

Second, I am not here concerned with evaluating the degree of moral responsibility. When we have multiple actors who (through their collective actions) cause some harmful effect, it can be difficult to determine the extent of each individual’s responsibility. Much has been written on various proposals that aim to supply the appropriate moral calculus.² The complexity of this calculus is compounded when it is not just one effect, but a range of negative effects, that are generated. Should we only hold some of the actors responsible for some of these effects? Or do we treat the effects as a whole and assign a portion of moral responsibility to each actor? I shall put these important questions aside. My concern is prior to issues that arise with determining the degree of an individual contributor’s moral responsibility; my concern is whether we can make sense of assigning moral responsibility for global warming (and similarly structured phenomena) to individuals in the first place.

¹My concern is with indeterminacy that arises when attempting to trace an individual’s emissions to its causal contribution to global warming. This indeterminacy arises regardless of whether the path tracing an individual’s emissions causing (or contributing to) harms involves additional causal links. Additional links serve to increase the complexity of that path, which might make the resulting indeterminacy more salient, but it does not impact the framework for assessing this indeterminacy.

²See, for example, Glover and Scott-Taggart (1975), Parfit (1984), Kagan (2011), Nefsky (2012), and Pinkert (2015).

3. The moral complexity of global warming

Although my concern is with the assignment of moral responsibility *simpliciter*, rather than with determining the degree of that responsibility, many accounts aim to achieve both. Much discussion of global warming and moral responsibility focuses on models of collective harm, which aim to address not only the concern that individuals are held morally responsible for their contributions, but also the degree to which they are responsible. We begin our inquiry by considering why global warming presents a challenge that escapes the common models.

A. Collective harm models

As mentioned at the outset, a ‘collective-harm case’ is one in which: (a) to produce the bad consequences it requires that enough people act in a certain way and (b) no single act makes a substantive difference. Discussions of collective harm tend to focus on two sorts of models: Cumulative Models and Threshold Models.³ An example of the former, which is routinely discussed in the literature, is Parfit’s ‘Harmless Torturers’. Here a thousand torturers press a button that imperceptibly increases the electric current delivered to the victim. No individual torturer is responsible for the harm that results, as his/her action only results in an imperceptible difference, but collectively they cause the victim extreme pain.

In Threshold Models, the harm in question does not merely require collective action, it is not triggered unless some threshold is crossed. An example that fits this model is Kagan’s ‘Chicken Butcher’. In this example, a butcher only orders more chickens, which results in more chickens being slaughtered, when he sells 25 chickens. As long as that threshold (selling 25 chickens) is not crossed, the actions of each individual chicken purchaser make no difference. The same number of chickens would have been slaughtered. These models, Cumulative Models and Threshold Models, share an important underlying feature. They draw out the difficulty of assessing an individual’s contributory role and, subsequently, his/her moral responsibility in collective-harm cases.

That global warming is an example of a collective harm is not very controversial. There is scientific consensus that humanity’s emissions cause global warming, which results in devastating climate change. These cumulative emissions are the product of the emissions of numerous individuals, and no individual’s acts of emitting greenhouse gases make a perceptible difference. Only collectively does the harm result. What is controversial is whether any of the specific proposals of the preceding models, which aim to attribute moral responsibility to individual contributors, are successful. Here criticisms tend to fall into one of two camps. They either (1) draw out problems with the specific moral calculus proposed or (2) take issue with the contribution relation, the sense in which an individual is said to contribute to the collective harm in question.

Much of the current debate concerns (1). Ethicists discussing common models of collective harm generally aim to supply some sort of moral calculus that allows us to determine the degree of an individual contributor’s responsibility, but I wish to put this issue aside. As noted at the outset, my concerns are prior to issues that arise

³While there is some debate regarding the appropriate taxonomy of collective-harm cases, the above classification roughly corresponds to what Kagan (2011) calls “imperceptible difference cases” and “triggering cases,” and what Nefsky (2012) calls “non-triggering cases” and “triggering cases.” What is crucial is whether the collective harm is merely cumulative (without a defined threshold) or whether the harm only occurs when a threshold is crossed.

with determining the degree of individual moral responsibility. The problem that I want to focus on concerns (2). It concerns whether we can make sense of assigning moral responsibility for global warming to individuals in the first place. When we say that the actions of numerous individuals contribute to global warming, it is natural to understand this contribution as causal, but this understanding confronts a significant obstacle. Unlike the relatively simple cases of collective harm discussed in the literature, global warming involves complexities that make it impossible to trace an individual's emissions to determine their causal role (*if any*) in contributing to global warming.

B. Obstacle to applying collective harm models

Global warming presents challenges that are not addressed in commonly discussed models of collective harm. To illustrate, consider Sinnott-Armstrong's example.⁴ Suppose that you take a drive merely for the pleasure of driving on a Sunday afternoon in a gas-guzzling sport-utility vehicle. (Following Kingston and Sinnott-Armstrong, let us call this activity 'joyguzzling'.⁵) It is certainly true that the emissions from this activity are extremely minute – almost negligible – when compared to the cumulative emissions that generate global warming. When we consider this feature, we might be tempted to apply the Cumulative Model. The case appears similar (in kind but not scale) to Parfit's 'Harmless Torturers'. Alternatively, when we attend to thresholds in the climate system, we might be tempted to apply the Threshold Model. In this regard, the case is analogous to Kagan's 'Chicken Butcher'. We might worry whether emissions produced from joyguzzling resulted in crossing any of these thresholds.

When discussing these two models, the Cumulative Model and Threshold Model, Jamieson makes similar observations. Each model appears to reflect certain features of global warming, but Jamieson quickly dismisses attempts to apply them. Talking about the Threshold Model, in particular, he contends that:

[I]t does not capture the dynamic nature of the climate system, the fact that there are vast numbers of differently structured processes that occur simultaneously, the differences in scale that are involved in moving from individual emissions to damages, and the fact that the system at each level is open to a vast number of influences, many of which are not causally active at other scales.⁶

But the issue here is not merely that the complexity of the climate system makes application of these simple models nigh impossible – that we cannot track to what harms particular emissions contributed or the extent of their contribution. Were this the extent of the problem, we might content ourselves with the knowledge that an individual's actions (e.g., joyguzzling) contribute to global warming and, subsequently, to harms that result. We could then debate to which harm(s) we can reasonably hold that individual morally responsible and the extent of their blameworthiness. But there is a deeper worry. The molecules from the Sunday-drive emissions might not even remain in the atmosphere (and, hence, contribute to global warming). They could be reabsorbed by trees, oceans, or other parts of the biosphere.

⁴See Sinnott-Armstrong (2005), pp. 287–88.

⁵Kingston and Sinnott-Armstrong (2018), p. 169.

⁶Jamieson (2014), p. 181.

In short, the problem with assigning moral responsibility to an individual's contribution to global warming is that, given the sheer complexity of the systems involved, we simply cannot track an individual's emissions to determine their causal role (if any) in contributing to global warming.⁷ Considerations like these suggest abandoning attempts to assign individuals causal responsibility for global warming. We might agree with Jamieson that, in this context, we should separate contributing to an outcome from causing it and conclude that "for all practical purposes, climate change damages are insensitive to individual behavior."⁸

C. Abandoning the causal account

On the other side of the debate, we have the position implied in Hiller's incredulous question, "If individual actions such as Sunday drives are not causes of climate change, then what does cause climate change?"⁹ This rhetorical assertion captures what might seem obvious – that individual human actions, even those as mundane as joyguzzling, cause climate change. However, it is not clear that in abandoning individual causal responsibility for global warming, Jamieson must commit himself to the stronger position of *denying* individual causal responsibility. His remarks often suggest neutrality in this regard – that, practically speaking, it is impossible for us to determine an individual's causal role (*if any*) in contributing to global warming.¹⁰

I expect most people would not remain neutral on this point. They would probably agree with the sentiment in Hiller's rhetorical assertion. But if we accept that individuals are causally responsible for contributing to global warming, this suggests a problem. It seems a natural (if not short) step to maintain that individuals, then, bear some moral responsibility for their contributions. However, for the reasons just discussed, we cannot hold any particular individuals *morally responsible* for global warming! There is some tension here. (The underlying tension can be expressed formally, but I shall put this aside for the moment. We shall return to this issue later, in Section 5.) One remedy is to sever the connection between causal responsibility and moral responsibility. While they might not put it this way, this is essentially what the proposals of Sinnott-Armstrong and Jamieson do. They reject a standard causal-consequentialist account of moral responsibility when it comes to global warming, one which grounds moral responsibility on causal responsibility, with the latter determined by tracing a causal chain from the harm(s) in question back to the actions of individuals.

Sinnott-Armstrong (2005) maintains that the locus of moral responsibility for global warming is not properly individual emitters but rather governments. This need not absolve individuals of all moral responsibility. Individuals might be indirectly morally responsible for addressing global warming. They could have moral obligations to exert political pressure on their governments to enact policies that reduce emissions or mitigate climate change damages, but this is quite different from holding them

⁷Others have raised similar concerns, e.g., Franzen (2015) and MacLean (2019).

⁸Jamieson (2014), p. 181.

⁹Hiller (2011), p. 349.

¹⁰Following his discussion of the complexity of the climate system, Jamieson makes the following remark: "Having said all this, I think we are too ignorant and confused about both the climate system and the concept of causation to make Sinnott-Armstrong's categorical claim that an individual joyride 'does not cause global warming, climate change, or any of the resulting harms, at least not directly.'" See Jamieson (2014), p. 181.

directly morally responsible for their individual emissions. In contrast, Jamieson (2007, 2014) does not want moral responsibility for global warming to be limited to governments, but he, too, abandons a straightforward consequentialist account. Rather than grounding moral responsibility on tracing a causal chain from an individual's emissions to harms generated by global warming, Jamieson maintains that an individual is morally responsible and, hence, blameworthy or praiseworthy based on whether (and to what extent) they exemplify 'green virtues'.¹¹

To be clear, these approaches are *compatible* with consequentialist moral reasoning. Even Jamieson's appeal to virtue is firmly grounded in consequentialist reasoning – that individuals ought to adopt green virtues insofar as this generates the best outcomes. However, they are not without cost for the consequentialist. They abandon the straightforward consequentialist account on which individual moral responsibility for actions that generate particular emissions (e.g., joyguzzling) must be based on individual causal responsibility for certain harms (e.g., global warming).

4. Reviving the causal account

Once we abandon straightforward causal-consequentialist attempts to assign moral responsibility to individuals for actions that contribute to global warming, it seems natural to relocate moral responsibility in the political domain or in the exemplification of certain virtues. Whether these approaches are appealing depends, in large part, on whether one can accept that moral responsibility for curtailing emissions rests primarily (if not solely) on governments rather than on individuals or whether one accepts that there are green virtues and squares this appeal to virtue with a thoroughgoing consequentialist approach to moral reasoning.¹² In this section, I argue that we do not have to go down either of these routes. There is an alternative approach that overcomes the obstacles that prevent us from adopting a straightforward causal-consequentialist account of moral responsibility.

A. Preliminaries

Before presenting an alternative approach to the problem, it is worth stepping back for a moment and considering what we want.

(1) Individual moral responsibility

First and foremost, we want an account of how joyguzzlers bear *some* moral responsibility. Groups may have moral obligations regarding global warming, but individuals do, too. Individuals have moral responsibilities to reduce their emissions, for instance, to avoid joyriding in gas-guzzling vehicles.

¹¹Some of these virtues, e.g., temperance, are widely discussed in virtue ethics. Other green virtues are more novel, e.g., mindfulness, cooperativeness, and respect for nature. See Jamieson (2014), pp. 186–93.

¹²Of these approaches, the latter seems more palatable. That consequentialist approaches to moral reasoning can make room for the importance of virtue is not very controversial. In chapter 4 of *Utilitarianism*, Mill argues that the utilitarian standard “enjoins and requires the cultivation of the love of virtue.” It should be noted, however, that Mill was only presenting a consequentialist account that accommodated the sorts of virtues traditionally discussed in virtue ethics. It is not clear that the same reasoning is readily applicable to the green virtues.

(2) Straightforward causal account

Second, we want a straightforward consequentialist account of individuals' moral responsibilities to be causal in nature. What makes individuals morally responsible for global-warming harms is that their actions, for instance, joyguzzling, causally contribute to those harms.¹³

Neither Sinnott-Armstrong nor Jamieson supply accounts that satisfy both requirements. Sinnott-Armstrong abandons individual moral responsibility when it comes to global warming; he contends that “[G]lobal warming is such a large problem that it is not individuals who cause it or who need to fix it. Instead, governments need to fix it.”¹⁴ And Jamieson abandons a straightforward causal account of moral responsibility. Ideally, we would not want to make either concession.

B. The problem of indeterminacy

Is there a consequentialist account that attributes moral responsibility to individuals (in virtue of their GHG emissions) that is causal in nature? The challenge with global warming is that given the sheer complexity of the systems involved, we simply cannot track an individual's emissions to determine their causal role (if any) in contributing to global warming. This feature appears to prohibit adopting an account that assigns moral responsibility to individual emitters on straightforward consequentialist grounds – that their actions *cause* harms. On the other hand, we know that the actions of individuals do causally contribute to global warming. Actions that produce GHG emissions causally contribute (even if minutely) to global warming, and in doing so, these actions causally contribute to the harms of climate change.

The problem is not that there is doubt regarding whether actions of individuals generate emissions that contribute to global warming. The problem is that, practically speaking, it is impossible to trace which *particular* actions contribute. Put another way, Jamieson was almost correct that “for all practical purposes, climate change damages are insensitive to individual behavior.”¹⁵ What is actually the case is that climate change damages are insensitive to *particular* individual behavior. We know that individuals are responsible – just not which particular ones. The underlying concern is one regarding indeterminacy.

To illustrate, consider Sinnott-Armstrong's example of joyguzzling. We know that such actions needlessly produce GHG emissions. When we consider the sum of such joyriding activities, the collection of activities as a whole, there is little doubt that it contributes to global warming. (For the moment, put aside the extent of this contribution, as this is a separate worry. It is enough that it makes some contribution.) Nor is there any doubt that this contribution results from the emissions generated from the individual instances of joyguzzling that comprise the collection. What is indeterminate is *which* of these instances are contributors. Which joyriding activities resulted in emissions that remained in the atmosphere and which resulted in emissions that were

¹³For simplicity, I shall often use the phrase ‘causally contribute’ to describe an individual's causal relationship to global warming. By which, I mean only that (a) global warming, as a collective harm, is something to which individuals contribute (no individual alone causes global warming) and (b) this contribution is causal in nature. It is caused by individual actions that produce GHG emissions.

¹⁴Sinnott-Armstrong (2005), p. 304.

¹⁵Jamieson (2014), p. 181.

reabsorbed by the biosphere? Practically speaking, we simply cannot trace these individual emissions. We know that some set of these emissions contributes to global warming, just not which one.¹⁶

C. Indeterminacy in metaphysics

Compare the above problem, the impossibility of tracing individual emissions, with discussions of indeterminacy in metaphysics. Consider the following, which is a paraphrase of ‘The Problem of The Many’ discussed in Hudson (2001):¹⁷

George, a person, is composed of material simples (i.e., material objects that do not have any proper parts). While we tend to think that there is just one set of material simples that compose George, there are actually many, many candidates. To illustrate, take some set of simples, S1, that is an excellent candidate for being *the set* that composes George. Remove one simple from this set (e.g., an outermost simple on George’s right hand) and add a simple not in this set (e.g., a simple near George’s left hand). This alternative set, S2, is equally a candidate for being the set of simples that compose George. Regardless of whether we take S1 or S2 to be the set of simples that composes George, everything that is true of George (e.g., claims concerning his other properties, capacities, or history) are equally true in either case. The truth values of these claims are not sensitive to the gain or loss of one material simple.

In a similar fashion, we can construct other candidates that are just like S2. We can construct sets S3, S4, S5, S6, and so forth, each of which involves the loss and addition of one material simple. Each is an equally good candidate for satisfying the predicate ‘is the set of simples that composes George’. We know that George is constituted by some set of simples; the problem is that it appears to be indeterminate as to which set this is.

In both problems, tracing individual GHG emissions and The Problem of the Many, ineliminable indeterminacy arises regarding whether some set exhibits the property in question. In the former problem, tracing individual emissions, the indeterminacy concerns which emissions remain in the atmosphere and, hence, contribute to global warming. In the latter, The Problem of the Many, the indeterminacy concerns which set of simples comprise George. Given their similarities, insight into how we might address the indeterminacy concerning individual emissions can be gained by considering how metaphysicians address indeterminacy in The Problem of the Many.

One approach to resolving indeterminacy that has garnered considerable attention is supervenience theory. Its proponents take The Problem of the Many (along with similar cases concerning indeterminacy and vagueness) to be a consequence of semantic indeterminacy. Some terms have a degree of imprecision in their meaning. Our term ‘person’, for example, is not precise enough to single out one collection of simples, but this term could be made more precise. There is a range of admissible precisifications, consistent with current use of the term, that we could make to sharpen its use. Recognizing this, we can distinguish among propositions that are supertrue, superfalse, and those that suffer from a super-truth-value gap. Supertrue propositions are those

¹⁶It is also indeterminate to which particular harms the emissions in question contribute. However, in the interest of not overcomplicating the problem, let us put this issue aside for now and return to it later.

¹⁷For a more detailed presentation of the Problem of the Many, see Hudson (2001), pp. 11–17.

that come out true on every admissible precisification of the term. Superfalse propositions are those that come out false on every admissible precisification, and assertions that are true on some precisifications but false on others suffer from a super-truth-value gap.

While much more can be said about the supervaluationist approach to indeterminacy, what I want to consider here is how this approach to indeterminacy in metaphysics might be applied to the indeterminacy that arises in the present context. Supervaluation theory provides a framework for resolving our problem – addressing indeterminacy when it comes to tracing individual GHG emissions (a primary obstacle to assigning individual moral responsibility).¹⁸

5. Supervaluationist moral attributions

What we want is an account that (a) attributes moral responsibility to *individuals* like Sinnott-Armstrong's joyguzzler and (b) grounds this attribution in straightforward consequentialist terms. We want an account where individual joyguzzlers are morally responsible for climate change damages because their actions (joyriding in gas-guzzling vehicles) causally contribute to those harms. (Again, it should be noted that our concern is not with the extent of the joyguzzler's moral responsibility. Their contribution is undoubtedly extremely small, but this is a separate issue. The question we are considering here is how, given the complications we have been discussing, we can even say that individual joyguzzlers are morally responsible *at all*.) This is where supervaluation theory is useful.

Recall the underlying problem. We know that some set of emissions from joyguzzling remains in the atmosphere and, hence, contributes to global warming. But it is impossible (practically speaking) for us to determine which set this is. Consider the various sets of emissions from joyguzzling that are candidates for being the set that contributes to global warming. These candidate sets function similarly to permissible precisifications in the supervaluationist's resolution of semantic indeterminacy. Of course, not just any set of emissions is a candidate set. Similar to the application of supervaluation theory to semantic indeterminacy, where admissible precisifications are limited to those compatible with the relevant semantic restrictions and non-semantic facts, there must be some limits as to what counts as a candidate set. Obviously, any such set must be compatible with the scientific facts, but candidate sets should also be limited to what is plausible. (For example, it is possible that the emissions of some model vehicle, which is popular among joyguzzlers, are never included among those that contribute to global warming. When considering candidate sets, a set that reflected this scenario may be *possible*, but it is surely implausible.)

With the above caveat in mind, consider again the various sets of emissions from joyguzzling that are candidates for being the set that contributes to global warming. We can evaluate what is supertrue, superfalse, or falls into a super-truth-value gap by considering what is true on all candidate sets, false on all candidate sets, or true on some candidate sets and false on others. Consider the proposition that the joyriding of an average *particular* individual, for example, George, is guilty of contributing to global warming. On some candidate sets, this particular individual's emissions are included and on others they are not. Consequently, the proposition 'George (a

¹⁸There is considerable discussion of the costs and benefits of supervaluationism in the literature. For detailed discussion of this view, see Williamson (1994), ch. 5.

particular joyguzzler) is morally responsible for producing GHG emissions that contribute to global warming' falls into a super-truth-value gap. On the other hand, the proposition that 'There are individual joyguzzlers who are morally responsible for producing GHG emissions that contribute to global warming' is supertrue. On every candidate set, this proposition is true. What varies from set to set are the *particular* emissions that are included and, hence, which *particular* individuals are morally responsible (which are responsible for the emissions in that set). But on every candidate set, it is nonetheless true that there are individuals who are morally responsible for producing joyriding GHG emissions that contribute to global warming.

The above result is an instance of a well-known consequence of supervenientist approaches to addressing indeterminacy. Insofar as they identify truth with supertruth, supervenientists accept that there can be true existential generalizations with no true instances. Consider, for example, the classic sorites problem concerning the number of grains of sand required to make a heap. For supervenientists, the proposition 'There is an n such that n grains of sand do not compose a heap, but $n + 1$ grains of sand do compose a heap' is true. On every admissible precisification, this general existential claim is true. But, of course, it is a different n that satisfies the existential claim on each precisification. So, while the general existential claim is true, no particular instance of it is true. The proposition is not true for any particular n . When we put in a particular number for n , the resulting proposition falls into a super-truth-value gap.

That there can be true existential generalizations with no true instances is a consequence of supervenientist theory that many critics take to be objectionable. Perhaps this is, indeed, a problem in other contexts, but in the context with which we are concerned (the attribution of moral responsibility), this consequence is a benefit. It captures what we want to say. Given the underlying indeterminacy concerning an individual joyguzzler's emissions, we cannot hold *particular* individuals morally responsible for producing joyguzzling emissions that contribute to global warming. Nonetheless, it is surely individuals who are responsible. The supervenientist approach captures these truths. It explains how we can maintain the truth of the general existential claim "There are individual joyguzzlers who are morally responsible for producing GHG emissions that contribute to global warming" without asserting that any particular instance of this claim is true.

What we have, then, is an example where a supposed negative consequence of supervenientism is actually, in this moral context, a benefit. It captures what we want to say. It allows us to sensibly maintain that individual joyguzzlers are morally responsible for their emissions, but this is not the only benefit of adopting this approach. In the next section, I will consider some other benefits of adopting a supervenientist approach to attributions of moral responsibility when confronted with the sort of indeterminacy that arises in the joyguzzling scenario – indeterminacy that is not uncommon when we consider moral responsibility in complex collective-harm scenarios that emerge on a global scale.

6. Benefits of supervenientist moral attributions

Earlier we considered two features that an adequate consequentialist account of moral responsibility should have when it comes to global warming. It should supply an account whereby individuals can be held morally responsible for needlessly producing emissions that contribute to global warming, such as joyguzzling. This account should also be causal in nature: what makes individuals morally responsible for global warming is that their actions causally contribute to this phenomenon. A supervenientist

account of moral attributions meets these conditions. (For simplicity, I shall henceforth abbreviate this account as simply ‘SMA’.)

We have already seen that SMA satisfies the first condition. It provides an account of individual moral responsibility. Contrary to Sinnott-Armstrong’s contention, moral responsibility for global warming is not solely the purview of governments. There are individuals, like Sinnott-Armstrong’s joyguzzlers, who are morally responsible for their GHG emissions. Of course, Jamieson’s account also meets this condition, but his account does not meet the second condition. He contends that moral responsibility when it comes to global warming comes down to the exemplification of green virtues. He abandons a straightforward consequential analysis that connects being morally responsible for actions that generate GHG emissions (joyguzzling) with *causing* harms (global warming).

SMA preserves the straightforward causal-consequentialist analysis of moral wrongdoing. To illustrate, consider the various sets of GHG emissions from joyguzzlers that are candidates for being the set that contributes to global warming. As we discussed, the assertion “There are individual joyguzzlers who are morally responsible for producing GHG emissions that contribute to global warming” is supertrue. It is true on all candidate sets, and hence true *simpliciter*. What is more, this moral responsibility is grounded on a causal chain from individual actions to causing (or contributing to) global warming, rather than indirectly on the exemplification of virtues. For, here too, the assertion “The moral responsibility in question is grounded on a causal chain that starts from the joyguzzler’s actions (generating frivolous GHG emissions) to contributing to global warming” is supertrue. It is true on all candidate sets and, as such, true *simpliciter*.

In sum, SMA satisfies the two conditions laid out earlier. It supplies an account whereby individuals are morally responsible for needlessly producing GHG emissions, and this account is causal in nature. Nevertheless, I expect that some critics might think there is some sleight of hand here. They might give something like the following objection:

While the claim “There are *individual* joyguzzlers who are morally responsible for producing GHG emissions that contribute to global warming” is true, the claim “George (*a particular* joyguzzler) is morally responsible for producing GHG emissions that contribute to global warming” is not true. This statement falls into a super-truth-value gap. It does not matter whether we are talking about George or any other particular individual joyguzzler. No particular individual is responsible on every candidate set. But we do not just want an account according to which individuals (generally) are morally responsible. We want an account that holds *particular individuals* morally responsible. We want to hold George, our gas-guzzling joyrider, morally responsible!

Admittedly, SMA does not, at least directly, supply an account that holds George morally responsible for his contribution to global warming, but nor is it entirely silent on this issue. It supplies the groundwork for such an account, but let us put this issue aside for the moment. We will return to consider how SMA plays an important role in assigning moral responsibility to an average joyguzzler like George. But first, I want to show that we should not be too quick to dismiss its ability to hold particular individuals morally responsible. SMA delivers this verdict in a number of salient cases, which align with our moral intuitions.

A. Super-offenders

When dealing with indeterminacy as a roadblock to moral attributions (as in cases of GHG contributions to global warming), SMA does not merely allow us to truly assert that “There are individuals who are morally responsible for contributing to the phenomena in question.” It also allows us to say that certain particular individuals are responsible. Keep in mind that claims concerning moral responsibility are true when they are supertrue. They are true when they hold on every candidate set. If a particular individual’s contributions to the phenomenon in question are included in every candidate set, then it would be supertrue (and, hence, true) that that individual is morally responsible for contributing to that phenomenon.

Let us call a person whose contributions are included in every candidate set a ‘super-offender’. There are different ways in which we might end up with super-offenders. Of course, the easiest way to end up with a super-offender is when there is only one candidate set – that is, when there is no indeterminacy. But even when there is indeterminacy, which generates multiple candidate sets, there can be super-offenders. For example, we could end up with a super-offender due to the sheer quantity of the offender’s contribution. Given the quantity of that individual’s contributions, it could be that his/her contribution is always necessary to generate the phenomenon. Alternatively, the issue might not be one of quantity but rather that individual’s relationship to other contributors. To illustrate this possibility, consider another way we might draw candidate sets. Thus far, I have been considering candidate sets to be sets of emissions, but there are other ways we might draw candidate sets, depending on the moral questions we are investigating.¹⁹ Suppose, for example, we are not interested in which individual joyguzzler’s emissions contribute to global warming but rather in the contributions of individual acts of joyguzzling. The candidate sets in this case comprise individual acts of joyguzzling.

It might initially appear that this change makes no difference – after all, acts of joyguzzling contribute to global warming in virtue of producing emissions that contribute. With these candidate sets, however, we are not merely interested in the emissions’ contributions. We are interested in other contributions that derive from the acts themselves. Such derivative effects could yield super-offenders. For example, we could have a ‘super-offender leader’, a person whom others follow. Without his/her contributions the others would not contribute. In virtue of this relationship to other contributors, the leader’s contributions are included in every candidate set. Or, consider the super-offender follower, who never ‘takes the first step’ but always ‘takes the second step’ (or joins in once enough people have done so). Here, again, we can see how such a person’s contributions would be included in every candidate set.

Of course, it is one thing to point out that SMA allows the possibility of super-offenders. It is another to claim that there are super-offender joyguzzlers. Were it the case that joyguzzling was akin to a celebrity-inspired fashion craze, for example, most people were joyguzzling because some celebrity made it popular, then that celebrity would be a super-offender. This would be a version of the super-offender leader, but this clearly is not the case. Even switching focus to some other subgroup of activities that needlessly contributes to global warming (living lifestyles that involve extravagant energy consumption, traveling the world in private jets, etc.), it seems unlikely that

¹⁹The benefit (at least initially) to taking the candidate sets to be sets of emissions is that this is conceptually similar to the sets of material simples in *The Problem of the Many*. This similarity makes it easier to grasp the analogous application of supervenience.

these activities involve super-offenders in the sense that is relevant here – that their contributions would be included in every candidate set.

Putting aside contributions to global warming, however, there are certainly other cases where super-offenders arise. Consider a firing squad where some soldiers are (unknowingly) given blanks. If we make the firing squad particularly large, it is implausible to think that we could trace which bullets came from which gun. Practically speaking, it is indeterminate which soldiers in the firing squad contributed to damaging the target. This indeterminacy is similar to the indeterminacy that arises when attempting to trace a joyguzzler's contribution to global warming. Here, too, we might adopt the SMA approach, where the candidate sets are composed of individual soldiers' acts of firing their weapons. Unlike with joyguzzling, however, it is quite plausible that there could be super-offender leaders and/or followers in this case.

In short, it is a mistake to think that SMA does not attribute moral responsibility to particular individuals. In fact, it does so in a manner that accords with moral intuitions. It distinguishes between the average individual and super-offenders. Super-offenders bear significant individual moral responsibility for the outcome insofar as their contribution is included in every candidate set.

B. Individuals, particular individuals, and groups

That SMA attributes moral responsibility to certain particular individuals, super-offenders, is an important result, but the question remains: What about those who are not super-offenders? It appears unlikely that there are individual super-offenders when it comes to contributions to global warming, especially contributions that result from joyguzzling. Individual contributors are merely average contributors like George. Like most (if not all) of his fellow joyguzzlers, George is not a super-offender. The statement "George (qua joyguzzler) is morally responsible for producing GHG emissions that contribute to global warming" falls into a super-truth-value gap.

Since George is not a super-offender, we cannot attribute moral responsibility to George for causally contributing to global warming. Does this mean that, morally speaking, George is off the hook? I think we could simply accept this result. I agree with Sinnott-Armstrong and Jamieson that we cannot hold George morally responsible for causally contributing to global warming. Even with this concession, however, the door remains open that George is morally responsible for a related offense. Let me close here with a tentative suggestion concerning for what we might hold George morally responsible.

We cannot hold George, as a particular individual, morally responsible for causally contributing to global warming. But George is not merely a particular individual. He is a participating member of a group defined by a shared activity – joyriding in gas-guzzlers. We can hold George responsible for being a member of this group, which needlessly contributes to global warming. In fact, this is something that, to some extent, we already do. When hearing that someone is a member of a group defined by a shared activity (e.g., joyguzzling, talking in theaters, taking up multiple seats, etc.), it is not uncommon to express verbally (or mentally) the thought that the person in question is 'one of those'. The person is evaluated (negatively) as being a member of a certain group (e.g., joyguzzlers, theater-talkers, seat-hoarders). What is more, this evaluation involves a moral component; it is not merely an indication of aesthetic distaste.

That we hold people morally responsible for group membership in certain cases is not very controversial, but it is one thing to say that we *do* evaluate people this way

and another altogether to say that we *ought* to evaluate people this way. What grounds this moral evaluation? What reason is there to maintain that individuals (at least in certain cases) bear moral responsibility for group membership? It seems that there are two ways we might go. We could extend Jamieson's account and maintain that what grounds this moral responsibility is that such membership is indicative of vice. With some groups, such as hate groups, this seems plausible. Membership in these groups would seem to indicate the presence of vice. But is this really true of joyguzzlers?

Perhaps the moral condemnation that George incurs as 'one of those joyguzzlers' is merely an oblique way of pointing out that George lacks green virtues, such as mindfulness, cooperativeness, and respect for nature. But I think there is another way of understanding this moral critique. Why not simply take this moral condemnation at face value? The moral culpability attributed to George for being 'one of those joyguzzlers' is grounded in the assessment that (a) joyguzzlers (as a group) cause harm and (b) George is a member of this group. Put simply, George is culpable for being a member of this harmful group. When we condemn George in this regard, this condemnation derives from active membership in this group, rather than the causal impact of his actions or, for that matter, a deeper evaluation of the presence/absence of certain character traits.

Admittedly, the above is only a general approach to how a proponent of SMA might assign moral responsibility to average contributors like George. Important details would have to be worked out. For example, moral responsibility for group membership could only reasonably apply to certain groups. One natural restriction seems to be that the group be defined in terms of a shared activity among its members. It is not a mere taxonomical happenstance that George is part of the group in question, joyguzzlers. We do not want to hold George responsible for membership in groups in which he merely happens to be a member (e.g., homo sapiens or brown-eyed individuals). Rather, it is in virtue of being a member in a group defined by a shared activity with which George himself engages (e.g., joyguzzling) that he is morally responsible. But I do not want to go too far down this rabbit hole. My aim here is relatively modest. Although SMA does not directly assign George moral responsibility for his contributions, it leaves open the possibility that he might bear some moral responsibility via less direct means. In fact, it does more than leave this possibility open. It supplies the background framework needed to develop this account.

If we are to hold someone morally responsible for membership in a group, we need some account that assigns moral responsibility to groups – that allows us to say that a particular group is (morally) bad. One widely discussed issue concerning group responsibility is whether it must be distributed, that is, whether moral responsibility assigned to groups *must* be analyzed in terms of individual moral responsibility.²⁰ Although I do not wish to take a position on this broader issue here, I would endorse a weaker claim. All things being equal, it is preferable to have an account of group responsibility that is distributed – especially in the case of collective harms that result from the cumulative actions of the group's individual members.

Here SMA is again useful. It preserves a straightforward causal account of group moral responsibility that is distributed. Groups are responsible for contributing to a collective harm in virtue of their individual members being responsible for contributing to that harm. What is more, this account blocks what would otherwise seem the 'next step' in this reasoning – assigning moral responsibility to George (as a particular member)

²⁰See, for example, Benjamin (1976) and Narveson (2002).

for causally contributing to the collective harm. Here, then, SMA supplies a novel background framework whereby the moral culpability of groups is grounded on the culpability of the actions of its members, but not transferable to the culpability of particular members (unless, of course, those members are super-offenders). While this might initially appear inconsistent, the SMA account dispels the illusion of inconsistency.

7. Conclusion

Let me conclude with a couple of remarks. Throughout this article, my focus has been on one source of indeterminacy that arises when attempting to trace an individual's emissions and their contribution to global warming – that not all emissions even end up contributing. Some are absorbed into the biosphere. But there is nothing particularly special about this source of indeterminacy. Given the complexity of the climate system, there are many sources of indeterminacy that arise when attempting to trace emissions' contributions to global warming and subsequent climate damages. The choice to focus on the aforementioned indeterminacy was a matter of convenience. That there are other sources of indeterminacy when attempting to trace the impact of an individual's emissions only serves to underscore that we need something like a supervaluationist account.

Another point worth emphasizing is that the sort of indeterminacy that we are talking about here, what we might call “practical indeterminacy,” is not uncommon. Cases of collective harm discussed in the literature, while intellectually interesting, are relatively simple. Many collective harms that we encounter everyday are much more complex – especially when they involve the interaction of various systems at local, national, and global levels. With this complexity often comes the sort of practical indeterminacy that we have been discussing. Practically speaking, the difference between tracing the social and environmental impact of an individual's purchase of a new cellphone and tracing the impact of an individual's joyguzzling emissions is one of degree, not kind.²¹ That practical indeterminacy is common in real-world collective harm cases emphasizes the need for an account of moral attributions that handles indeterminacy. It emphasizes the need for SMA.²²

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²¹The collective social impact of cellphone consumption is significant. One of the largest manufacturers, Foxconn, has repeatedly been under scrutiny for abusive labor practices. (See Condliffe 2018.) Much of the cobalt used in lithium-ion batteries is mined in the Democratic Republic of the Congo. Here, too, abusive labor practices, such as unsafe working conditions and child labor, are not uncommon. (See Kara 2018 and Niarchos 2021.)

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