

Climate Change, Consequentialism, and Difficulties for the Participation-Adjusted Utility Solution

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Abstract

There's a familiar problem for consequentialism that arises in connection with anthropogenic climate change: it seems as though someone has misbehaved, but if no individual makes a difference, then it's not clear how to assign wrongdoing. Several philosophers have suggested an intuitive solution. The idea is to assign disutility to a group act and then distribute a share of this disutility to each of the participants. Unfortunately, the idea hasn't been developed in a satisfactory way. I identify several difficulties for the approach, and I explain why I don't think the approach can be made to work.

1 Introduction

There are apparently many ways in which an individual American may contribute to the rising concentration of atmospheric CO₂: driving a gas-guzzling SUV, flying somewhere for vacation, clear-cutting a wooded lot, purchasing a steak. Through the performances of acts like these, each of millions of Americans participates in a collective activity that's causing dangerous climate change. Erratic and extreme weather events occur more frequently, rising sea levels wash out developed coastlines, and heat waves put strain on farmers and those with certain pre-existing health conditions. People overall suffer more than they otherwise would under a stable and cooler climate system.

In some cases, an individual's act apparently makes a significant contribution to the problem. If a popular celebrity goes on joyrides in her flashy sports car, others may be influenced by her example. The celebrity's contribution

may have a big impact. But in other cases, it seems that an individual's act of contribution makes no difference. The emissions produced by the daily commute of an ordinary American, for example, are seemingly negligible. Climatic changes apparently will not occur from the little bit of CO₂ that comes out of a single vehicle's tailpipe, and no one will be influenced to commute more by your regular commute. In extreme cases, it might be that *no* individual's act makes a difference. No matter how any given individual would act—whether, for example, he or she would bike to work instead of driving—not enough others would act differently; the bad outcomes of climate change would still be just as bad. In such cases, each individual actor seems to have a plausible excuse: “the result would have been the same even if I had made no contribution.”

There's a familiar problem for consequentialism that arises in connection with the extreme cases. It seems as though someone, or perhaps *something*, has misbehaved. But Act Utilitarianism is notorious for being unable to capture the intuition when focused solely on an individualistic level of moral evaluation. We assume that each individual act maximizes utility: the consequence of a given act of contribution is no worse than the consequence of not contributing. So if a consequentialist remains fixated on an individualistic level of evaluation, it is unclear how to accommodate the intuition that a wrong has been committed.¹

We may distinguish between two broad approaches consequentialists have taken in order to accommodate the intuition of wrongdoing in connection with anthropogenic climate change and related cases. Under the first approach, the consequentialist widens the scope of moral evaluation to include the behavior of groups. Under this ‘group-based’ approach, the consequentialist attempts to capture the intuition about misbehavior from within the traditional Act Utilitarian moral framework. The *group act* doesn't maximize utility; the consequence of what the group does is worse than many other consequences accessible to the group. Thus, it is possible to identify at least one morally wrong act: a group act. The second approach is to remain fixated on individualistic morality—to leave group acts out of it. Typically, those who pursue the ‘individualistic’ approach abandon the Act Utilitarian moral framework for something else.²

¹See, for example, Sinnott-Armstrong (2005) and Christian Barry (2015). See also Lawford-Smith (2016).

²Some pursue a hybrid version of consequentialism. See Jamieson (2007). Others embrace virtue ethics or Kantianism as the best way to capture the intuition of wrongdoing.

Can the group-based approach be successfully developed in connection with the case of anthropogenic climate change? In what follows, I elucidate and evaluate a familiar version of the group-based approach. It involves assigning disutility to the group act performed by the American emitters and then distributing a share of this disutility to each of the participants. I suggest that this idea hasn't been developed in a satisfactory way in connection with the case of anthropogenic climate change. I explain why I don't think this could be done.

2 The Mismatch Problem and Adjusting Utility for Participation

Perhaps the biggest obstacle for group-based approaches is the mismatch problem. While it is an entirely natural thought that the group of American emitters has acted wrongly, the success of an appeal to group wrongdoing requires that we have some way of distributing the group's guilt to the individual members of the group. Otherwise we will end up with a moral framework that paradoxically condemns what the group does without being able to say anything against what the individual members of the group have done. Since the group has an alternative with a greater utility, the group has acted wrongly under Act Utilitarianism. But since no individual contributor has an alternative with a greater utility, each individual member of the group has acted permissibly under Act Utilitarianism. The theory delivers mismatched verdicts; it condemns the behavior at the group level, but this condemnation fails to trickle down to the behavior of any of the individuals involved. So if we are to pursue the group-based approach to consequentialism in connection with the case of anthropogenic climate change, we need a slightly modified version of Act Utilitarianism: one that is able to accommodate the intuition that there is wrongdoing but that will not lead to mismatched verdicts.

Some philosophers have suggested, in various ways, that this may be accomplished by appeal to a natural thought: individuals who participate in a suboptimal group act ought to get assigned some discredit for *participating*.³ Many philosophers find it hard to accept that a harmful group act could be

See Rentmeester (2010) and Hourdequin (2010).

³I take Lyons (1965), Singer (1972), Glover (1975), Goldman (1999), and Nolt (2011) to make suggestions of this sort. Others who discuss, but ultimately reject the idea, include Horwich (1974), Regan (1980), Parfit (1984), and Kernohan (2000). In a later footnote, I explain why my criticism of the idea is importantly different from the criticisms mounted by this latter group of philosophers.

composed of harmless individual acts.⁴ Peter Singer, for example, thinks it absurd to deny that we are each responsible for a share of the harms we collectively cause. He has claimed that “[a]n act may contribute to a result without being either a necessary or sufficient condition of it, and if it does contribute, the act-utilitarian should take this contribution into account.”⁵

For an illustration of how this idea has been presented in connection with anthropogenic climate change, consider John Nolt’s calculation of the climate-related harms attributable to an average American.⁶ Through its collective emissions of greenhouse gases, a large group of Americans has brought about serious injury to millions of people. This group—call it the ‘American Emitter collective’ (AE)—could have done much better had the group pursued more sustainable, less carbon-intensive ways of living. And yet we are assuming that in the extreme cases no individual member of AE makes a difference by his or her personal emissions. The climate-related injuries are not brought about by any individual emitter, but by the group. Nolt nonetheless pursues a calculation that attributes harm to the emissions of an individual American. He estimates the total greenhouse gas emissions associated with AE’s group act, and he estimates the total harms resulting from these total emissions. He also estimates an individual American’s lifetime emissions. Based on the proportion of individual lifetime emissions to the emissions of the group, he concludes that an average American’s lifetime of emissions does harm equivalent to the serious suffering and/or deaths of two future people. In this way, Nolt assigns to the acts of individual members of AE a share of the total disutility of what AE does. Apparently, this assignment is based on the fact that each individual American participates in the group act. The assignment of extra disutility carries normative implications. Presumably, it makes it so that each individual American acts wrongly if he or she doesn’t reduce personal emissions.⁷

⁴See, for example, Roberts (2011). Relatedly, see Zimmerman (1992) and Kagan (2011) for a reluctance to accept that a morally wrong group act may be composed entirely of morally permissible individual acts.

⁵The quotation is from (Singer, 1972, 103). See also Singer (1998).

⁶See Nolt (2011) and Nolt (2013). See section 3 of Garvey (2011) for a similar sort of calculation. For other climate ethicists who seem to adopt a similar procedure, see Broome (2012) and Hiller (2011).

⁷In connection with related cases, other philosophers have pursued a solution of the same sort. Consider Jonathan Glover’s case of the bean-stealing bandits in Glover (1975). A group of 100 bandits raids a village, each stealing an imperceptible amount of beans. Though no individual act makes a difference, the group act makes the villagers hungry.

It is important to list the steps that would be involved in a complete development of the idea. First, a group act with significant disutility is identified: this is AE's group act. Next, each individual member of AE is identified as a participant in the group act, and so each individual act gets assigned a share of the disutility associated with the group act. Assuming that each individual could have acted differently in a way that wouldn't have counted as participation, we hold off from assigning any extra disutility to the individuals' non-participating alternatives. Act Utilitarianism is modified: according to *Participation-Adjusted Act Utilitarianism* (PAAU), an act is morally permissible just in case there's no alternative with a greater participation-adjusted utility. Each individual American has an alternative with a greater participation-adjusted utility. So each acts wrongly. In this way, a slight modification to Act Utilitarianism allows the group-based approach to evade the mismatch problem.

Note the data that must be accommodated if PAAU is to be successfully developed: in the case of anthropogenic climate change, AE is a group; the group performs a group act; each individual act counts as participation in it; and each individual has an alternative under which he or she wouldn't have participated. In the following sections, I show that it is very difficult to find a satisfactory account of groups and of participation that will serve to substantiate this data.⁸ In section 3, I present several accounts of what

Glover suggests that each bandit's theft should inherit some of the total disutility associated with the group act performed by the bandit collective. The harm each individual does "should be assessed as a fraction of a discriminable unit, rather than as zero... [and] in cases where harm is a matter of degree, sub-threshold actions are wrong to the extent that they cause harm, and where a hundred acts like mine are necessary to cause a detectable difference I have caused 1/100 of that detectable harm." (Glover, 1975, 174) Each bandit participates in the raid. Accordingly, each individual bandit's act of theft gets assigned an additional amount of disutility: 1/100 of the disutility associated with the group act. So each bandit acts wrongly because each has an alternative which does not receive the adjustment for participation. (The case is also discussed in Jackson (1987) and Singer (1998). Parfit discussed a similar case involving one thousand torturers in Parfit (1984); see Kagan (2011) as well.)

⁸In a previous footnote, I mentioned several philosophers who present and then reject PAAU. These philosophers include Horwich (1974), Regan (1980), Parfit (1984), and Kernohan (2000). They write in such a way as to suggest that they assume that PAAU can be formulated adequately; they assume that the data can be accommodated in related cases. They then show that the theory would deliver counterintuitive verdicts in connection with certain other cases. It seems to me that the advocate of PAAU would be able to respond to these objections by insisting that the opponent has not formulated PAAU properly.

it is for a group to be capable of acting. I raise problems for each account. In section 4, I pursue a different way of thinking of group acts that will allow us to move forward with the discussion: I introduce a distinction between cohesive group acts—acts that are performed by the group *acting as a group*—and non-cohesive group acts. I raise problems for two plausible accounts of cohesive group acts. In section 5, I propose a causal account of participation under which each individual contributor to anthropogenic climate change participates in the group act by causing some change to an underlying dimension. I present several difficulties for the account. There is no suggestion in the literature, and no suggestion I can think of, that will make it work right. I conclude that either consequentialists should not pursue the group-based approach, or they should not attempt to resolve the mismatch problem by appealing to participation-adjusted utility.

3 Searching for an Adequate Account of Group Acts

To accommodate the data, the advocate of PAAU needs an account of groups that establishes that AE is a group capable of performing group acts. There are two different approaches one might take. The first, conservative approach proceeds by comparing AE with certain paradigmatic act-performing groups. The goal is to identify some general feature of these groups that makes them capable of performing group acts and such that AE has this feature. The second, liberal approach proceeds by simply taking any set of individuals to make up an act-performing group. Each approach encounters difficulties.

3.1 The Conservative Approach

Start by reflecting on paradigmatic act-performing groups: corporations, armies, senate committees, sports teams. We are looking for some general feature of these groups that makes them capable of performing group acts; perhaps AE shares such a feature with the paradigmatic act-performing groups.

There's a certain way of thinking about the paradigmatic act-performing groups that has intuitive appeal. The thought goes like this: only *agents* perform acts; so if a group is to be capable of performing acts, there must be some feature of the group that makes it appropriate to think of the group as

But it is my aim in this paper to identify the difficulties that arise in trying to formulate PAAU in the first place.

an agent. According to Stephanie Collins, the characteristic feature of the paradigmatic act-performing groups is the possession of a decision-making procedure.⁹ The procedure takes in and processes moral reasons. The result of the group's following the procedure is the issuing of instructions to the individual members of the group. Suppose some large corporation is engaged in morally problematic environmental practices; the production of a certain product is causing unnecessary environmental harm. The board members of the corporation may get together according to customary procedures in order to figure out how to address the problem. The board may decide to change a certain aspect of production, and it may then issue instructions to individuals within the corporation regarding how to implement the changes.

But under the Collins-inspired account, we discover that AE is not capable of performing group acts. Unlike corporations and the other paradigmatic act-performing groups, AE lacks a decision-making procedure. Environmentalists lament the fact that AE is not able to process moral reasons—if only there were some way to command the group to emit less! Unfortunately, there is no governing body to receive and process an appeal by environmentalists to reduce emissions. Furthermore, no individual American would be issued instructions to behave in any particular way by AE. So the advocate of PAAU needs a different way of accounting for groups in order to accommodate the data in the climate change case.

Perhaps a different feature of the paradigmatic act-performing groups will do. Notice that members of the paradigmatic act-performing groups listed above belong to their respective groups in virtue of some formal membership condition. The employees of a corporation have their names appear on a payroll; the members of an army have to be accepted into its ranks. In order to serve on a senate committee, one must be officially appointed; in order to be a member of a sports team, one must make it in the tryouts. In general, each of the paradigmatic act-performing groups apparently has some formal condition of admission. We may assume that it is in virtue of this feature that we may see the group as capable of acting.

But AE obviously lacks formal admission criteria. There is no official procedure for inducting individual Americans into AE. There's no list associated specifically with the group.

Perhaps *formal* admission conditions are not necessary for a group to be capable of performing group acts. Suppose several individuals spontaneously

⁹See Collins (2013).

gather in a park and toss a ball around. Two teams emerge; suddenly the play becomes competitive. If one of the two teams wins the game that has developed, we will want to ascribe the victory to a group. But no formal membership condition exists among the members of the winning team. There is no roster; there were no tryouts. Apparently, the only membership condition in this case is that each self-identifies with the team. So it might be suggested that in certain circumstances it is sufficient for being a group capable of performing group acts that each member merely identifies himself or herself with the group.

Of course, AE fails to possess even this feature. Suppose Danny drives his gas-guzzling SUV excessively; he often takes the long way home from work just because it gives him an excuse to spend some leisure time behind the wheel. But suppose that Danny denies that he is contributing to climate change. He doesn't even recognize that an increase in atmospheric CO₂ is a byproduct of burning gasoline. Suppose that even if Danny accepted that a group activity is causing climate change, Danny would not self-identify as a member of the group. Intuitively, Danny is a member of AE, as are hundreds of thousands of other Americans who also deny their roles in causing climate change. So the idea that a group is capable of performing group acts if each individual identifies as a member is not able to accommodate the data in the climate change case. The advocate of PAAU will have to look elsewhere.

There is apparently no feature of the required sort that AE shares with the paradigmatic group acts. AE lacks sufficient structure, and its members fail to meet a recognizable formal or informal membership condition. Some advocates of the conservative approach will conclude that AE is not a group of the appropriate sort—that it is not capable of performing group acts. They will conclude that the idea about participation-adjusted utility cannot be adequately developed.

3.2 The Liberal Approach

But other philosophers have taken a different, liberal approach toward thinking about whether a group is capable of performing group acts. In his discussion of the mismatch problem for Act Utilitarianism, Frank Jackson is “inclined to count any old mereological sum of individual actions (or of group actions) as a group action (or as a *further* group action). My last eye-blink together with Nero's burning of Rome is a group action, a highly heterogeneous one of no particular interest to anyone, but a group action

nevertheless.”¹⁰ Consider any random collection of individuals. According to the Jackson-inspired account, the collection is a group, and the group is capable of performing group acts: mereological sums of the individual actions. A group act is simply any set of individual acts. Accordingly, any set of people is capable of performing a group act.

While this liberal approach identifies AE as an act-performing group, it generates several unacceptable normative implications when trying to develop PAAU. Toward explicating these unacceptable consequences, consider the enormous number of group acts that are performed in the climate change case under the liberal approach. First, there’s the group act performed by AE. This is a very large set of individual acts. Suppose we remove one individual act from the set. Another, distinct set of individual acts results. Under the liberal approach, this is also a group act performed by a different group: AE- i_1 . And if we put the individual act back and take away a different individual act, we get a third set of individual acts corresponding to a third group act performed by a third group: AE- i_2 . There are millions of such groups that may be generated in this way.

Furthermore, instead of removing acts from the group act performed by AE, we can also add individual acts at random. Consider some innocent bystander, b . Suppose he acts in a way that doesn’t have anything to do with what each of the members of AE does. Nonetheless, there is a set of individual acts corresponding to AE’s group act plus the bystander’s individual act. Under the liberal approach, this is a group act performed by a different group: AE+ b . By substituting in different bystanders, we apparently generate millions—even *billions*—of related groups.

Of course, the sheer profusion of groups does not by itself pose a problem for developing PAAU. The problem arises when we attempt to calculate the participation-adjusted utility of an individual act. The existence of so many groups results in a vicious sort of double-counting. Recall that the utility of an individual act receives an adjustment if it counts as participation in a group act. Consider Danny’s taking the long way home from work in his gas-guzzling SUV. This act counts as participation in the group act performed by AE. But without some principled reason for thinking otherwise, it also counts as participation in the group acts performed by AE- i_1 , AE- i_2 , AE- i_3 , and so on. Each of these group acts has a significant disutility. So the utility of Danny’s commute is adjusted millions of times; he participates in

¹⁰(Jackson, 1987, 93). See also Killoren and Williams (2013).

group acts performed by millions of groups. Thus, the participation-adjusted utility of Danny’s commute is astronomically and unacceptably negative. It is perhaps just as negative as the disutility associated with AE’s group act.

Another problem with this profusion of groups is that it results in an unjustifiable adjustment to the utilities of the acts of innocent bystanders. Recall that the group $AE+b$ contains all the members of AE plus some bystander member. The bystander acts in a way that doesn’t have anything to do with what each of the members of AE does. Nonetheless, the resulting group act—the act performed by $AE+b$ —has significant disutility. And without some principled reason for thinking otherwise, the bystander’s act counts as participation in it. So the utility of the bystander’s act gets adjusted down. He’s unacceptably penalized for something he didn’t take part in.

So the liberal approach fails to accommodate the data in the climate change case. While the liberal approach succeeds in identifying AE as an act-performing group, we cannot identify the single unique group act in which each individual member of AE participates. Thus, we have no way of identifying AE as the group of interest—the group that performs the group act with significant disutility that must be divided up. Accordingly, I cannot see how PAAU could be developed under the liberal approach without generating unacceptable normative implications.

4 Cohesive and Non-Cohesive Group Acts

If PAAU is to be adequately developed, it must be on some middle ground between the conservative and liberal approaches. We may accept that any collection of individual acts makes up a group act. But we cannot allow it to be the case that every group act corresponds to a group of the appropriate sort. Some group acts are *cohesive*: there is justification for thinking that the individuals have acted together, in concert, *as a group*. Other group acts are non-cohesive: the individual acts are totally unrelated to each other, like my last eye-blink and Nero’s burning of Rome.

Assume that only cohesive group acts are such that their disutility must be divided up; it’s only cohesive group acts in which the individual acts count as participation. To accommodate the data, we would need to establish that AE is capable of performing a cohesive group act—that AE can act in such a way that there is some feature of the individual acts that ties them all together. Intuitively, one might say that the individual members of AE have

acted together in virtue of the fact that each participates. But we need an account of cohesive group acts that bears out this intuition. To this end, we may reflect on two intuitively plausible approaches to cohesive group acts.

4.1 Intention-based Account

According to a particularly popular approach, a group act is cohesive just in case all the individuals who perform acts contained in the group act share a particular sort of intention. There are different ways of thinking about the required intention.¹¹ Since many of the individual members of AE have minimal to no interactions with each other, I follow Christopher Kutz’s account, which is apparently the least demanding of the intention-based accounts.¹² Say that a *shared goal* is some particular outcome that two or more individuals would like to see obtain. Say that each of these individuals acts with a *participatory intention* if he or she has an intention to do his or her part in a group act the performance of which is sufficient for producing the shared goal. We may see a group act as cohesive just in case all the component individual acts are accompanied by participatory intentions.¹³

It is fairly straightforward that the participatory intentions account cannot accommodate the data in the climate change case. The individuals who contribute to climate change do not all share a goal; there’s no particular outcome that all the emitters would like to see obtain. AE is made up of individuals who go about their days in almost total independence from the others. If we could somehow gather the members together and ask ‘What

¹¹Compare Bratman (1993) and Velleman (1997).

¹²Kutz (2000)

¹³To see how this account of cohesive group acts works, it may be helpful to reflect on one of Kutz’s examples: “Suppose that while we are having a picnic, it begins to rain. I jump up, grab the sandwiches and head for the car. I intend to do my part of our saving the picnic, hoping you will simultaneously grab the drinks and the blanket. If you do, then it is reasonable to say we will have jointly saved the picnic. We might not have acted jointly, if, say, you had been dozing when the rain hit. But if we do both act with participatory intentions, then we will have jointly intentionally saved the picnic. . .” (Kutz, 2000, 18)

Under Kutz’s account, there is justification for thinking that we have acted together, despite the fact that neither of us communicates with the other. It is simply that you and I have a shared goal that the picnic is saved, I intend to do my part in a group act that’s sufficient for bringing about this state of affairs, and you also intend to do your part in a group act that’s sufficient for bringing it about that the picnic is saved. I grab the sandwiches, you grab the drinks and the blanket, and our group act is cohesive.

does each of you aim to accomplish by increasing the atmospheric concentration of CO₂?', it's not clear what sort of answer we'd get. Someone might suggest that he wants to bring about climate change. But the production of dangerous climate change is almost universally *unwanted*. Someone else might suggest that she wants to enjoy a certain level of convenience. But this wouldn't establish that the emitters have a shared goal. Suppose you and I both drive to work instead of biking. It's not as if you want to see that *I* secure a bit of extra convenience, and I don't want to see that *you* secure a bit of extra convenience.

But even if there were some shared goal in the anthropogenic climate change case, it would be implausible to think that each individual intends to do his or her part in a group act that would be sufficient for producing the shared goal. Danny doesn't intend to do his part in anything; he simply intends to take pleasure in a longer commute in his SUV. Meanwhile, Franny routinely takes plane flights from San Francisco to Maui on vacation. Whether Danny wants to see the same outcome obtain that Franny does, he doesn't intend to do anything with Franny in order to produce it. It is implausible to characterize the individuals as acting with participatory intentions. So the intention-based account of cohesive group acts implies that the group act performed by AE is not cohesive. Accordingly, the account cannot accommodate the data about participation.¹⁴

4.2 Act-type Account of Participation

Consider a different approach to cohesive group acts. Instead of identifying a common type of intention, we may instead identify a common type of act. We might say that a group act is cohesive just in case all the component individual acts are of the same type.

¹⁴Some might see the explicit focus on intentions as misguided. According to Margaret Gilbert, a collection of individual acts is cohesive whenever the individuals have mutual obligations to each other around some shared goal. See Gilbert (1990). These mutual obligations need not require intentions (though often they do). But even if AE does have a shared goal, the individual members apparently do not satisfy the condition of mutual obligations to one another. Suppose that Danny and Franny live on opposite coasts, living totally independent lives. Intuitively, there's nothing about what either does that generates any sort of mutual obligation to the other. Danny doesn't owe Franny anything. Were Danny to stop driving, Franny would have no grounds for complaint. And were Franny to stop flying, Danny wouldn't feel slighted in the least. So the Gilbert-inspired account also fails to classify AE's group act as cohesive.

One problem with this account is that it incorrectly characterizes situations in which individual members of the same group are trying to compete with the others. Consider a tiny group composed of two ‘interrupters’. Each performs an act of the same type: trying to frustrate the other from performing his act. Chaos ensues; the individuals jolt each other around. Intuitively, the group act is not cohesive—in this case, there’s justification for thinking that the interrupters are *not* acting together. But the interrupters perform acts of the same type.

Another problem with this account is that it fails to deliver the correct verdict in connection with certain paradigmatic act-performing groups. Consider the German football team that won the most recent World Cup. During the last seven minutes of the championship game, the players acted together—the group act was cohesive—but not every player acted in the same way. Some players sat on the bench. Others ran around on the field. Some defended; others were on the offensive. One of the players, Gotze, scored. At any moment up until the game-winning goal, each player performed a different type of act.

For a similar reason, the account cannot accommodate the data in the climate change case. There are many different ways to contribute to the atmospheric concentration of CO₂. Danny travels by road. Franny travels by air. These are very different types of act. Someone might say that each of Danny and Franny performs an act of the type ‘traveling’, but it is possible to travel without emitting CO₂—sailing, for example. Someone else might suggest that each of Danny and Franny performs an act of the type ‘emitting CO₂’, but in the case of Franny, it’s complicated. When Franny rides aboard a plane, she’s not producing CO₂; the plane is. A given plane seats hundreds of passengers. We may imagine that Franny has never flown in a plane that wouldn’t have flown anyway had she not been a passenger on it. Accordingly, it’s not clear that we should describe her individual acts of flying as emitting CO₂. Her individual acts do not strictly speaking put any CO₂ into the atmosphere. When we speak about Franny as an ‘emitter’, it’s in an extended sense. And yet, intuitively, Franny contributes to climate change; her act shares some feature with Danny’s act that ties them together.

Of course, Danny and Franny both perform acts of the type ‘contributing to climate change’. When Franny purchases a ticket and rides on planes, she increases the demand for air travel. An increase in flights causes an increase in atmospheric CO₂. It is for a reason of this sort that Franny is thought to be a contributor. But then we may as well say that AE performs a cohesive

group act because each individual act counts as contribution—and what is it to contribute to climate change other than to participate in AE’s group act?

5 Causal Account of Participation

We need an account of cohesive group acts that establishes that the group act performed by AE is such that each individual act token contained in it counts as participation. Otherwise, there is no basis for making an adjustment to the utilities of the individual acts. Furthermore, it must be established that each individual who performs an act token contained in AE’s group act has some alternative under which he or she wouldn’t have participated—or, as I will suggest in this section, an alternative under which he or she wouldn’t have participated *to the same extent*. Otherwise, all of every individual’s alternatives will receive the same utility adjustments, and there will be no basis for concluding that any act token is morally wrong under PAAU.

In an attempt to meet these requirements, start by noticing that each individual act of contribution to anthropogenic climate change alters the climate system in some way: each individual American emitter causes a change in the atmospheric concentration of CO₂. The change may be caused directly, as in the case of Danny’s drives, or it may be caused more indirectly, as in the case of Franny’s flights. Either way, each individual act manipulates the same environmental variable as is manipulated by AE’s group act: the group act causes a large change to the atmospheric concentration of CO₂; each individual act causes a tiny change.

Thus, we may say that each individual American emitter participates in the group act performed by AE in virtue of causing some change to a common environmental variable—which we may call the *underlying dimension*. AE has alternatives under which certain value states differ, though no individual member of the group has an alternative under which these value states differ. But each individual has alternatives under which the underlying dimension differs. Enough changes to the underlying dimension cause changes to the value states. We may say that AE’s group act is cohesive—and that each individual act counts as participation in the group act—in virtue of each of the individual act’s causing a change to the underlying dimension.¹⁵

In order to evaluate whether this account of participation can accommo-

¹⁵I borrow the concept of an underlying dimension from Kagan (2011) and Nefsky (2012).

date the data in the case of anthropogenic climate change, we must identify an underlying dimension in the case. An intuitive starting point is atmospheric concentration of CO₂. But the causal features of the anthropogenic climate change case are quite complex: it's not exclusively atmospheric CO₂ that causes changes to the climate system. When it comes to global warming, other so-called 'greenhouse gases' have an effect. These compounds include methane, ozone, water vapor, and CFCs. The problem is that certain greenhouse gases interact with others. CFCs, for example, destroy ozone. Suppose someone uses up some old cans of hairspray, sending CFCs up into the atmosphere. Has this person caused a change to the atmospheric concentration of greenhouse gases? The answer is not straightforward. Causal interactions *within* the underlying dimension increase the complexity of the solution. Perhaps we should instead take the underlying dimension to be something like the 'heat-trapping potential' of the atmosphere. It not clear how this environmental variable would be specified.

Furthermore, it's important to notice that the unifying feature of individual acts in the case of anthropogenic climate change is not simply that each causes a change to the underlying dimension. Certain acts of mitigation cause changes in the atmospheric concentration of CO₂. Some entities—so-called 'carbon sinks'—operate in such a way as to remove CO₂ from the atmosphere. Trees are carbon sinks because they absorb CO₂ as they grow. Suppose you plant hundreds of trees. This is a way for you to offset your emissions precisely because it causes a change in the atmospheric concentration of CO₂. But your act of mitigation is not to count as participation in the group act performed by AE.¹⁶

Another issue is that the members of AE cause changes to the underlying dimension in myriad ways. Danny drives an SUV. The drive causes some CO₂ to go into the atmosphere. Franny purchases an airline ticket. The ticket purchase causes Delta Airlines to introduce a new flight. The new flight causes some CO₂ to go into the atmosphere. Intuitively, Franny's purchasing

¹⁶Perhaps we could enhance the account of participation under the causal account in order to address this concern. We could say that an individual act counts as participation in a group act in some situation just in case the individual act causes a change to the underlying dimension *in the same direction* as the change to the underlying dimension caused by the group act. In connection with the anthropogenic climate change case, each of the individual American emitters acts in such a way as to cause an *increase* in the atmospheric concentration of CO₂, as does the group. More would need to be said about the notion of directionality in order to evaluate this suggestion.

a ticket is at a greater causal distance from the underlying dimension than Danny's taking a drive. We may wonder whether both Danny's drive and Franny's ticket purchase are to count equally as acts of participation.

More generally, suppose events of type E cause events of type E'. Suppose events of type E' cause events of type U. Suppose events of type U cause changes to value states V. Suppose we identify U as the underlying dimension. Then E is at a *greater causal distance* from the underlying dimension than E'. A sufficiently general account of participation will need to indicate whether causal distance matters in qualifying an individual act as participation in a group act.

Perhaps a deeper problem with the causal approach is that members of AE have no alternatives under which they don't cause a change to the underlying dimension. You expel CO₂ when you breathe, and—excepting suicide and holding your breath—all of your alternatives are accompanied by breathing. So under the causal account of participation, whatever you would do, you would participate in the group act. That's apparently a failure to accommodate the data in the climate change case. We apparently need an account of participation under which each member of AE has an alternative under which he or she wouldn't have participated. Otherwise all of the individual's alternatives will receive a utility adjustment, and there will be no basis for concluding that any individual act token is morally wrong.

It seems to me that the advocate of PAAU would need to embrace some idea about levels of participation. This would have to be explained by appeal to the extent to which an individual act affects the underlying dimension. The greater your contribution of CO₂, the higher your level of participation; the smaller your contribution of CO₂, the lower your level of participation. And perhaps the greater the causal distance from the contribution of CO₂, the lower your level of participation as well. For many contributors, it cannot be established that each has an alternative under which he or she wouldn't have caused a change to the underlying dimension. But perhaps each has an alternative under which he or she would have either (i) caused a smaller change to the atmospheric concentration of CO₂, or (ii) retreated to an act at a greater causal distance from the contribution of CO₂.¹⁷

¹⁷A simple illustration may serve to demonstrate how an appeal to levels of participation would work. Suppose that Danny could either drive his gas-guzzling SUV the long way home from work or take a more direct route home. Each of Danny's alternatives—the long drive and the direct drive—would cause an increase in the atmospheric concentration of CO₂. Thus, whichever he would perform, it would count as participation in a group act

Even if all the preceding concerns can be addressed, a ‘big picture’ worry remains for the causal account. Any advocate of PAAU who is inclined to attach special significance to the disutility of AE’s group act will be unable to do so under the causal account of participation. The cohesive group act of interest is much larger: anyone who has ever existed has caused a change in the atmospheric concentration of CO₂. This enormous group—which we may call the ‘Global Historical Emitters Collective’ (GHEC)—has performed a colossal group act spanning thousands of years and taking place within all geopolitical regions across the entire planet. And so it is GHEC’s group act in which each American’s individual act token will count as participation under the causal approach. An advocate of PAAU would make a mistake in identifying AE’s group act as the group act with significant disutility that must be divided up. Instead, the participation-adjusted utility of any individual act of emission will be a share of the disutility of GHEC’s group act. And any individual act that has caused a change in the atmospheric concentration of CO₂ counts as participation—even those acts of emission performed in countries that have done very little to impact climate change. So the causal account of participation identifies a group act that’s much larger than our intuitive target, and it distributes wrongdoing more widely than is intended.

6 Conclusion

The proposal involving participation-adjusted utility faces some serious difficulties in connection with the case of anthropogenic climate change. There are assumptions about groups and participation that the proposal must be able to accommodate if PAAU is to resolve the problem for consequentialism: it must be established that the individual contributors to anthropogenic climate change compose a group that is capable of performing group acts, performed by AE. And whichever of his alternatives he would perform, the group act would have the same disutility; after all, Danny doesn’t make a difference. But were Danny to take the long drive, he would cause a greater increase in the atmospheric concentration of CO₂ than were he to take the direct drive. Under the idea about levels of participation, he would participate more by taking the long drive than by taking the direct drive. Accordingly, the utility of the long drive must get adjusted by a larger fraction of the disutility of the group act than the utility of the direct drive. Supposing that Danny takes the long way home from work, he will have an alternative with a greater participation-adjusted utility. There will be some basis for concluding that his individual act token is morally wrong according to PAAU.

and it must be established that each individual contributor participates in the group act performed by AE. I have highlighted challenges associated with accommodating this data. While something like the causal account of participation appears to be the best way forward, it would take some serious work to develop the account in light of the many problems identified here. Unless these difficulties can be adequately addressed, I conclude that the solution embodied by PAAU cannot be made to work. Consequentialists concerned about the problem posed by anthropogenic climate change either should not pursue the group-based approach, or they should not attempt to resolve the mismatch problem by appealing to participation-adjusted utility.

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