Climate Change and Individual Responsibility

How much harm does a single individual act, such as an afternoon pleasure ride in a gas-guzzling car, cause with regard to its effects on climate change? *None*, according to Walter Sinnott-Armstrong, who argues that there is thus nothing wrong with doing so, since such acts are too small to make any difference.[1] Sinnott-Armstrong's detailed argument encapsulates a lot of common thinking about the effects of small-scale individual actions in a very large world. As Ronald Sandler puts it, "even a person's entire lifetime impacts on any longitudinal collective action problem is likely to still be inconsequential."[2] On this view, most or all common individual actions, and even full individual lives, are too causally insignificant to make *any* difference with regard to climate change. I shall call this the claim of *individual causal inefficacy*, (ICI). As Sinnott-Armstrong writes, "Global warming and climate change occur on such a massive scale that my individual drive makes no difference to the welfare of anyone."[3]

In this paper, I argue that ICI is false not just for its claim about whole human lives but even for its far weaker claim of the inefficacy of single individual actions, such as a Sunday drive. I claim that it fails for two main reasons. First, if individual actions such as Sunday drives are not causes of climate change, then what does cause climate change? The cause would have to be some metaphysically odd emergent entity. Second, an expected (dis-)utility calculation shows that individual acts do make an expected difference, and one that is not insignificant. My argument becomes quite general about the many ways in which people fail to account properly for potential harms of actions where the causes are many and the effects are indirect. Since this is a common phenomenon, I discuss several possible explanations of why it is difficult for people to grasp individual moral responsibility with regard to global phenomena.

I will use two unargued-for assumptions (along with Sinnott-Armstrong). First, I assume that there will be (or, that given our current state of knowledge, it is epistemically likely that there will be) anthro-

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pogenic global climate change (AGCC) due to human greenhouse gas (GHG) emissions. Second, I assume that AGCC is causing or will cause severe harm (or, that it is epistemically likely that it is or will) to a large number of people, as well as a large number of nonhumans. Additionally, I will be discussing only whether there is any negative moral valence with regard to the direct climatological effects of one individual drive. I will not be making an all-things-considered moral judgment about any particular case. Rather, I will simply claim that individual drives are *prima facie* wrong. I will also not consider possible indirect effects of actions, such as whether my driving will cause me to drive more in the future (if it leads to my forming a habit of going for Sunday drives).

I. The Argument for ICI

The core of Sinnott-Armstrong's argument is that the GHG emissions from one afternoon's ride do not cause any harm because they are insignificant. Even some who do argue that it is wrong to produce such emissions, such as Sandler, argue that it is wrong for reasons other than its direct causal effects. Sinnott-Armstrong uses an analogy. If there is a river flooding a town, and then one individual pours a quart of water into the river upstream from the town, the extra water will make no difference whatsoever—it will not cause the flood or cause harm. And just as the extra quart of water, in a large flooding river, won't make any difference to the harms downstream, one extra drive in a gas-guzzler won't make any difference in the harms due to AGCC. As Sinnott-Armstrong puts it, "[m]y individual joyride does not cause global warming, climate change, or any of their resulting harms, at least directly."[4] Dale Jamieson makes a similar remark: "Joy-riding in my '57 Chevy will not in itself change the climate."[5]

Taking Jamieson's remark as a paradigm instance of ICI, it will be helpful to be precise about what exactly it means. There are a number of possibilities:

(1) If I joy-ride in my '57 Chevy, but no one else ever emits any GHGs, then there would be no change whatsoever in global climate.

This cannot be right. As even climate skeptics correctly point out, the climate is always changing, even independent of human activity. Better is (2):

(2) If I joy-ride in my ’57 Chevy, but no one else ever emits any GHGs, then there would be no AGCC.

It is likely that (2) is true, and is perhaps what is intended by ICI. However, as a principle used in moral arguments, it is irrelevant, since it is conditional on a state of affairs extremely different from the actual state of affairs. It is a bit like saying, “if I give you a small tap, it would not have any effect on you, assuming you aren’t teetering on the very edge of a precipice.” This may be true, but if the individual in question were in fact on the edge of a precipice, then its truth would be irrelevant to whether it is permissible to give the person a small tap. The point is not that we are teetering on a climatological precipice; rather, it is that causal claims about the effects of actions that are conditional on the world being very different from the way it actually is (and is known to be) are normally irrelevant in assessing the morality of the action. Furthermore, one would not be able to go for a joy-ride in a ’57 Chevy unless there were an entrenched system of cars, roads, oil drilling, gas stations, etc. Thus the idea of a single joyride in isolation of other GHG-emitting activities is hardly intelligible. So (2) cannot do much work in debates concerning individual responsibility and climate change. We need a principle that is responsive to the actual state of the world, where historical GHG emissions have already caused us to pass a threshold whereby AGCC is occurring.

Thus, more pertinent is claim (3):

(3) Given the state of the world today, if I joy-ride in my ’57 Chevy rather than not, there will be no difference in the amount of AGCC.

This, I believe, is a successful way to understand the original claim. However, I propose that the best analysis is as follows:

(4) Given the state of the world today, if I joy-ride in my ’57 Chevy rather than not, there is no *expected net difference* in the amount of AGCC.

The shift from actual to expected effects should be uncontroversial. Anyone who holds (3) should also hold (4), since anyone who makes a claim of (3) is simply reporting expectations. Furthermore, in assessing

the moral status of actions in cases we are considering, what really matter are the expected rather than actual effects. For example, if indeed there are no expected net effects of single joy-rides, but due to an odd "butterfly effect" type of causal structure, one individual's Sunday drive does in fact happen to make a huge difference in a climate event (either for worse or for better), we should not blame or credit the driver for the dramatic effects. So the move from (3) to (4) should be acceptable, and thus (4) is a proper expression of a particular instance of the claim of ICI. However, in section III I argue that (4) is rather *obviously* false.

II. An Argument for Individual Moral Responsibility

Sinnott-Armstrong considers a number of possible reasons why it might be wrong to go for a Sunday drive and rejects them all. However, the list of moral principles given by Sinnott-Armstrong is not exhaustive.[6] I submit that the reason why a Sunday drive is at least *prima facie* wrong is because of the following moral principle:

(MP) it is *prima facie* wrong to perform an act which has an expected amount of harm greater than another easily available alternative.

That it is *prima facie* wrong to go for a Sunday drive follows from (MP) and the following three claims:

(A) (4) is false, i.e., given the state of the world today, if I joy-ride in my '57 Chevy rather than not, there will be a positive *expected net increase* in the amount of AGCC.

(B) If there is a positive expected net increase in the amount of AGCC, then there is a positive amount of expected harm that will result from it.

(C) Refraining from driving is an easily available alternative and does not cause any other relevant harms.

A defense of (A) and (B) is given below—here I am just stating the structure of the argument of why it is *prima facie* wrong to go for a

Sunday drive. I should note, though, that (MP) is similar to the *risk principle* stated by Sinnott-Armstrong,[7] which I shall discuss in greater detail in section IV.

It might be claimed that it is not wrong to perform acts where there is a foreseeable expected harm if the agent does not in fact foresee that the expected harm. This relates to a complex issue in normative theory that I shall not discuss in significant detail. I will assume for this paper that it does not make a difference in the present context—even if some individuals are ignorant of the expected effects of their actions, individuals ought not be ignorant. And to the extent to which ignorance does exculpate some individuals, the onus is on those who are aware of the dangers of AGCC to ensure that no one can avoid culpability simply by lacking knowledge. I hope this paper contributes to that end.

It is important to clarify the argument for the *prima facie* wrongness of actions since Sinnott-Armstrong makes a move that is illicit. He distinguishes between global warming and climate change, where the former denotes an increased average global temperature, and the latter denotes floods, droughts, or heat waves—climatological events which cause harm—and Sinnott-Armstrong makes a substantive point using the distinction. Since Sinnott-Armstrong accepts (4), it is no surprise that he would reject (B) as well. He writes:

> The point becomes clearer if we distinguish global warming from climate change. You might think that my driving on a Sunday raises the temperature of the globe by an infinitesimal amount. I doubt that, but, even if it does, my exhaust on that Sunday does not cause any climate change at all. No storms or floods or droughts or heat waves can be traced to my individual act of driving.[8]

If the only way in which one's action can be said to cause harm is if that action first raises global temperatures and second, that the rise in global temperatures is such that there is a harmful storm or other climatic event traceable to it, then Sinnott-Armstrong is likely right that individual actions do not cause harm. However, it is much easier in understanding the morality of individual actions with regard to climate change to analyze the expected amount of harm due to the performance of the action, which is what is accomplished by (A) and (B) above. The argument need not require any storms or the like being traceable to an individual action. And as I argue below, the expected harm is indeed nonzero.

It might be argued that the shift to talk of expected harm in (4) rather than actual harm in (3) is then a very substantive move, since expected harm carries with it all the mechanisms of expected utility calculations. However, (MP) is a highly plausible moral principle, and to demand, as Sinnott-Armstrong seems to, that harm is caused only if there is a traceable intermediary event that is caused by the action is much less plausible. Furthermore, although (MP) involves a calculation of expected harm, it is a principle that nonconsequentialists ought to accept. Even nonconsequentialists are concerned about consequences; nonconsequentialists simply deny that the permissibility of an act is fully determined by a utility calculation. (MP) rests on no such claim.

III. Do Sunday Drives Cause Any AGCC?

Whether or not Sinnott-Armstrong's precise argument withstands scrutiny, there is still a substantive question about the truth of (4). Let's assume, for *reductio*, that (4) is true. Since the case of the Sunday drive is just a random example, we can generalize (4): no drive which emits GHGs at the same level as a Sunday drive makes any difference in AGCC. This, however, is metaphysically untenable, on the assumption, which all parties in the current debate accept, that there is AGCC due to *everyone's* driving. If individual drives do not make any difference in AGCC, but *everyone's* driving does, then *everyone's driving* would have to be some odd emergent entity that is not reducible to individual acts of driving. But this is farfetched, metaphysically.

However, it might not be *completely* implausible for a reason I mentioned earlier. Individual drives would not exist except insofar as there is a large system of cars, roads, laws, oil drilling, gas stations, etc. So perhaps there is a higher-order entity, *the system of driving*, which is not reducible simply to individual drives, and it is this entity that is responsible for climate change. Still, it would be metaphysically odd to claim that *this* entity is totally irreducible. For though it would not be reducible to individual drives alone, it would be reducible to individual drives plus all the actions which create and maintain the system of driving, such as building roads, drilling for oil, etc. Each of these actions plays some causal role in AGCC. And this seems correct: we do believe

that oil companies, for example, are at least partly causally responsible for AGCC even aside from the ways in which they directly emit GHGs. We should still attribute to individual drives some partial causal role in AGCC.

One might argue that (4) is metaphysically coherent on the grounds that short drives do not make any difference in climate change, but long drives do. The problem with this is that long drives may simply be understood as multiple concatenated short drives. Of course, as we imagine dividing drives into smaller and smaller units, the proportion of the drive relative to the total amount of climate change will become smaller and smaller. But (4) is an extreme claim: that individual drives make *no* net difference. As long as we are considering noninfinitesimal drives, the difference in expected AGCC because of them will be nonzero.

One final way in which (4) may be metaphysically coherent is if we add a temporal element to it. It might be argued that in our history of driving, we emitted a tremendous amount of GHGs into the atmosphere, and after an initial threshold of the atmosphere being able to accommodate emitted GHGs was passed, each of the individual drives indeed did make a difference. However, this argument proceeds, we have now passed a second threshold, such that no *additional* Sunday drives will make any difference. This view is not explicitly stated by any of the authors who make the ICI claim, but it may underlie some people's assertions of it. However, it is highly implausible. I will discuss it further in the next two sections.

IV. Do Sunday Drives Cause Significant Harm?

It is not difficult to show that (B) is true, using an argument similar to the argument just given against (4). If we assume that the sum total of AGCC is causing harm, then we can show that any individual act that contributes to AGCC also causes an expected harm. However, it might be the case that a certain very specific amount of AGCC will in fact be beneficial, but amounts of AGCC that differ from that amount are considerably worse. So it is possible that some slight incremental increase in AGCC that is caused by one Sunday drive will in fact have the effect of leading to less harm. However, from our given limited epistemic state, there is no way to determine exactly where those discontinuities might occur. Rather, the *expected* amount of harm increases directly with the amount of

AGCC. The only way that (B) could fail to be true is if, after a certain threshold, no more harm is caused by AGCC. This could happen, to use an extreme example, if the amount of AGCC that will already occur will cause the entire world to be destroyed. I discuss this further below.

If (MP), (A), and (B) are correct, then it is *prima facie* wrong to go for a Sunday drive. Sinnott-Armstrong, however, argues against a principle similar to (MP). He notes that boiling water emits GHGs, thereby increasing the risk of harms to others, but surely there is nothing wrong with boiling water.[9] Thus (MP) seems unduly restrictive.

Since the point at issue concerns only *prima facie* wrongs, I maintain that, if there is another easily available alternative to boiling water, then even boiling water is *prima facie* wrong. This, I grant, may seem counterintuitive. However, (MP)'s conditional does do some work in it—there may be no easily available alternative, in eating healthy food, than to boil water on occasion. So, it is likely that (MP) shows that boiling water on occasion is not *prima facie wrong*. Furthermore, even if boiling water is indeed a *prima facie* wrong, it may be the case that it is almost never all-things-considered wrong, and hopefully that fact makes the claim that it may be *prima facie* wrong less counterintuitive. In addition, the claim that if an act has very small or imperceptible effects, it cannot be wrong because of those effects is to make what Derek Parfit identifies as a *mistake in moral mathematics*.[10] (Sinnott-Armstrong claims, rightly, that he himself is not making one of those mistakes, since he believes that Sunday drives have *no* effects with regard to climate change, as in (4).[11] I have argued that (4) is false, but not for Parfit's reasons.) As Parfit shows, a claim that actions with small effects are not at all *prima facie* wrong leads to problems for any normative theory. It is important to maintain that, if (4) is false, then Sunday drives are *prima facie* wrong.

On the basis of the argument I give, it might still be the case that the expected amount of harm caused by the AGCC which is caused by the GHGs emitted in a Sunday drive is nonzero but still quite insignificant—so insignificant that it is a waste of time even discussing it. Since the amount of GHGs in the atmosphere is so great, what difference could one Sunday drive possible make? This, I believe, is what most people have in mind in thinking that there is nothing wrong with performing everyday actions. So, how much harm is one Sunday drive expected to cause?

Unlike the debate over (4), this is a substantive empirical question beyond the basic assumptions that Sinnott-Armstrong accepts. Unfortunately, none of Sandler, Jamieson, Sinnott-Armstrong, nor Fiala, all of whom make the ICI claim in one form or another, cite any data to support ICI. But there is a fairly elementary way to determine the answer:

(Step 1) Estimate the amount of GHG emitted by the one drive, d.

(Step 2) Estimate the total amount of GHG emissions responsible for climate change, e.

(Step 3) Estimate the total amount of harm that climate change will cause, h.

(Step 4) Calculate (d/e) x h.

Importantly, John Nolt has done something very much like this calculation, though he does so in analyzing the consequences of individuals' entire lives.[12] The number Nolt arrives at is not insignificant. He argues, using data from the IPCC's "Climate Change 2007: Synthesis Report,"[13] that on average, an American's lifetime GHG-emitting activities cause serious harm to one or two people, typically in the developing world. If Nolt is correct, then the average American, over the course of her or his lifetime, does make a difference.

Interestingly, Nolt is explicit that he is not interested in calculating the effects of a single individual action and that it is the *habit* of driving that is relevant.[14] So defenders of ICI may still wonder: I may in my whole life harm one or two people, but what harm can one drive cause? However, the answer to this question is quite simple, given the result of Nolt's calculation. As I discuss elsewhere using data from the National Academy of Sciences,[15] the emissions from a twenty five-mile car ride amounts to approximately 1/4 of a day's worth of emissions for an average American.[16] Thus if the actions of a full life of an American seriously harm the full life of one person (taking the more conservative of Nolt's estimates), then 1/4 of a day's worth of emissions causes 1/4 of a day's worth of serious harm. In other words, *going on a Sunday drive is the moral equivalent of ruining someone's afternoon*. Since ruining someone's afternoon is, to use nontechnical vocabulary, not a very nice

thing to do, if Nolt's assumptions are correct then one Sunday drive is indeed *prima facie* wrong *to a not-insignificant extent*.

I myself have concerns with Nolt's methods, and even Nolt himself expresses many caveats about the accuracy of his calculation. However, from the epistemic state in which we find ourselves, there is at present no better answer than Nolt's. Since what we are most interested in is *expected* harm rather than actual harm, Nolt's answer must suffice.

It might be argued that we should abandon the effort to determine the expected harm of the average American's actions given the vast amount of empirical uncertainty underlying the calculation and given difficulties in quantifying harms that surely complicate Step 3. But this seems absolutely irresponsible. Again, (MP) says that it is *prima facie* wrong to perform an act that is expected to cause harm. If (MP) is true, then responsible individuals ought to take a serious interest in what the expected effects of their actions will be. And until we have a more rigorous answer, we ought to use our best estimate. We (including Sinnott-Armstrong) assume that there will indeed be a very large amount of overall harm caused by AGCC—this is why so many people are so concerned about it. So likely, even if Nolt's number is wrong, it is still in the right ballpark. Those who wish to dispute Nolt's calculations should do so not by disregarding the question but by providing an alternative calculation.[17]

There are two somewhat technical complications with Nolt's calculation worth noting. This paper is concerned not with average harm of individual actions but with the expected marginal increase in harm if an individual performs an action. These values are not necessarily identical. In particular, if AGCC is known to be a threshold phenomenon, where the amount of harm does not vary linearly with the amount of GHG emitted, then the average value will not equal the value of each marginal action. There is every reason to believe that climate change is a threshold phenomenon,[18] and further, that there is not just one threshold but many. Nevertheless, this fact does not compromise my own calculation, for two independent reasons. First, if there is a threshold, but we are unsure when we will reach the threshold, then the *expected* effects of any action will still vary at a rate which is close to a linear progression. Even if an individual action *in fact* makes no difference in the resulting amount of harm, associated with every additional unit of GHG emitted is a marginal increase in *expected* harm, and this is what (MP) deems to be *prima facie*

wrong (as long as there is no other alternative that does not cause harm).[19] Second, the idea behind the "tipping point" is that up to the point, humanity will be able to adapt to some extent to the negative effects of AGCC, but afterwards, problems will increase dramatically. But this entails that, if there is a significant tipping point which we pass, the marginal expected harms from a drive will be *greater*, rather than lower, than the average harms. So my estimate of a ruined afternoon's worth of harm may be a more conservative estimate than is needed.

The other complication is that Ben Hale[20] and Baylor Johnson[21] have independently argued that individual actions will make no difference not because they are too small but because if one individual does not emit GHGs, someone else will. Hale, for example, argues that since there is a finite amount of total oil on the Earth, given the realities of natural resource economics, all of it will be burned, emitting GHGs. So any single individual's act will make no difference to the net amount of harm.

We should be cautious about this argument. AGCC causes harm not simply because the temperature is rising, but because it rises at a rate faster than that to which humans (and nonhumans) can adapt. So even if the total amount of GHGs emitted through the years is the same, it makes no small difference when exactly they are emitted.

Still, as Hale points out, this issue connects to a more fundamental question in ethical theory. For a consequentialist, it makes no difference whether an individual is the direct cause of a harm or simply knowingly allows a harm to occur. Thus, if Hale is correct that it makes no difference no matter what any given individual does, then the consequentialist may say that in fact a Sunday drive is not all-things-considered wrong. However, for a deontologist, the distinction is of no small importance. If the emissions from one drive are the cause, then the drive still is wrong regardless of whether someone else would have caused the same harms. I do not wish to resolve this issue here, especially since I believe Hale is wrong in some of his empirical claims. However, my argument does seem to make the morality of individual actions, in an era of AGCC, extremely stringent for any deontologist who accepts (MP). We indeed do, on a regular basis, perform actions that we knowingly expect (or, at least, ought to knowingly expect) will harm people. Unless a deontologist appeals to a (dubious, on my view) principle of double-effect, the deontologist who accepts (MP) ought to believe that many common actions are

wrong. This is an interesting result since it is commonly thought that consequentialism is a much more demanding type of normative theory.[22] If I am right, however, in an era of AGCC, nonconsequentialism is extremely stringent as well.[23]

I should also note how the approach in this paper differs from an equal shares approach, such as that discussed by Steve Vanderheiden.[24] On a version of an equal shares approach, every individual has a claim to a certain allotment of GHG emissions. The difference between the two approaches may be seen in an example of an individual who uses less than her allotment but decides in one instance to go for a Sunday drive. On an equal shares view, this would be permissible as long as it did not lift the individual past the allotted amount. By (MP), it would still be a *prima facie* wrong. Which account is preferable? I grant that there is a strong inclination not to blame an individual for such an act when the individual is otherwise successful in limiting her GHG emissions. However, we should keep in mind the fact that such activities still do cause harm to other people (who themselves are already likely to be disadvantaged). So even if the individual is commendably doing a better job on the whole than many others in limiting her GHG emissions, it is hard to see how truly neutral conditions of fairness could maintain that the individual's Sunday drive is acceptable. When we compare the Sunday drive of the otherwise-conscientious GHG emitter not just to those individuals who are emitting more than their fair share of GHGs but to the suffering of an individual who is harmed by the Sunday drive's emissions, (MP) still seems to hold.

Vanderheiden's own view, however, is more subtle than this version of the equal shares view, since he distinguishes between survival emissions and luxury emissions, and claims, following Henry Shue, that individuals have basic rights to the former and lesser or no rights to the latter.[25] Interestingly, Vanderheiden's approach ultimately may be at least roughly coextensive with the approach in this paper, since (MP) does not condemn acts which emit GHGs when not emitting the GHGs would cause more harm than that caused by the GHGs, and that might cover a similar range of acts as those which would be protected under the individual's basic survival emission rights. However, the present approach may be preferable to Vanderheiden's since (MP) provides a simple and highly plausible basis upon which to found claims of the wrongness of many GHG-emitting acts and does not involve potentially controversial

criteria of survival emission rights. Much more can be said about this issue but since my main goal in this paper is only to undermine ICI, I shall not pursue it here.

V. Why Do People Believe in ICI?

Although there are complicated philosophical and empirical issues underlying the arguments in the previous sections, the basic arguments are, in my view, rather elementary. So one might wonder why the idea that individual drives are insignificant is so common. I believe that there are interesting issues in moral psychology that are raised by this, and the following are five conjectures as to why people erroneously do not believe that individual actions have much or any effects. In giving these, I do not wish to understate the fact that many people are simply ignorant of or mistaken about empirical facts; but I believe that such lack of knowledge does not explain the near-ubiquity of ICI.

1. Selfishness and denial

In fact, we do in some way understand that individual actions are significant, but are also aware that if we countenance this fact and wish to remain moral, our whole lives must change. So we subconsciously let ourselves believe that small individual actions in fact make no significant difference.[26]

2. The fallacy of double-division

If there is a threshold phenomenon with a structure such that only one particular action carries us over a tipping point, then one has a very tiny chance of making an enormous difference. One might think that AGCC is such, especially given the rhetoric of supporters of climate policy such as James Hansen.[27] So one might gamble that one's own action won't be the one that does so, and also believe that if one's own isn't the one that brings us over the tipping point, there will be no associated wrongdoing. This is obviously fallacious from the perspective of (MP), since it is a failure to appreciate *expected* harm.[28] But one might still think that, even if one's own behavior is, unluckily, the very one that makes us cross the threshold, one still is just one of many people contributing. So, there is only a tiny chance (say, one in five billion) of being

the person who is responsible for an enormous harm where one is just one of a large number of people (say, one in three billion) creating the harm, and so one might twice divide the harm done when doing an expected utility calculation of one's action. This number will show that the expected effects of any individual action are indeed miniscule. But this is fallacious. On the proper expected utility calculation, one must calculate only the expected marginal effects of one's action. The number of co-participants in the phenomenon is irrelevant, and so one should not double-divide.

3. The "Nero's Fiddle" effect

Andrew Fiala argues that we have likely already crossed a tipping point so that no matter what anyone does, we are going to be faced with an unsolvable environmental crisis. Fiala says that "our paltry efforts to heal the earth are all too little and much too late,"[29] in discussing the recent work of James Lovelock.[30] Because of this, rational agents—even ones who are concerned about the general well-being of others—may decide to "fiddle while the Earth burns," i.e., to not take any actions to mitigate AGCC since that cause is hopeless, and instead just try to have a good time. Fiala is cautious about making this claim, and intends his paper to encourage people to find other solutions to the collective action problem. However, Fiala does not provide any reason to reject the claim that we are in a "Nero's Fiddle" scenario.

However, if the argument in this paper is correct, then this is surely mistaken. It is indeed terribly dismaying to think of all the harms that will undoubtedly occur due to AGCC. However, as above, there is absolutely no reason to believe that additional AGCC will have no marginal effects, even if the situation we are faced with has already crossed a threshold and is already dire. It is as if Fiala and Lovelock take it that there will already be infinite amount of harm done. But this is untenable—it is not as if the Earth will be literally destroyed because of AGCC. So even if the situation is already dire, there is still a marginal increase in expected harm—harm that real people and real nonhumans will actually experience—by each additional action. The fact that no matter what we do, many will already be harmed by the effects of AGCC is irrelevant to the morality of individual actions.

4. Psychic numbing

The economic psychologist Paul Slovic has argued, with regard to helping the needy in developing countries, that potential donors to inter-

national aid organizations face a problem of *psychic numbing*.[31] Slovic's idea, based in part on the work of psychologists and economists, is that individuals fail to rationally assess the needs of large numbers of people. We become numb and fail to rationally consider the best course of helping behavior. Slovic deserves great credit for using the methods of economic psychology to analyze not just behavior that goes against individuals' self-interest (so-called "economically irrational" behavior) but for behavior that goes against individuals' more altruistic interests ("altruistically irrational" behavior?). A similar model should apply to perceptions of the need for action with regard to climate. In the process of considering the large numbers of people and nonhumans who may be harmed by the effects of AGCC, we may become numb and fail to reason properly.

5. We have a limited capacity for valuing

This point is extremely similar to Slovic's but is made from the perspective of philosophical moral psychology. Consider the way that Thomas Nagel describes the *absurd*.[32] According to Nagel, human life is absurd because we can adopt two very different perspectives: one where we care very deeply about things in our daily lives and another where our daily lives seem insignificant in the grand scheme of the universe. This is not a claim of moral skepticism by Nagel, but a claim that, when viewed *sub specie aeternitatis*, things in our daily lives really don't matter much. It is the clash between the two incompatible perspectives that is responsible for the absurdity of human lives. Nagel is expressing a view similar to that of others, but there is something erroneous in the general idea that is brought to light in the way Nagel expresses it. Why do ordinary actions seem so insignificant when we are pondering the cosmos? My conjecture is that something like the following occurs. First, valuing happens in a way much like how David Hume says:[33] we have sentiments, and we project our sentiments onto the world. However, as Hume himself recognized, this will not always be a good way to make moral judgments, since our sentiments might not be judiciously applied. This is why, for Hume, we should try to view moral situations from the 'general point of view'.

In the situation that Nagel calls to mind, we imagine the entire universe that contains literally trillions of stars. In these moments, it is not that we become moral skeptics and lose all sense of value. Rather, one projects all the sentiments that she or he possesses onto the whole of the universe—the universe does deserve our awe. But then, knowing how

large the universe is, the observer does the division, and determines that her or his own life amounts to almost nothing.

However, this is misguided. Someone who can imagine the universe *sub specie aeternitatis* really ought, at the same time, to be able to perform grand utility *summation*. Rather than having the perspective *sub specie aeternitatis* make us think less of our ordinary lives, it should make us believe that our total capacity for invoking our sentiments is hopelessly limited given the very surprising enormity of the universe. Our moral sentiments evolved to deal with local phenomena and it should be no surprise that they lead us astray when they are brought to bear on cosmic or even global phenomena. Thus trying to view the universe *sub specie aeternitatis* should not lead us to value our individual lives any less.

It should be obvious how this point extends to the present debate. It is impossible for an individual to fully appreciate the effects of AGCC since the potential harms transcend anything that one individual can grasp. Because of this, we should be highly dubious of our snap judgments about the limited effects of individual actions in a large world. Instead, we should look carefully at the amount of expected marginal increase in harm if we perform certain actions, and make our moral judgments accordingly.

I grant that all the points I make in this section are speculative as conjectures in moral psychology. Still, they comprise a reasonable error theory about why ICI may seem plausible when it is fairly obviously mistaken.

VI. Conclusions

I am not claiming that we must always sit down and do an expected harm calculation before deciding what to do. That, certainly, will be too cumbersome.[34] However, I do believe that, in light of the above considerations, individuals ought on certain occasions reflect upon the effects of many ordinary actions and formulate what are likely to be an updated set of practices.

Though Sinnott-Armstrong believes that there is no *prima facie* wrong in going for a Sunday drive, he still holds that we have responsibilities with regard to mitigating AGCC. In particular, we ought to be working to change laws that relate to climate issues.[35] It is ironic, though, that Sinnott-Armstrong claims that we ought to make political efforts when

the very same arguments that he gives against the causal insignificance of driving can be made about the causal insignificance of political efforts. Famously, an individual's voting in an election is held to make virtually no expected difference. And it would be impossible to determine that a possible future drought was averted because one individual wrote a letter to her congressperson or carried a sign at a climate rally. Nevertheless, I do not believe that such efforts are totally inefficacious, and I agree with Sinnott-Armstrong that we have such political obligations. So the fact that I have emphasized individuals' direct moral responsibility should not be taken as an argument that we have no political responsibilities as well. My main point is that the question of the direct expected causal effects of individual actions has been inappropriately neglected, even among thinkers such as Nolt, Jamieson, Sandler, and Hourdequin, all of whom believe that we must change our behavior significantly because of AGCC.

Furthermore, there may be specific practical implications of adopting the perspective of individual causal responsibility rather than viewing AGCC as simply a collective action problem. First, if many individuals become aware of their daily impacts and because of that awareness make changes in their practices, the benefits may add up to a very significant extent. Second, individuals can be inspired to change their behavior by campaigns similar to those noted by Slovic concerning helping those in need. In particular, Slovic shows that providing potential donors with data about suffering in developing nations does little to inspire them to help those in need, but putting a human face on the suffering does inspire people to help.[36] Analogously, providing people with data about the overall harms of climate change may not spur people to action, but putting it on a human scale might, and my claim about ruining someone's afternoon may help serve that purpose. Third, if these changes do occur, they might lead to an increase in political will to make greater policy changes. Last, if we can grasp the amount of harm caused by certain activities, we can more easily justify and create a system of reparation so that those harmed can make specific claims on those who cause harm.

One might regard the finding of this paper with despair: by performing many ordinary, everyday actions, we harm people. This is not a conclusion to be taken lightly. Still, my findings can be given a more optimistic spin. Just as small individual actions like Sunday drives cause a not-insignificant amount of harm, when we refrain from doing so and help

others refrain from doing so, we are *preventing* (or, at least, *averting*) a not-insignificant amount of harm that would have happened. Furthermore, the apathy that might result from a belief that what one does makes no difference can be quite damaging. Those who, following Fiala's tentative argument, start fiddling while the Earth heats up with the full awareness that people are being harmed by AGCC likely will not take much joy in such fiddling. Much more inspired are likely to be those who, motivated by an awareness of the effects of their actions and a commitment to something like (MP), take the time to reconsider their actions and act accordingly. Though we should be aware of the expected harmful effects of many of our actions, we also should not underestimate the expected helpful effects of many other, even seemingly small, individual actions that we are fully capable of performing.[37]

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Notes

1. Sinnott-Armstrong (2005).
2. Sandler (2010, 172).
3. Sinnott-Armstrong (2005, 293).
4. Op. cit., 290–91.
5. Jamieson (2007, 167). Jamieson uses ICI not to show that we have no responsibility to curb GHG emissions but to show that utilitarians shouldn't appeal to typical utilitarian reasons in explaining what is wrong with GHG-emitting actions. Sandler (2010) goes further and argues that because of ICI, consequentialism and Kantianism cannot account for the wrongness of GHG-emitting actions and that we should instead be environmental virtue theorists. However, this may be putting the cart before the horse—if indeed there is an unexpected argument that shows that standard normative theories cannot account for the wrongness of a certain type of act, we have at least as much reason to conclude, with Sinnott-Armstrong, that the act is not wrong rather than go searching for a different normative theory.
6. Hourdequin (2010) makes this point.
7. Sinnott-Armstrong (2005, 293).
8. Op. cit., 291.
9. Op. cit., 293–94.
10. Parfit (1987, 75). These are mistakes four and five. See Vanderheiden (2008, ch. 5) for a more detailed application of Parfit's argument to climate change.
11. Sinnott-Armstrong (2005, 291).
12. Nolt (2011a; 2011b).

13. IPCC (2007).
14. Nolt (2011a, 65).
15. National Research Council (2010).
16. See Hiller (2011).
17. Nolt himself is also concerned with harms to nonhumans, but for ease of calculation does not include nonhumans. Thus the total harm done may be quite a bit more than given by Nolt's answer.
18. See Lemonick (2008).
19. See Nolt (2011b) for a similar point. To be clear, although in section III I claim that *everyone's driving* causes AGCC and is reducible at least in part to individual drives, I do not accept an account according to which the reason why individual acts are wrong is because of their contribution to the large set of acts that surpasses a threshold. All that is required on my account is a notion of expected harm.
20. Hale (2011).
21. Johnson (2003).
22. See Kagan (1993) for a discussion of this.
23. I make a similar point in Hiller (2011).
24. Vanderheiden (2008, 226). See, also, Singer (2007).
25. Op. cit., 247, and Shue (2001).
26. This is very similar to what Gardiner (2006) calls the 'problem of moral corruption'.
27. See Lemonick (2008).
28. Claims very similar to ICI have arisen in the debate over vegetarianism. See Matheny (2002) for a related point.
29. Fiala (2010, 52).
30. See Lovelock (2006).
31. Slovic (2007). Slovic is using a term coined by Robert J. Lifton (1967).
32. Nagel (1979).
33. As in Hume (1983).
34. This is a point made by Jamieson (2007).
35. Sinnott-Armstrong (2005, 304).
36. Slovic (2007, 90).
37. Thanks to Stephen Gardiner, Ben Hale, Dale Jamieson, and John Nolt for discussions of these issues, to an anonymous referee from this journal for helpful comments, and to Angela Coventry for a discussion about Hume.

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