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# **Chapter 3: Difference-Making and Individuals' Climate-Related Obligations**

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## **3.1 Individuals' Climate-Related Obligations**

Climate change appears to be a classic aggregation problem, in which billions of individuals perform actions none of which seem to be morally wrong taken in isolation, and yet which combine to drive the global concentration of greenhouse gases (GHGs) ever higher towards environmental (and humanitarian) catastrophe.<sup>1</sup> When an individual can choose between actions emitting differing amounts of GHGs—such as to ride a bike to work rather than drive a car, to have goods shipped from another country rather than locally—does she have any reason to choose the lower-emitting actions? For an act consequentialist, that depends on whether choosing the lower-emitting action would make a difference; for a rule consequentialist, it depends on whether choosing the lower-emitting actions as a general rule would make a difference. It is morally wrong to choose the higher-emitting actions only if choosing the lower-emitting actions would bring about less harm overall. The argument from 'no difference' denies that any such choice would bring about less harm overall.

I will focus on the individual's action making a difference to the kind, and degree, of harms to persons both current and future experienced as a result of climate change. Harms to persons include physical suffering, such as injuries sustained in the course of extreme weather events like typhoons, floods, droughts, etc., and death; psychological suffering, such as caused by the death of—or injuries sustained by—those you have emotional attachments to, or caused by landlessness or statelessness (as experienced by those whose countries will be subsumed as ocean levels rise), and culture shock (as experienced by those climate refugees offered settlement in other countries); deprivation, such as suffering from a medical condition for which there was previously a treatment, but for which there is no longer due to ecosystem damage in rainforests and on ocean-floors; and the loss of liberty that would follow a person's being confined to a climate-refugee processing centre for an indefinite period after her state is subsumed by rising sea levels. I do not count economic losses as harms to persons except

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<sup>1</sup>Aggregation problems are discussed in various forms, including stealing single beans from hungry people's plates (Glover 1975: sec. 3; see also Jackson 1987: 96–98); giving single drops of water to dehydrated persons (Parfit 1984: 76–78); ratcheting a torture dial up one notch (Quinn 1990; see also Arntzenius & McCarthy 1997); expelling a single extra molecule of pollution from a factory (Kagan 2011: 108–109); introducing microscopic quantities of a contaminant into a fresh water supply (Kagan 2011: 105); buying a single caged chicken (Kagan 2011: 110–111; see also Nefsky 2012); taking a single drive on a single Sunday afternoon (Sinnott-Armstrong 2005). None of these actions are thought to be morally wrong in isolation, yet when done by many can 'add up' to starvation, dehydration, torture, pollution, factory farming, and climate change (respectively).

insofar as they lead to physical and psychological suffering of the kind just presented.<sup>2</sup> To figure out whether the individual's choice between higher- and lower-emitting actions makes a difference to these harms, we need to get clearer on the way in which her actions might contribute causally to those harms (the focus of 3.2-3.4).

Most of the recent discussion of climate ethics focuses on states' obligations to reduce their GHG emissions, which one might reasonably assume leaves open what particular obligations fall on individual citizens. The state might exercise discretion between focusing on a nationwide transition to clean energy sources or investing in extending public transportation infrastructure; it might incentivize communities or individuals, e.g. through tax breaks, to emit less GHGs; it might pass law making it illegal to perform actions with a high environmental cost, such as taking international flights without offsetting, and so on.

But that whole story is top-down: there's something, globally, that ought to be the case—e.g. the global concentration of GHGs in the atmosphere ought not to become denser than 350 parts per million—and that has implications for what states ought to do, which in turn has implications for what individuals ought to do. But while there's some agreement among moral philosophers on what ought to be the case top-down, there's not widespread political acceptance; and attempts at creating binding global treaties have failed thus far. Very few states, if any, are doing as much as they would be required to under such a treaty, so very few are delegating the relevant obligations to their citizens. We should, then, be interested in what individuals ought to do to take up their states' slack. In principle, large-scale collective action problems give rise to obligations for individuals without states (or other collective agents) as intermediaries, so there's no reason to dismiss out of hand that there will be such obligations in the case of climate change. And more broadly, the argument from 'no difference' is routinely made by states (e.g. that the state's choices between actions that emit differing amounts of GHGs make no difference to the predicted harms of climate change) so the arguments I make, focusing on individuals' actions, will apply *a fortiori* to states' actions with their comparatively greater scope. I will assume that morality is at least something of a luxury, and so focus on the obligations of those individuals within developed states, and those individuals who are wealthy within highly stratified developing states.

The overall project is to reject the claim that individuals don't make a difference when it comes to climate change. In what follows I first discuss certain difference-making as a way of getting clearer about how individuals' actions impact causally on the harms resulting from climate change, and then move on to discuss low probability of major difference, and high probability of minor difference. I conclude by noting some policy implications of having individual difference-making back in play.<sup>3</sup>

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<sup>2</sup>Ignoring other kinds of economic losses makes individuals' climate-related obligations perfectly compatible with large-scale global economic redistribution. It also prevents theorists from rejecting individuals' climate-related obligations on the grounds that they would cost money, by denying that economic losses (at least, those which do not entail physical or psychological suffering) enter into a tradeoff with physical and psychological suffering.

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<sup>3</sup>Because this is a chapter about the difference-making challenge in the context of climate change, I'm setting aside what I think is the best solution when it comes to large-scale moral challenges and individuals' relative inefficacy alone, namely, collectivizing. But see discussion in Collins (2013), Collins & Lawford-Smith (*forthcoming*), and Lawford-Smith (2015a).

### 3.2 Our Actions Always Make a Difference

In this section I will try to defend the claim that we do in fact make a difference, even though that difference might be imperceptible given the constraints of current measuring technologies, and even when that difference would be drowned out by statistical noise were the measuring technologies up to the task. Then I will explain a special case in which you make a local difference but not a global difference. Finally I will explain the structure of thresholds in greater detail to ultimately concede that it is not plausible to think that any given action always makes a difference. The solution to the 'no difference' challenge, then, can't be that our actions always in fact do make a difference. (Note that I'm focusing in particular on difference-making in the GHG emissions associated with one's own conduct, e.g. choices about transportation and consumption, and bracketing both influence upon the emissions associated with others' actions, and political action against cities', states' or the international community's emissions).<sup>4</sup>

Current technologies are not nearly sophisticated enough to measure a single individual's single action's effect on the global concentration of GHGs in the atmosphere (although in some cases we can estimate it); nor even the effect of her daily, weekly, yearly, lifetime actions (although in some cases we can estimate them). But notice that while the emissions associated with a single action might be far too fine-grained to be measured by our current technologies, that's not an in-principle reason to think they cannot be measured. It might be that one day personal impact trackers will be developed, and even if they're not, that they could be. Those tiny differences might be adding up, even though they only register with our current technologies once they reach a certain level (thousands, millions, perhaps billions of our actions' effects added together). It remains true that those single actions might make a difference even though that difference is not perceptible given the constraints of current technologies, and in spite of the fact that human attempts to map or graph any such tiny effects would be drowned out by statistical noise.

There is a special case in which the actions of a single person on a single occasion would make a local difference but not a global one. The paradigmatic case involves blackmail. That I choose to ride my bike to work instead of taking the car would make a tiny difference, but you are irritated by my environmental activism and tell me that although you were planning to walk to work (you hate traffic), if I ride my bike you will take the car instead. Then diachronically I would make a difference that you'd cancel out; if the actions were performed synchronically I wouldn't make any difference at all. This can happen without a blackmailer though, because it can just so happen that the GHG emission-reducing actions taken by individuals in one part of the world are exactly cancelled out by the GHG emission-increasing actions taken by individuals in another part of the world. In that sense your action can make a local difference but not a global one (if you measured the impact of the local actions on the concentration of GHGs there'd be a positive difference, if you measured the impact of the global actions on the concentration of GHGs there'd be no difference). These cases do arise, e.g. for states that by introducing a carbon tax encourage corporations with high GHG emissions to migrate to countries with weaker environmental regulations, and for individuals who boycott a product and inadvertently impact demand and therefore price, making the product more accessible to a previously priced-out consumer. But those of our actions facing this 'blackmail' problem are arguably not in the majority and it's certainly not that all of our actions have this structure. Furthermore, it would be disingenuous for any individual to suggest this as her justification for emitting, given that she cannot know exactly

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<sup>4</sup> I develop the idea of obligations relating to our influence over others (both individual and collective) in more detail in Lawford-Smith (2015b).

how the numbers will come out (i.e., precisely how everyone else's actions will affect the global concentration).

What I have said so far allows that in principle, our GHG emitting actions—even the single actions of a single individual on a single occasion—make a difference to the relevant concentration of GHGs in the atmosphere, with the exception of blackmail cases. But notice that this is not sufficient to defeat the 'no difference' claim. It is not enough for our actions to make a difference to the concentration, which they almost always will do; the concentration must make a difference to the kind and degree of harm to persons experienced as a result of climate change. So the question becomes: does it?

For the answer to be affirmative, it would have to be true that the higher the concentration, the worse the harms. The connection between the concentration and the temperature is itself probabilistic, because the temperature system is so chaotic. At first glance, the correlation claim seems correct, because we know that the higher the concentration of GHGs in the atmosphere, the more frequent and severe extreme weather events will be (Károlyi et al. 2013; Clarke 2013), which themselves cause widespread devastation. But to figure out whether the claim withstands closer inspection, it is necessary to explain how the relevant thresholds work, which I will put in terms of macro- and micro-thresholds for ease of exposition (even though plausibly harms are on a spectrum rather than one or the other).

First, the macro-level thresholds. The main such thresholds involve the Arctic, the Amazon, and Siberia. In the Arctic, three major areas are at threat of severe disruption due to warming: the sea ice over the Arctic Ocean, the ice sheet covering Greenland, and the ocean conveyor belt originating in the Nordic sea which carries heat and salt around the world. In short, the greater the patches of water across the ice the more heat is stored within the water, making it warmer and causing more ice to melt from below, which extends the size of those patches in the next season, and speeds the overall melting of the ice. This will eventually raise sea levels, which will eventually mean the loss of huge tracts of land on which people live and grow food, and the contamination of freshwater supplies with saltwater. In the Amazon, warming is expected to bring serious droughts causing massive tree death. At a certain point it is projected that the Amazon, one of the world's major carbon sinks, will stop storing carbon and start emitting it. Finally, the Siberian permafrost stores about 1,600 billion tons of carbon in the ground. That carbon will be released if the permafrost melts, which it is at risk of doing as the global concentration of GHGs increases. Once these thresholds are crossed, the environmental changes are irreversible (massive tree death, massive ice-melt, carbon-sink reversal), and grievous harms will very likely follow them (to name just some: starvation and poverty in those reliant on fishing for subsistence, collapse of fishing industries, loss to medical research (and those who would have been treated as a result of it) of materials found on ocean floor, loss of coral reefs; loss to medical research of materials found in rainforests, loss of biodiversity, loss of carbon sinks exacerbating carbon-capture problems elsewhere; subsumption of low-lying lands (creating statelessness), crop death as a result of saltwater contamination, and massive fresh water shortages, all leading to radically increased numbers of environmental refugees, poverty, famine, dehydration)—although a limited amount of adaption to the effects of these macro-level thresholds being crossed is possible. We know that there are such thresholds, even though we do not know the precise point at which they are located. (This makes the precise threshold indeterminate for practical purposes, but if we are interested in preciseness we should be able to predict a range of numbers within which the threshold will be crossed, or a lower bound after which it's not guaranteed that the threshold will not be crossed).

Also at the macro-level, in addition to the precise scientific thresholds at which the aforementioned changes become irreversible, are the political thresholds, i.e. those suggested

in the public debate over climate change. One prominent threshold has been limiting global temperature increase to 2°C over the pre-industrial average—although there is growing consensus that this limit seriously underestimates the problem, and that avoiding the worse projected effects of climate change would actually require limiting temperature rise to 1°C (Smith et al. 2009). But notice that the political thresholds are heuristics in a way that the scientific thresholds are not, and this means that an individual could not necessarily justify a higher GHG-emitting action over a lower one on the grounds that it wouldn't make a difference to the precise political threshold, i.e. that it would have been crossed no matter what she did. A temperature slightly higher than 2°C would presumably satisfy the ends the political threshold was set to satisfy.

If the macro-level thresholds were all there was to climate change, then the 'no difference' challenge would be almost exactly like the well-known voter's paradox. There's a very precise threshold: under a system of strict majoritarianism with two candidates, that threshold is  $n+1$  where  $n$  is the number of votes received by the other candidate. So long as votes are cast sequentially rather than synchronically (I come back to this in the next section), an individual ostensibly need only be interested in the chance that her action will be the trigger—that her vote will be the +1 that makes it the case that her candidate wins rather than that the candidates are tied; that her driving her car to work makes it the case that the Siberian permafrost will melt and release the currently trapped carbon. Such a macro-level empirical threshold would be an insufficient basis for the claim that the single actions of a single individual on a single occasion in fact do make a difference. It's not certain that they don't, because there's a very tiny chance that they might, but neither is it certain that they do, because they're overwhelmingly likely not to. This means if we are going to get difference-making, it will have to be to be probabilistic: it is not that individuals' climate-related actions do in fact make a difference, albeit an imperceptible and very small difference; but that they might make a difference. I pursue this line in the next section. But the battle for non-probabilistic difference-making is not yet lost. There are still the micro-thresholds to consider.

I mentioned above that the higher temperatures caused by increasing quantities of GHGs emitted correlate with more frequent and severe extreme weather events, like floods, droughts, bush fires, typhoons. Such events can happen in different ways: a bush fire will spread more quickly when the land is very dry and there are strong winds; a tornado will grow to a certain size and travel a certain path depending on a number of variables. We know for certain there will be more extreme weather events, and those that there are will be more severe, as the temperature climbs higher. We also know that it makes a difference to when the *macro*-level thresholds are crossed when GHGs are emitted and which kinds of GHGs they are, for example Andrew Light suggests in his chapter of this volume that combining aggressive reduction of methane and hydroflurocarbon emissions with moderate reductions of carbon emissions will delay our crossing of the most salient projected thresholds by around thirty years, which buys us time to come up with new technologies and infrastructure to assist in aggressive reductions of carbon emissions. This variation in the 'when' and 'what' might also impact upon the *micro*-level thresholds. I assume that the future is open, which is to say, there are many variables which determine the holistic cause of change to the climate, weather system, and environment—and persons' situations as a result—and small changes to those variables may subtly change the course of the future and thereby the harms of climate change. Those variables include which GHGs are emitted (e.g. carbon instead of methane), in what quantity they are emitted (both overall and relative to one another), where they are emitted (e.g. the emission of carbon from flights is worse because delivered higher up), when they are emitted (sooner rather than later), and of course whether they are emitted at all. That opens up the possibility that there's a genuine correlation between the GHG-emitting actions that we perform and the harms we are interested in here. Maybe the fact that I don't

take the car today will remove just that tiny bit of CO<sub>2</sub> necessary to delay a tornado by an hour or a day, or set it on a slightly different path, or cause it to occur with a slightly lesser intensity, all of which would cause slightly less damage to persons than otherwise. To what extent this is true is an empirical question. It is difficult to find a conclusive answer, but it strikes me as hugely implausible that there could be a *strict* correlation between the concentration and climate-related harms—i.e. that every additional molecule of a greenhouse gas makes the world worse.<sup>5</sup>

For it to be true that 'the higher the concentration the worse the world', it would have to be true that for any consecutive pair of numbers (to millions of decimal places) reflecting the global concentration of GHGs in the atmosphere, those two numbers would always track a difference in the amount of climate-related harm in the world, even if only to the same microscopic extent. Again, although it's an empirical question (see fn. 5), it strikes me as much more likely that there are thresholds 'all the way down', just micro-level ones. We don't know where those thresholds are or what will be triggered when they're crossed. But if there are thresholds all the way down, then there are some GHG-emitting actions that genuinely don't make a difference. Assume, just for the sake of example, that the relevant micro-threshold is one ton. Each time one ton of GHGs is added to the atmosphere, it becomes the case that a given extreme weather event will occur in a more harmful way than it would have done. In that example, the actions that emit between 1kg and 999kg of GHGs are completely morally innocuous. In principle, it's not worse to be at 999kg than at 500kg or at 1kg. It's only morally bad to be at one ton, because that's where the next lot of harms are triggered. Thus it's false that the single actions of a single individual on a single occasion always make a difference. At least, it is false accepting the assumption about how the micro-level thresholds work. What matters a great deal in the case of climate change is that we don't know where those micro-thresholds are, and how our single actions on a single occasion interact with everyone else's actions everywhere else to cross them. When there is so much uncertainty, we have to turn to expectations of difference-making, rather than certainty of difference-making.

### 3.3 Low Probability Expectation of Major Difference

In the next two sections, I try a probabilistic strategy; not 'our actions do make a difference' but rather, 'our actions might—or may well—make a difference'. I start with Shelley Kagan's first formulation of this solution, worked out in detail for the kinds of thresholds

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<sup>5</sup>To the extent that the philosophical claim about likely difference-making rests upon this empirical claim for which it is hard to offer solid evidence, it should strictly-speaking be only a conditional claim: if the micro-thresholds work the way I think they must, then we can expect with high probability that our actions will make at least some difference to kind and degree of climate-related harms. The content of the macro-thresholds can be held fixed (i.e. the Amazon rainforests will completely die off, the Arctic ice-sheets and sea-ice will melt entirely and the ocean conveyor-belt will be irreversibly disrupted, and the Siberian permafrost will thaw and release all the trapped carbon), so the difference our actions make is only to whether and when those thresholds will be crossed. Affecting the 'whether and when' is an important difference, but holding fixed all the other GHG-emitting actions in the world, the chance of mine being the one to cross the threshold is infinitesimal. That's why the micro-level thresholds are so important, because we don't just hold fixed that various extreme weather events (natural disasters) will happen in a certain way at a certain place and time, and so it's not only that we can make a difference by buying ourselves a little more time to prepare for them. Rather we might affect their happening at all, or happening in one way rather than another. Because we can be presumed to want fewer such events and for them to be of a lesser severity when they do occur, and because we know that a higher concentration of GHGs in the atmosphere indicates their occurring with more frequency and with greater severity, we have reason to bring about a lower concentration. On that understanding, there's much more room for the claim that 'every little bit counts' than there would be were there only the macro-level thresholds.

involved in consumption, moving through to his second formulation, which gives roughly the right results. I will also say something about the notoriously difficult over-determination cases.

Kagan (2011) presents a solution to the difference-making challenge, in terms of expected utilities. Any action of an individual intersects with potential states of the world, and that intersection has a different value in each case, and we can add the values for each intersection to get an expected utility for each action. The idea of his first formulation is that we might make a major difference. Assume that one of our micro-thresholds will be crossed if 1,000 people take flights between Australia and New Zealand today, and the crossing of that threshold will cause ten additional people to die (assume for the sake of example that there are only 1,000 people who might fly—I will come back to overdetermination soon). Imagine that Claire is deciding whether to take a flight from Melbourne to Dunedin to see old friends. In this case we plot the actions 'Claire takes the flight' and 'Claire doesn't take the flight' against the relevant potential states of the world, which in this case will be those from 'zero others take the flight' right through to '999 others take the flight'. Claire's action of taking the flight will intersect with each of those states of the world, in 999 cases (from '0 others...' to '998 others...') having positive utility, and in just one case ('999 others...') having negative utility. But Kagan's argument is that the negative utility of triggering the relevant micro-threshold and thereby bringing about the death of 10 people is so bad as to counterbalance all the lesser positive utility of the other intersections (e.g. where Claire gets to see her friends). Kagan argues that the utilities will always work out this way: if the threshold were 10,000 flights and the deaths 100, or the threshold 100,000 flights and the deaths 1,000, Claire's action would have a much smaller chance of being the action to trigger the harm, but the harm itself would be correspondingly greater (Kagan 2011: 117–121). Thus a way to defeat the difference-making challenge: you might make a major difference, and that is reason enough not to perform the action.<sup>6</sup> Julia Nefsky has responded to Kagan's claim that the utilities always work out that way (Nefsky 2012); I will concentrate on a different problem.

Kagan treats these as cases in which the sole cause of the relevant threshold being crossed is the single action of a single individual. In terms of the flights case above, the assumption would be that in the case that 999 others are taking flights from Australia to New Zealand, Claire's taking the flight is the sole and unique cause of the micro-threshold being crossed, and thereby ten people dying. Claire's action on this account makes a difference to the physical harms experienced as a result of the flight, although no other passenger's taking of the flight makes a difference. This is necessary to the diagnosis that we might make a major difference; the low chance of a major harm is weighed against the higher chance of no harm, and on balance taking the flight comes out with disutility: there's a lot of disvalue attached to having killed ten people.

But in his second formulation, developed in discussing the specific case of a consumer's purchasing of chicken meat, Kagan points out that in cases where the exact number of actions necessary to hit the threshold are performed (and no more), the harm depends counterfactually on every action (Kagan 2011: 125–127). I have supposed that there are only 1,000 people who might fly, to avoid complications I'll soon return to. Notice that Claire wouldn't have been the trigger if only 998 others had taken the flights, making her the 999th; which is to say, she would not have been the trigger if exactly one other person had chosen not to fly. Because we are only concerned with the crossing of the threshold and not 'getting

<sup>6</sup>Notice that the agent's running the expected utility calculation gives her a rational reason to choose one action over another, namely the action with the highest expected utility. But that is not yet a moral reason unless we think the correct moral theory tells agents to maximize expected utility in the satisfaction of her own preferences or desires. We can run a moral version of expected utility by replacing agents' preferences or desires with objective value.

closer to it', there's no moral difference between 0 people flying and 999 people flying. There's only a difference in harms if 1000 people fly. But Claire is only able to cross the threshold because 999 others chose to fly. The triggering of the micro-threshold and the subsequent death of ten people is counterfactually dependent upon all 1,000 individuals having chosen to fly. Each of those individuals is a difference-maker because without any of them having chosen to fly, the threshold wouldn't have been crossed.

Furthermore, when the threshold is crossed, it's the result of a joint action<sup>7</sup>—at the limit 1,000 different individuals choosing 1,000 different actions for 1,000 different reasons (flights from different points of origin in either country to different destinations in either country for different purposes).<sup>8</sup> Whether or not there can be responsibility for joint actions of this kind is controversial, but if the causation is genuinely synchronic in the way I explain below, then the fact that the joint action makes a difference will be sufficient to establish that the individual's action makes a difference, as an indistinguishable part. So when exactly 1,000 people fly each makes a difference, rather than only the 1,000th. To establish no-difference we'd have to establish that either less than 1,000 people or more than 1,000 people flew, which takes us to overdetermination cases.

What I've just said is true in non-overdetermined cases. But what about overdetermined cases, which will surely be prevalent in light of the various micro-thresholds I have said are involved in climate change? At first glance, these kinds of cases seem to undermine the claim of counterfactual dependence, which is one way of getting difference-making. If 1,000 individuals were flying anyway, and that's the only relevant threshold, it seems not to matter at all if Claire flies too. But worse still, it seems not to matter at all if anyone flies, because it's not true for any of the 1,001 individuals that had one of them chosen not to fly, the threshold wouldn't have been crossed. It would have been.

Martin Bunzl (1979) has argued that overdetermination cases do not exist: the causation is either sequential, in which case we're involved with pre-emption, or the causation is synchronic, in which case we're involved with joint causation. It's easier to return to the earlier issue of voting, involving the macro-threshold of electing a candidate to political office, to explain this point. If votes are cast sequentially (e.g. votes are gathered and counted in temporal sequence, or the polling booths close at different times across federal states) then the election of the relevant candidate will be pre-empted. That is to say, those earlier in the sequence actually elect the candidate, even though the candidate would have been elected by the later votes had the earlier votes not been sufficient (this is just like when two rocks are thrown at a window, and the first one smashes the glass while the latter flies through the newly-created hole. The second rock would have smashed the glass if the first rock hadn't, so the smashing of the glass is overdetermined, but the fact that the first rock did the actual smashing pre-empts the second rock doing it). In such cases, the only actions that make a difference are those that are pre-empting causes.

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I don't mean this in the technical sense given in e.g. Pettit & Schweikard (2006: 23), but rather in the sense that actions can be extended (Jackson (1987); Dalton (1993); see also discussion in Lawford-Smith (2015a).

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<sup>□</sup>A brief note on responsibility for joint action. Causation and responsibility are not necessarily proportionate, so being blameworthy along with 999 others for the death of 10 people does not mean being 1/1000th responsible for 10 deaths (or 1/100th responsible for 1 death). Each individual might be fully responsible for all 10 deaths, given that her choosing not to fly would have been sufficient to those deaths being avoided. See also discussion in Read (2011).



The votes might, however, be cast synchronically: perhaps everyone has access to a personal computer and all votes are cast at exactly the same moment. In this case there's no distinguishing 'actual votes' from 'overdetermining votes'. All votes jointly elected the relevant candidate. In such cases, all actions together make a difference, in that they bring about some outcome together. On these two understandings of overdetermination, returning to the flights case, either all 1,001 flights jointly caused the ten deaths (joint causation), or 1,000 flights caused the 10 deaths and pre-empted the 1,001st flight from causing anything (pre-emptive causation). But on the latter, now factor in that there are many flights being taken each day and imagine that the threshold is always 1,000; then, even being the 1,001st relative to that one threshold doesn't mean your action doesn't make a difference, because it might become the first of 1,000 flight-takings jointly necessary to triggering the next threshold. So, we should set Kagan's first formulation of low probability of major difference aside, accept his second formulation in terms of expected difference-making (via counterfactual dependence and conditional only on cohort size and threshold location), and explore the idea that our actions have a high probability of being a cause relative to one micro-level threshold or another, and sometimes several at once.

### **3.4 High Probability of (Repeated) Minor Difference**

At this point we need to add epistemic opacity into the story, to get the best reflection of the climate change situation, and the clearest version of the probabilistic difference-making solution. In the simplified cases I've been discussing, we know what the relevant micro- and macro-thresholds are, we know the number of other contributors, and we know roughly-speaking what they might do, so we're able to figure out the expected utilities. But global climate change is the result of individuals, families, communities, companies, domestic corporations, international corporations, states, and international institutions, across different times and different geographical locations, performing actions that produce GHG emissions at different rates. All these gases feed into a central system which affects the climate. The relationship between cause and effect in this system is utterly opaque, as many commentators have noticed (see e.g. Gardiner 2006): if only we could track the emissions from e.g. the Hewitt Cattle Company in Australia between 1992 and 2002 through to the floods in Queensland in 2010-11! But alas, about all we can say is that our cumulative global GHG emissions cause a rise in temperature.<sup>9</sup>

But what kind of causation is that? This is where epistemic opacity becomes crucial. Our current technologies for measuring GHG emissions do not allow us the distinction between pre-emption and joint-causation in the triggering of the macro-thresholds, and they can't allow us that distinction in the triggering of the micro-thresholds because we do not know even roughly where those are. So all any individual knows is that each of her actions intersects in some way with the actions of all other individuals across the globe, in some cases not causing anything at all because of a blackmail-type situation (someone else doesn't because she does, someone else does because she doesn't); in some cases combining with others as a joint cause of the triggering of a particular micro-threshold; in some cases not causing anything at all because pre-empted by the actions of others; in some cases combining with others as the joint cause of the triggering of a massive macro-level threshold; in some (future) cases not causing the triggering of macro-level thresholds because pre-empted by the billions of actions of billions of others. But notice that when it comes to the micro-thresholds,

<sup>9</sup>Of course, we can list the specific events that the higher concentration of GHGs causes; the point is only that demonstrating precise causal links between particular emissions  $x$  and particular harms  $y$  is impossible.

as mentioned at the end of 3.3 there are very many such thresholds, so that any given action which might be causally inefficacious due to having been pre-empted relative to one threshold may yet be one of the actual causes in a sequential causation case relative to a different threshold (or one of the joint causes in a synchronic causation case). The role of any one action in affecting multiple micro-level thresholds radically increases the chances of any one individual's GHG-emitting actions making a causal difference to the harm experienced as a result of climate change.

In light of this extreme epistemic opacity, all we can do when it comes to the differences a single GHG-emitting action performed by a single individual on a single occasion might make is to run the expectations based on the best-estimated probabilities. This is close to Richard Tuck's (2009) solution to the voter's paradox, which involves the ratio of votes needed to elect the candidate to actual votes cast (e.g. if fifty votes were needed to elect the candidate, and if one hundred votes were cast in favour of the candidate, then the ratio is 1:2, which means in some sense that each person has a 1:2 chance of having been a deciding vote). This is a way of simplifying the world: actually if the votes were cast synchronically then every vote was a deciding vote, and if the votes were cast sequentially then the first fifty votes were deciding votes and the subsequent votes were pre-empted. In the voting case very likely we can look at the world and check whether the vote was sequential or synchronic, and we can probably even find out what the sequence was and so who the sequential deciding votes were cast by. But with GHG-emitting actions we can't. We have no idea whether our action's role in the crossing of certain micro- and macro- thresholds will be (or was) sequential or synchronic, and we have no way of finding out what the sequence was and so who the threshold-crossing actions were performed by. Moreover, as previously described, there are many thresholds that matter, not just one threshold as there is in the case of voting to elect a candidate to political office.

Individuals have duties not to cause certain kinds of harms. But sometimes we don't know which actions will cause harm. When we're working with as much uncertainty as is involved in climate change, but we know what we know about the relevant micro- and macro-level thresholds, the duty can only be put probabilistically: individuals have duties not to perform the actions that can be reasonably expected to cause certain kinds of harms.

The solution above gets us difference-making, and the point of being able to say that our actions make a difference was to say that individuals, in the face of climate change, have obligations to choose lower GHG-emitting actions (perhaps even to offset all the way to GHG-neutrality). But there's a risk that the solution over-generates: now *all* GHG-emitting actions are candidates for individuals being obliged not to perform them, so long as an agent also has the option of either performing a GHG-neutral action, or offsetting. There are a few ways to avoid the solution over-generating, which I won't do more than sketch here. The first is to class the obligations as positive rather than negative, which allows individuals discretion over their content; the second is to say they are *prima facie* wrong but not necessarily all-things-considered wrong, which gives us the latitude to say they're wrong when chosen for bad reasons and right when chosen for good reasons; the third is to class them as negative obligations but to say we are in such radically non-ideal circumstances that we are forced to choose which negative obligations to violate, in which case we may yet be excused for violating them. More plausible than all of these, I think, would be to say that only certain kinds of GHG-emitting actions are even *prima facie* wrong, and give a story about which are and which are not. Many commentators have already suggested a distinction between subsistence emissions and luxury emissions<sup>10</sup> (although there is obviously a large contestable

<sup>10</sup>The case for distinguishing luxury from subsistence emissions is, I think, a particularly strong one. It allows for the idea that there are some tradeoffs it just isn't permissible to make, e.g. to prioritize my luxuries

area between the two), and between the emissions of individuals in the world's least developed countries and the emissions of individuals in the world's most developed countries. We might also be interested in distinguishing between emissions associated with morally valuable projects (on a broad understanding of what is morally valuable) and emissions not so associated, or emissions up until a safety point (e.g. for each individual, that amount of emissions per day that it would be possible for everyone to emit, holding the current population size fixed, without crossing the best approximations of the relevant macro-level thresholds) and emissions that go over that point.

Defeating the 'no difference' challenge only gets GHG-emitting actions on the table as candidates for actions which individuals are obliged not to perform. How many such actions make it through to being those which individuals have an all-things-considered obligation not to perform depends entirely on the things that are allowed to enter into the moral calculus as candidates for tradeoffs. It is my strong sense that obligations not to perform certain GHG-emitting actions will often be all-things-considered, because of the magnitude of the harms involved, especially in the crossing of the macro-level thresholds.

### **3.5 Public Policy**

Climate change is an aggregation problem: actions that do not seem to matter at all in isolation 'add up' to major harms. Furthermore, any changes an individual could make to isolated performances of her own GHG-emitting actions may produce only marginal gains, compared to which she could potentially do better by investing resources in a different moral project. But notice that this way of conceptualizing the problem, as a question of individuals' choices at multiple moral choice points throughout an ordinary day (most immediately: how to travel, what to wear, what to eat and drink, what to buy), is not true to the actual phenomenology of moral decision-making (nor to what any moral theorist, consequentialist or non-consequentialist, actually endorses). Rather we use heuristics: we form general habits, preferences, dispositions, practices, and these are more or less context-sensitive. We do this to avoid cognitive overload, to avoid becoming crippled by various moral and empirical calculations and tradeoffs when we need to make quick decisions.

An ordinary individual, then, knowing that she most likely makes some difference at each of these prospective moral choice points, will develop a set of general habits which render her everyday decisions straightforward. For example, she might develop the habit of offsetting her emissions whenever she books a flight; might come to prefer rail travel to car hire for domestic trips; might consume dairy products only if they are organic; etc. This creates an immediate case for public policy change, based on the observation that it's significantly easier to be a good person in a good society (a person is more likely to become vegan in a society that offers her decent options in cafés and restaurants, more likely to carry a reusable shopping bag in a society that has eliminated free plastic bags at supermarkets, more likely to offset her flight emissions when they are built into the price of the airline ticket). The role of public policy can be to create a scaffolding to make it easier for people to form and maintain GHG emissions-reducing habits and dispositions, reducing the number of moral choice-points in a day or making them significantly easier to resolve, freeing up cognitive resources for other plans and projects (see e.g. Goodin 2009).

This does not mean removing choice entirely and thereby obstructing individuals' exercise of autonomy. Residents of developed, affluent countries currently have an immensely broad choice over their lifestyle and consumption choices, from the kinds of cars they drive

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over another's basic rights, and it keeps the moral pressure off the comparatively poor, which is desirable for a combination of reasons including the separate case for not exacerbating the already extreme global wealth gap.

through the kinds of household appliances they use, to the kinds of food they buy, clothes they wear, trips they take, policy they support. For the most part, this chapter has been concerned only with whether those choices make a difference to the harms that will result from climate change, which is generally considered a pre-condition for their having an obligation not to perform them. I did not take the further step of insisting that individuals have an obligation not to perform those actions, for the reasons given at the end of 3.4. But notice that when we shift to talking about habits or dispositions, the chance of making a difference increases dramatically—we're then considering differences across a month, a year, a lifetime. There is a comparatively greater case, then, to be made for the obligation to form and maintain such habits or dispositions.

Public policy can scaffold that obligation by ruling some choices out entirely, for example getting rid of factory farms entirely and thereby eliminating the possibility of consumers buying anything but free-range meat<sup>11</sup>; by restricting some choice sets, for example simply taking all household appliances rated below a certain level of energy efficiency off the market, thereby leaving a choice only between different brands of energy efficient appliances; and by changing economic incentives, either by reflecting the 'real cost' of a product in its price (including the real price of carbon offsetting within domestic and international flights, rather than leaving it to the consumer's conscience to find a reputable offsetting website and make the offsetting transaction independently), or by artificially skewing the prices (e.g. levying a tax on private vehicle usage and using those taxes to subsidize public transportation ticket prices, or to extend public transport infrastructure; levying a tax on the use of carbon-emitting energy sources such as coal, gas, wood and oil, and using those taxes to subsidize the use of clean-energy sources, such as solar and wind).

The alternative to the 'social scaffolding' route is to attribute individuals obligations in an indirect way, namely via their states. Even if we were inclined to concede that individuals make such a small difference that they'd always be permitted to choose to do something other than reduce their personal GHG-emissions (a point which I think we should not concede), we must agree that states' actions make a difference big enough to support *their* reducing their GHG-emissions, and thus there is a case for states' obligations, which will have implications for the obligations of their individual members. How exactly the distribution from states' to members' obligations works is complicated (see discussion in Lawford-Smith 2012; Collins & Lawford-Smith *forthcoming*) but at the very least individuals will have obligations to support the state in doing what it ought to do, which will mean voting for political candidates with the right policies on climate change, supporting appropriate climate policy as it is put forward, and obeying new environmental laws.

The problem with this alternative is that it conceives of political change as top-down, as though policy changes are recommended to policy-makers and subsequently introduced, at which point individual members of states need only comply with them. But we've all seen top-down changes introduced and then repealed by an incoming government, which suggests to me at least that real political change—by which I mean more or less stable political change—is bottom-up.<sup>12</sup> I think we need individuals to be committed to a reduction in GHG

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<sup>11</sup>This is assuming the clear case in which policy-makers act without an explicit public mandate. The line between the state's scaffolding of individual action and individuals acting via the machinery of the state is much blurrier when policy-makers act on an explicit public mandate, e.g. because they were elected at least partly because of their commitment to perform those actions, or because while in power there was a public campaign for them to act in certain ways.

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<sup>12</sup>Although I'm currently persuaded by the dominance of bottom-up political change, I accept that there's also much to be said on the top-down side. Perhaps it's ultimately a combination of the two, or it's context-

emissions, so that they will support the relevant policy if and when it comes along, or push for the relevant policy to come along. One way for them to become so committed is for them to recognize their individual obligations, whose fulfilment will require changes in their own behaviour which will simultaneously work as a signal of their values and commitments to other individuals with whom they come into contact.<sup>13</sup> I think if we stop talking about what states ought to do about climate change, and start focusing on what individuals ought to do, we might find that states end up being able to do what they ought to do as a consequence. The claim an individual's actions—and even a state's actions!—make no difference is dangerously false. Dismantling it makes space for individuals being obliged to take unilateral action (and multilateral action, in 'coalitions of the willing'), prior to coordination by the state or some other authority, and in spite of other individuals' non-compliance. Likewise it makes space for states being obliged to take unilateral (and multilateral) action, prior to coordination by international treaty, and in spite of other states' failure to take action. If we start acting on these obligations, perhaps climate change won't remain the international political failure it is more and more being cast as.

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sensitive which is dominant, e.g. top-down in states where citizens are politically passive and have short-term political memories, and bottom-up in states where citizens are politically active and protest and / or attempt to overturn any policy passed without an explicit mandate.

<sup>13</sup>Although cf. the point made by Andrew Light—again in his chapter in this volume—that a recent survey of American attitudes revealed that many people who believed climate change to be a serious problem had modified their own behaviour in some way, but only a tiny proportion of those people had followed those behavioural changes up with civic action. See also <http://www.climatechangecommunication.org/report/climate-change-american-mind-series-spring-2013> (accessed 10 April 2014).

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