

The Ethical Underpinnings of Climate Economics

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9 Moral asymmetries in economic evaluations of climate change

The challenge of assessing diverse effects¹

Blake B. Francis

Introduction

Combating climate change will require mitigation policies that abate greenhouse gas emissions as well as adaptation policies that buffer against the impacts. One of the problems that decision makers face concerns the complexity involved in assessing policy options – comparing, on the one hand, potential gains in agricultural productivity, biodiversity, and sea level stability from mitigation policy against the risk of higher energy/transportation prices, lower economic growth rates, lost employment opportunities and reduced competition in certain markets. Economic methods present a solution: they’re designed to “measure diverse benefits and harms ... to arrive at overall judgments about value” (IPCC 2014b: 24).² For instance, cost–benefit analysis (CBA) measures total costs of a policy against benefits from reduced climatic changes on a monetary scale and sums them. A policy is justified when the result is positive and the benefits outweigh the costs.

Despite presenting an elegant way to resolve the challenge of diverse effects, economic methods invite serious criticisms. Economics “cannot account for all ethical principles” nor can it “take account of justice and rights” (IPCC 2014b: 24).³ Indeed, philosopher Simon Caney argues that aggregation should be suspended in assessments that compare potential human rights violations to economic productivity and general well-being (Caney 2010). This chapter argues that we would be too quick to restrict or rule out the application of aggregative methods in assessing climate change policy, and offers an alternative diagnosis of aggregative economic methods based on the differences or “asymmetries” in the moral significance of “harms” and “benefits” appropriately defined (§2). While traditional economic methods fail to accommodate the moral difference between harms and benefits, it is possible to design aggregation methods to be more morally sensitive by assigning greater weight to certain harms or by creating aggregation functions that represent the moral asymmetries between diverse effects (§3 and §4).

Harm, benefit, and asymmetry

a Suffering harm

A fully adequate account of harm has yet to be developed. The most influential has been that of Joel Feinberg. In *Harm To Others*, Feinberg's aim is to give an account of wrongful harm – the sense of harm required to justify coercive punishment under criminal law. Feinberg's concept of wrongful harm can be roughly described as follows: Person A, wrongfully harms Person B, if A causes B to *suffer harm* in a way that violates B's rights (Feinberg 1984). The concept of wrongful harm contains a more broad, basic or fundamental notion of "suffering harm," which Feinberg understands in terms of having one's interests set back. A fundamental difference between wrongful harm and suffering harm is that freak acts of nature can cause a person to suffer harm, but *only* other people can inflict wrongful harms. What separates suffering harm from wrongful harm is that suffering harm doesn't have an "essential moral charge" in the way that wrongful harm does. Suffering harm is more like "killing." Killing isn't always wrong, unlike murder, which has a built in moral charge (Shiffrin 1999). When people suffer harm or are at risk of suffering harm, questions are raised about the moral status of the actions and events that brought about the harm and/or about what should be done to prevent, reduce, or alleviate it.

A central debate over the nature of harm focuses on the question of what it is to suffer harm.⁴ Suffering harm is very important given that a goal of most governments is to reduce it. But what counts as suffering harm? If suffering harm could include *any* loss, including mere offense, disgust, annoyance, and minor hurts, then the government mandate to reduce harm would oppressively (and absurdly) extend to most corners of human life as public safety organizations turn their attention to correcting bad taste and rude behavior as well as reducing the number of toes stubbed per year. Moreover, the importance of the goal of reducing harm would come under suspicion, for reducing dissatisfaction and hurt feelings is simply lower on the priority list than reducing highway deaths and issuing chemical safety regulations.⁵ So, an account of suffering harm needs to do (at least) two things:

- First, it needs to distinguish between suffering harm and mere loss.
- Second, it needs to do so in a way that captures harm's priority.

Rather than take space to attempt to defend a complete account of harm, I'll appeal instead to the considerable amount of overlap among different accounts of suffering harm. Shiffrin (2012: 5) suggests a provisional list of what accounts of harm should include: "physical injuries, many physical disabilities, many mental disabilities, some material inabilities, incidents of pain, the failure or ruin of certain sorts of important projects and relationships, some losses, and [some instances of] death."⁶ Appealing to this list, however, won't provide a full picture of which effects of climate change involve harm and which don't. And

for that matter, it won't allow for the settling of hard questions such as whether and how to characterize certain instances of theft, blocked opportunities, and death as harms.⁷

b Benefit

In a generic sense of the term, "benefit" refers simply to any advance in a person's interests broadly conceived. It refers to both windfalls and rescues, to both sustenance for the starving and pleasure for the gourmand, to life-saving medical treatment and to cosmetic plastic surgery. There are several different senses of benefit that ought to be distinguished. (See Feinberg 1984: Chapter 4). Feinberg argues that people are prone to equivocate between two importantly different senses of "benefit." The first sense includes what we'll call "gratuitous benefit." As the name suggests, gratuitous benefits are those bestowed to beneficiaries who have no entitlement to them by benefactors who are under no expectation of bestowing them. Receiving a windfall from a stranger out of the goodness of their heart or being given a gift out of the blue or doing someone else a favor are examples of gratuitous benefits. People can fail to give you such a benefit without having an effect on your well-being, even if your well-being would have been enhanced by the bestowal compared to a relevant baseline. Failing to give you a gift out of the blue leaves you just exactly where you are well-being-wise.

The second sense of benefit involves the prevention of harm. Since we haven't considered a complete account of harm, we don't know precisely what counts as a harm prevention. However, this sense of benefit can be adequately described using the list of core harms provisionally offered by Shiffirin (2012). Very provisionally, a harm prevention is the reduction, prevention, or alleviation of suffering harm: "physical injuries, many physical disabilities, many mental disabilities, some material inabilities, incidents of pain, the failure or ruin of certain sorts of important projects and relationships, some losses, and [some instances of] death" (Shiffirin 2012: 5). A life-saving rescue involves benefit in the harm-prevention sense, and so does giving money or food to the starving or otherwise needy. Reducing a person's harm by providing them with medical care or calling an ambulance count as "harm preventions" in the sense intended here. Warning someone that they are or will soon be in harm's way is another example. Benefit in the harm-prevention sense is referred to as "harm prevention" throughout this chapter.

c Asymmetry

The problem of equivocation between the two senses of "benefit" presents an opportunity to identify an asymmetry between preventing harm and bestowing benefits. Feinberg identifies several instances of equivocation in legal and moral arguments about Bad Samaritan Laws, which legally require the performance of easy rescues of people who are in peril. Consider the "Enforced Benevolence Argument," which holds that Bad Samaritan Laws have the absurd and illiberal

implication of making charity mandatory. The argument holds that because the failure to prevent harm is merely a failure to (gratuitously) benefit, the victim has no more claim to an easy rescue than a stranger has to a charitable gift. James Barr Ames argued in 1908:

however revolting the conduct of man who declined to interfere, he was in no way responsible for the perilous situation; he did not increase the jeopardy; *he simply failed to confer a benefit upon a stranger*. As the law stands today, there would be no legal liability, either civilly or criminally in ... these cases. *The law does not compel active benevolence* between man and man. It is left to one's conscience whether he shall be a good Samaritan or not.

(Cited in Feinberg 1984: 135; emphasis is Feinberg's)

Feinberg points out that Ames would equate rescuing another person with bestowing a windfall profit or walking up to a stranger on the street and giving him a \$100 bill.

Feinberg argues that the Enforced Benevolence Argument equivocates between benefit in the harm prevention sense and benefit in the gratuitous sense, obscuring an important moral difference between bestowing benefits and preventing harm. Rescuing a child from drowning in a puddle is not *a mere benefit*, because encountering a child facing utter disaster presents very strong reasons for coming to their aid. Preventing death and injury is more morally important than giving cash to a decently well-off stranger. The moral significance of preventing harm is that one has very strong reason to do so when it can be done easily or without harm to the rescuer.

There are different ways to understand what we are calling the moral asymmetry between harm and benefit. For Feinberg, the moral asymmetry tracks the duties people have. The clarity and stringency of the moral duty to rescue declines along with the severity of the harm:

As we ... weaken the severity or probability of the threatened harm, the model of gratuity begins to take on plausibility. One stranger has a clear moral duty to make an easy rescue of another threatened with death, or to notify police or an ambulance when he perceives another under attack ... , but he has a less stringent duty, or no duty at all, to walk to the corner drugstore to buy a Band-Aid for a stranger who has just cut his finger and finds the interruption of his activities inconvenient.

(Feinberg 1984: 141)

As I interpret him, Feinberg would consider the provision of a Band-Aid for a stranger who has inconveniently nicked his finger a gratuitous benefit, which the passerby has no *duty* to provide. Providing the benefit would be considerate and kind but is beyond moral requirement. It will be difficult or impossible to pinpoint precisely when the severity of an injury gives rise to a duty to easy

rescue, or of what strength. Despite the availability of hard cases, the difference between a nick and a gash, between inconvenience and jeopardy, is clear enough to see the asymmetry.

Shiffrin's view in contrast understands the moral asymmetry between harm and benefit in terms of the strength of the moral pull that harm and harm prevention have on us compared to the bestowal or loss of what she calls "pure benefits" – any benefit that doesn't involve the prevention of harm of which gratuitous benefits are a class. She describes the phenomena as "the strength of our asymmetrical reactions" (Shiffrin 1999: 122). Examples of pure benefits will include benefits that one has a duty to provide. For example, the special relationship between parents and child gives the parents certain duties, including, perhaps, duties to give birthday gifts and duties to aid the child in securing educational opportunities even beyond those required for a decent life. We generally have strong reasons to avoid harming or to prevent harm. However, it is not always the case that benefits – in Shiffrin's sense – present us with weaker reasons relative to harms. At some point, the moral significance of harm can be overridden by important and life-enhancing pure benefits. Some pure benefits are of incredible importance either because they matter so much to people's way or quality of life, or because of the entitlements people have to the benefits stemming from promises made or from special relationships.⁸

Whether we adopt Shiffrin's or Feinberg's account of the moral asymmetry, it is plausible that such asymmetry exists. Our moral reasons to prevent harm are generally – but not always—much stronger than our moral reasons to provide (pure or gratuitous) benefits.

d Harm benefit asymmetry in climate change

Now that we have established at least a provisional account of harm, benefit, and their moral asymmetry on the table, let us consider how this asymmetry arises in the context of climate change. In order to draw out the asymmetry, we begin with an over-simplified and hypothetical proposal for an aggressive tax on carbon emissions. The Aggressive Carbon Tax would increase the cost of fossil fuels in an effort to restrict fossil fuel use, utilizing market forces to help invigorate a market in renewable energies, and to ultimately reduce climate change.⁹ For the sake of demonstration and simplicity, we'll consider just a small slice of the larger puzzle. Compare the lost profits to an oil company from the carbon tax today to the reduction of climate change impacts on a coastal city in Bangladesh in the future.

Many of the impacts of climate change on coastal Bangladesh involve harms and many of the impacts of the Aggressive Carbon Tax on the oil company involve failures to gratuitously benefit. However, it is important to keep in mind that there are harms and gratuitous benefits on both sides of the equation. For example, lower- and middle-class consumers may suffer harm, if fuel prices increase.

To begin, the coastal impacts of climate change expected in Bangladesh from sea level rise and hurricanes involve very serious harms to many people:

Most countries in South, Southeast, and East Asia are particularly vulnerable to sea level rise due to rapid economic growth and coastward migration of people into urban coastal areas together with high rates of anthropogenic subsidence [the lowering of land surface elevation] in deltas where many of the densely populated areas are located.

(IPCC 2014a: 382)

These impacts could be particularly severe due to both socio-economic drivers and Bangladesh's inability to afford the costs of adaptation. Bangladesh faces a US\$25 billion adaptation deficit when it comes specifically to hurricanes (IPCC 2014a).

Coastal impacts from climate change could have a variety of effects on food production, basic power, water and transportation infrastructure, and health. In addition, the growing level of exposure could lead to the displacement of human settlements and forced migration. Food production is threatened because of sea-water intrusion into agricultural lands and because of the effects of climate change on fisheries. Mortality, morbidity, and bodily injuries are expected as a result of hurricanes as well as flooding events. Sea level rise is predicted to lead to an increase in disease vectors (IPCC 2014a: 383). The Bangladeshis face a litany of bad health effects, bodily injury and death from climate change impacts. In short, coastal Bangladeshis stand to lose their lives, health, homes, businesses, agricultural lands, and places of cultural significance to flooding and storm surges. Most of these impacts involve bad conditions on the provisional list of harms that any theory of harm would identify as harms – at least in some respect.

The effects of the Aggressive Carbon Tax on the oil company could result in lost profits, pay cuts, and lay-offs as well as price increases for consumers. In the extreme case, it could put the company out of business. Losses to stakeholders in the oil company involve a mix of harms and failures to benefit, but those failures to benefit are not particularly morally serious.

First, are stakeholders of the oil company put in a condition of harm by the imposition of the Aggressive Carbon Tax? The effects of the carbon tax will certainly negatively impact some people. Employees of the oil company could face pay cuts or lay-offs. Depending on employment opportunities and the social safety nets of the country they live in, they could be pushed into destitution. Increased fuel prices have a range of effects on the lives of consumers. Increasing the cost of fuel makes it more expensive to cook food, to heat homes, and to get to work. This could have a dire impact on the lives of the poor and the middle classes who will have to reevaluate their household budgets and will possibly face hard tradeoffs between buying food and heating their homes. Increased fuel costs will also affect consumers' abilities to participate in activities that enhance their lives, because recreation and travel may become more expensive and have even greater opportunity costs.¹⁰

At the same time, however, the Aggressive Carbon Tax could open up markets in renewable energy and energy efficiency resulting in lowered energy

prices and/or job creation in alternative energy markets. The extent of the harms and benefits of the policy is uncertain economically and politically, and in terms of innovation, learning, and technological change. Another co-benefit of the policy involves the reduction of pollution in urban areas, reducing harms and saving costs of pollution-related health issues (see Thompson *et al.* 2014: 921). The annual cost of air pollution from the energy production sector in the US in 2011 was estimated at US\$131 billion (Jaramillo and Muller 2016).

As is often the case, the loss of profit to the oil company from taxes involves a mixed bag of harms and failures to benefit. Many of the effects of the carbon tax involve failures to gratuitously or purely benefit, losses that do not involve suffering harm. Some losses in income affect one's ability to purchase luxury items without affecting basic needs. Accordingly, some losses suffered by members of the oil company's management, CEOs, employees, and consumers from pay cuts, lay-offs, and price hikes involve failures to benefit. Because of the moral asymmetry between harms and benefits, those losses that involve *failures to benefit* do not matter morally in the same way that the *harms* from the Aggressive Carbon Tax and the *harms* from climate change do.

Do the benefits outweigh the harms? This depends upon consideration of any special reasons for protecting the benefits at stake. Some might argue that some or *all* losses to the oil company from the Aggressive Carbon Tax are morally important because they violate the entitlements of the stakeholders. There are several ways to argue for this conclusion. Some have argued that certain companies in developing countries have a right to carry on with their business-as-usual emissions. These so-called "grandfathering arguments" appeal, at least in spirit, to John Locke and Robert Nozick. Such a perspective contends that established companies have a "right to prolong current emissions levels into the future and that such 'squatters' rights' can be derived from common law doctrine of 'adverse possession'" (Neumayer quoted in Bovens 2011: 125).¹¹ However, both Locke and Nozick argued that just property appropriation is limited to circumstances in which the situation of others is not worsened (Nozick 1974). So just because a company may have been operating under an assumption of infinite atmospheric capacity to store emissions doesn't provide them a special entitlement to continue business as usual once discovering that continued emissions worsen the situation of others. The relevant question, then, is at what point do the company's emissions worsen the situation of others – and compared to what baseline?

Also, it is worth noting that there are several historical examples in which government regulation, technological change, or market fluctuation caused some companies to flourish and other companies to fail. Consider the change from wood fuels to coal in the early part of the industrial revolution; the environmental scarcities that drove the change from whale oil to kerosene for lighting lamps in the nineteenth century; and the failure of companies that mined and sold asbestos before it was banned by the US government in 1989.¹² It seems hyperbolic to say that these company's stakeholders had an entitlement to hold the social, environmental, and technological context static so that they

could continue to operate business as usual. These changes are part of the risk that companies take on when doing business in conditions of environmental scarcity, governments committed to public safety, and technological innovation.

A second argument to the conclusion that the carbon tax violates the entitlements of the oil company's stakeholders is inspired by classical liberal arguments offered by Milton Friedman (1962) and F. A. Hayek (1960), among others. It could be argued that the carbon tax is illegitimate because it is an untoward restriction on the economic liberties of the oil company's stakeholders. But Hayek allows for government regulation that impinges economic liberties in emergency circumstances (Hayek 1960: 130). So the question becomes: Is climate change a *great enough* emergency to justify market regulation? It is in principle possible that no entitlements are violated if the carbon tax is justified as an emergency prevention measure.

If the oil company is not entitled to the lost profits or the natural resources that keep them in business, then many of the losses to the company's stakeholders from the carbon tax policy involve a failure to receive a benefit, which shouldn't merit consideration in the same way that harms do. The impacts to the Bangladeshis and possibly to those made destitute by the Aggressive Carbon Tax count as harms. This being the case, there is an asymmetry in the moral significance of the effects of the Aggressive Carbon Tax: we have stronger reasons to prevent the harms than to prevent the failure to receive mere benefits.

Aggregating harms and benefits?

Traditional cost–benefit analysis doesn't differentiate between preventing harm or harming, and gratuitously benefiting or failing to gratuitously benefit. The trouble with economic methods is that the costs and benefits are quite generic, in the sense that costs are identified with any setback and benefits are identified with *any* advance in well-being. This generic sense of cost and benefit is presented in the climate change economics literature as a good way of measuring and comparing diverse effects. This generic treatment assumes that costs and benefits are symmetrical: a benefit is just a cost with a positive valence and vice versa. Costs and benefits can be understood simply as downward and upward movements along a scale of well-being. Equal movements along the scale are equivalent to each other whether or not one increase involves a large cash gift and the other involves rescuing a drowning child. The moral asymmetry between gratuitous benefit and the prevention harm suggests that these equal movements along a scale should be treated differently, because the reasons in favor of rescuing the child are stronger than the reasons to give the gift.

The problem with this result *isn't* that there is something morally suspect about the claim that monetary gains can cancel out malnutrition, morbidity, and death. See below for an argument that it is at least possible that trade-offs can be made between economic productivity and human health (e.g., when the economic loss is certain and the gains in human health are chancy, or when the

economic loss is severe and couldn't be prevented in any other way). The problem with CBA *isn't* that it aggregates. In its generic understanding of costs and benefits, CBA occludes the moral judgment that harms and their prevention matter more than gratuitous benefit.

However, it is possible to aggregate in a way that is more morally sensitive. One way of doing so simply adjusts the weight given to certain harms. Before defending this possibility against objections, we'll sketch the general strategy of "asymmetrical aggregation."

Just as there are different ways of spelling out the details of what makes harm morally significant, several different methods of aggregation could be recommended that take account of harm. Among other ways, moral differences between harm and benefit could be factored into the analysis: (i) by amending the shape of the aggregation function, (ii) by applying moral weights to harm and the prevention of harm, (ii) by measuring and aggregating different effects on disparate scales. We'll consider each in turn:

- i Aggregation functions take different shapes. Continuous functions, like the function that describes diminishing marginal utility, are represented by curves without any breaks. It is also possible to create functions that are continuous, but "kinked." The kink results from the point beyond which the shape of the curve changes. For example, a recent suggestion made in the context of legal economics is to build thresholds into the aggregation function, which designate levels of social benefits important enough to override some amount of harm to others (Zamir and Medina 2010).¹³
- ii More weight could be given to people who experience more harm, similar to the way that prioritarrians assign greater weight to the well-being of the worst off (Parfit 1995). For example, harms and benefits could be plotted on a continuous concave function, which assigns more weight the more serious the harm or benefit.
- iii If harms and benefits are asymmetrical in a way that makes it difficult to measure them along the same scale, they may require measurement on disparate scales (Satz *et al.* 2013). A harm scale could measure differences in the extent or severity of harms regardless of their cause, assigning, for example, greater measure to harms from an earthquake than to harms from cut fingers. A benefit scale can be used to measure the magnitude of gratuitous and other pure benefits, assigning, for example, greater measure to important education benefits than to an extra piece of candy. The dimensions of harm and benefit are aggregated using different functions. This approach involves a level of disaggregation in the sense that it separates out component parts of the total outcome. It is important to emphasize that informative comparisons can be made across the disparate scales. People can rank the relative importance of marginal changes of different sizes along the scales. For example, a large marginal change on the benefit scale may rank higher than a tiny marginal change on the harm scale.

a An objection: getting the numbers right

An important objection to morally sensitive aggregation in defense of more traditional CBA should now be considered. Take the suggestion for assigning greater moral weight the more serious the harm (ii). Aiding the seriously injured should get more weight than a scratched finger, as Feinberg points out in comparing the strength of the claims on others. Barbara Fried considers a similar argument for a continuous aggregation function that applies greater weight the more serious the harm.¹⁴ She offers this objection:

If the argument is that serious harms are, well, a lot more serious, that obvious truth should be reflected in the subjective disutility that individuals assign to serious and trivial harms respectively. That is to say, a properly done cost/benefit calculus based on subjective preferences would normally assume steeply increasing marginal disutility as one moves up the scale of harms.

(Fried 2012: 63)¹⁵

Fried's point here is *not* that there aren't asymmetries between harms and benefits, but that those asymmetries would already be captured when measuring well-being. In other words, if you just get the numbers right in the first place, the difference in moral significance is captured and plain old addition will do. Indeed, many of the intuitive problems that come up in discussing the harm/benefit asymmetry can be assuaged by getting the numbers right. We can explain to a large extent why we care less about the billionaire's loss or gain of \$1,000 than we care about broken arms just by getting the numbers right. The broken arm matters more, because it has a greater effect on the well-being of the injured party than the loss or gain of \$1,000 to the billionaire. For that matter, we can learn a lot about the effects of different climate policies if we get the numbers right for the oil company's lost profit and the losses from a future hurricane in Bangladesh. This is especially so if getting the numbers right involves correcting discrepancies in non-market damage estimates of disasters that affect poor regions.

Fried is correct that getting the numbers right can take us a long way. However, there are crucial problems with using subjective preferences as a metric for doing so, as is the practice among many economists. An obvious problem is that people sometimes prefer bizarre, monstrous, and trivial things that would be better left out of the calculus applied to public policies.¹⁶ A less obvious problem is that people's preferences don't necessarily track the claims they have on others for assistance. Thomas Scanlon (1975: 659) gives the example of a religious devotee who, in the face of starvation, would give up food in order to build a monument to his god. Scanlon argues that the devotee's urgent need for food generates a stronger claim on those who have a duty to assist him regardless of the strength of his preferences for monument building.

Further, such an all-encompassing understanding of economic welfare as preference satisfaction has absurd implications for identifying and correcting externalities. Externalities are goods and bads imposed on others that are not

captured by market prices paid by consumers. For example, if pollution from a waterworks project in an upstream community threatens the community downstream, a negative externality is created. Similarly, climate change is considered to be a negative externality produced by markets in fossil fuels: "Those who produce greenhouse gas emissions are ... imposing costs on the world and on future generations, but they do not face directly, neither via markets nor in other ways, the full consequences of the costs of their actions" (Stern 2007: 27). The externalities that economists (rightly) care about involve negative externalities like pollution and other effects that impose *important* costs on people.

However, if welfare is just whatever people value, then there are many more negative externalities to consider, many of which would lead to absurd social policy. For example, if someone is offended by a Rastafarian's uncombed hair, there's an externality to correct (Herzog 2000). If people in same sex relationships offend members of the Westboro Baptist Church, there's another externality to correct. If climate change deniers would prefer not hearing about carbon dioxide emissions, there's another externality to correct. In fact, depending on the number offended and the degree of their offense, quite a bit of economic welfare understood in terms of people's preferences is at stake in these negative externalities. Should these inefficiencies be corrected? Should a Rastafarian or a gay couple be required to pay compensation to the offended to correct the externality? Of course not.

Importantly, economists do not identify externalities when people have preferences about each other's preferences, and they do so often for implicit and perfectly sensible ethical reasons: "they identify externalities in ways closely tracing the traditional harm principle of liberal theory" (Herzog 2000: 912). Feinberg understands the harm principle to be a type of "liberty limiting principle," which identifies harms and acts of harm to be a valid reason to exercise the coercive power of the state by instituting criminal statutes, taxation, licensure, etc. In identifying externalities, economists implicitly or explicitly distinguish between "harms," "unjustifiable intrusions on others' interests," and hurts, "ways of bugging [others] that, however painful, don't give them any legitimate claim against us" (Herzog 2000: 913). Indeed, *The Stern Review* suggests that economists capture concerns about preventing harm by correcting externalities:

Protection from harm is ... expressed in many legal structures round the world in terms of legal responsibility for damage to the property or well-being of others. This is often applied whether or not the individual or firm was knowingly doing harm. A clear example is asbestos, whose use was not prohibited when it was placed in buildings with the worthy purpose of protecting against the spread of fire. Nevertheless insurance companies are still today paying large sums as compensation for its consequences... This version of the "polluter pays" principle that is derived from notions of rights ... also arises from an efficiency perspective within the standard economic framework.

(Stern 2007: 47, see also 27–31)

Such a principle arises from an economic framework designed to correct for externalities. If externalities are considered to involve harms imposed on others, then this requires differentiating between harm and mere dissatisfaction. Some method other than preference satisfaction will be needed. This is because well-being at least as it appears to be understood in the context of externalities is an *evaluative* notion; it can't be read directly off of what people prefer (Herzog 2000).¹⁷

A qualified defense of aggregation

a Human rights and lexical priority

The morally sensitive aggregation strategy is subject to a serious objection even if it can get the numbers right. The three strategies for including harm's moral significance in aggregation suggested above will most likely result in different answers than conventional cost–benefit analysis, but they still involve *aggregation*. Aggregation in any form is objectionable because it allows harms to some to be offset by benefits to others. Simon Caney makes a version of this objection against CBA in the context of climate change. He says:

In virtue of its aggregative nature, a cost–benefit approach is concerned only with the total amount of utility, and therefore the total wealth of current and future generations, and it is indifferent to the plight of the very severely disadvantaged if their disutility is outweighed by the utility of others.

(Caney 2010: 170)

For these and other reasons, Caney argues that a human rights approach to assessing climate change has several advantages over CBA and, most likely, other aggregative approaches. Caney argues that human-caused climate change violates the human rights to life, health, and subsistence, and that the aim of climate change policy is to stop violating peoples' human rights as much as possible. According to Caney's ecumenical understanding of human rights, a human right is a basic entitlement that each and every person possesses in virtue of their humanity and independently from social conventions and social practices (Caney 2010). Caney argues that, when it comes to a conflict between violating a person's human right and other values, such as economic efficiency or promoting well-being, human rights *generally* take lexical priority.¹⁸ Lexical priority means that human rights “trump” other values. Or more formally, A trumps B when *any* amount of A is more valuable than *any* amount of B (Satz *et al.* 2013; see also Raz 1986; Griffin 1986). Any number of human rights under threat is more valuable than any amount of, for example, economic efficiency or total well-being. The lexical priority of human rights requires doing everything we can to *not* violate human rights or “create threats” to human rights, and it requires that we promote other values only when doing so doesn't threaten human rights (Caney 2010: 176 n.38).¹⁹

Because of the lexical priority that Caney gives to human rights, balancing threats to human rights against economic productivity above the human rights threshold is not a matter of getting the numbers right. This is because no amount of mere economic productivity can outweigh the disvalue of even a single human rights violation.

In response to Caney, the following is a qualified defense of aggregation. First, the argument is that Caney's assignment of lexical priority to human rights is problematic. We will then discuss a qualification regarding when aggregation should be suspended or supplemented.

The problem with methods that are of aggregative character, on one reading of Caney's view, is that some harms – the ones that involve human rights violations – are incommensurable with other harms and benefits. Lexical priority is a weak form of incommensurability. If A is lexically prior to B, they can't be aggregated through addition, because no amount of B can offset any amount of A. One strategy for defending aggregation is to deny lexical priority. We'll start by denying the lexical priority of life and health over other goods.

To borrow an example from James Griffin (1977: 44), a person will probably not agree to have his arms and legs cut off in exchange for any number of delicious desserts. But this does not imply that there is a general priority rule about sacrificing body parts for gustatory pleasures (i.e., body parts trump desserts). It is unlikely that a person would make such a tradeoff. But this is because some goods, like desserts, become less and less valuable the more they're consumed in quick succession. Their value ranges across a series of infinitely diminishing amounts, which add up to a small finite number.²⁰ This, Griffin thinks, is a very loose sense of incommensurability: "Some values, because they diminish, sometimes to nothing, can never be added in a way that will make them equal to certain other values" (Griffin 1977: 45). This however, doesn't establish the computational break down implied by trumping. Indeed, Griffin suggests he'd give his pinky for a moderate number of incredibly fancy bottles of wine (Griffin 1977: 45). Similar things can be said about lives and other values. Free solo mountain climbers are willing to risk their lives for their sport, and some may even trade exhilaration for a shorter life.

But Griffin's examples have to do with the satisfaction of individuals' desires when it comes to trading off the risk of bodily harm for pleasure or excitement. Caney's claim about lexical priority concerns tradeoffs that governments make when setting policy. Examples from public policy suggest that the priority rule doesn't always hold – despite the fact that public policies very often express commitment to protect people's lives and health. Governments and medical doctors make tradeoffs between lives and money every time they decide to spend money on recreation or quality-of-life enhancements instead of saving lives. For example, a government may choose to allocate resources to expanding the trail system in a public park when it could have spent that money on improving highway safety (Harel and Porat 2011). Also, raising the speed limit is sometimes justified even though it will most likely result in more deaths. Governments routinely choose between safety and saving money for use on projects

that have nothing to do with safety, accepting that some will suffer harms. Griffin puts the point this way:

We seem willing to exchange length of life for beauty, convenience, excitement. *One* person is willing to accept an exchange of quantity for quality in his own life, and we expect governments to accept such an exchange in taking decisions that affect *many* people. We should not like the government to spend so much money on life-saving schemes (road improvements X-ray screening, certain medical research) that life-enhancing schemes (other medical research, education, art, housing) are abandoned.

(Griffin 1977: 54)

But in choosing to spend less money on saving lives than on life-enhancement through recreation or comfort or convenience, do governments and hospitals *create threats to human rights*? Caney would have to say they do:

Humans can violate the three human rights in two different ways. The first (and most obvious) route is for humans to emit high levels of greenhouse gases and to destroy carbon sinks, which will in turn produce high temperatures, increased precipitation, and severe weather events. The second route is for humans to design social and political institutions that leave people vulnerable to the physical impacts of climate change. Suppose that climate change were nonanthropogenic (and so route 1 was inapplicable), but politicians could implement an effective program of adaptation and design institutions that would safeguard the vital interests of people in life, health, and subsistence but chose not to do so. They could then be said to violate the human rights of others to life, health, and subsistence because they would be acting in such a way as to create threats to life, health, and subsistence.

(Caney 2010: 176 n.38)

It is true that legislators and hospital directors *could* implement policies that safeguarded all (or at least more of) the vital interests of people in life, health, and subsistence, if they spent more money on safety and lifesaving. This implies that when governments choose to fund recreation instead of the life-saving policy, they are threatening human rights in a way that is morally suspicious. But if this were the case, much of what twenty-first-century governments do would be suspect, because finite resources require making decisions about whether to spend money to prevent death and injury or to spend money to improve people's lives. Because a government could save more lives by instituting 30mph speed limits on the freeway, it seems that the government is threatening human rights when it opts instead for the convenience of 65mph. If this is the case, it is highly plausible that some threats to human rights are worth imposing for the sake of convenience, comfort, excitement, beauty, and quality of life. If that is the case, the lexical priority of human rights over other values is

put into question. Morally significant aggregation that differentiates between harm (or for that matter threats to human rights) and benefits (or effects less important than threats to human rights) could help policymakers to form judgments about when imposing harm is justified, when it is excusable, and when it is impermissible.

b A qualification: what do the numbers mean?

Although it has been argued here that it is possible to conduct aggregation over effects that are harm/benefit asymmetrical, there remains a serious practical limitation to aggregation: it obscures important information. Consider what we can learn about vulnerability to climate change from the estimates of the total damage from two storms: Super Storm Sandy, which swept the Caribbean and the east coast of North America in 2012, and Hurricane Nargis in Myanmar in 2008. The total damage estimate of Super Storm Sandy in the US was \$71 billion.²¹ The total damage estimate of Nargis was just over \$10 billion, making it the most destructive hurricane to hit the Indian Ocean to date.²² Based on these numbers – which should be compared very cautiously – Sandy resulted in greater net damages than Nargis by a large factor.²³

However, the damage assessment looks considerably different when you disaggregate and consider the numbers of lives lost. A total of 222 people died as a result of Super Storm Sandy (NOAA 2013), whereas 138,000 people died in Hurricane Nargis (CRED 2009; IPCC 2012). The amount of damage from property and infrastructure loss makes up a huge portion of the damages from Sandy – in part because property values are exponentially higher in the US than in Myanmar. Estimated damages from Nargis represent the loss of hundreds of thousands of lives.²⁴ The proposals here for asymmetrical aggregation would do a better job of treating the differences in the extent of the damages in the two cases by treating the loss of life and harmful forms of property damage asymmetrically. However, even when aggregation is perfectly possible and appropriate, supplementing the net figures with disaggregated information about what makes up the net figure is called for in order to make *what the numbers mean* explicit.

There are three reasons for including additional information alongside the results of aggregation functions. First, disaggregated information may be more relevant to the *goals* of a given policy. The aim of the policy may not be net savings in monetized damages, but saving lives, reducing low-income property damage, or improving overall human well-being. Second, disaggregated information is required for *transparency* about value assumptions.²⁵ This is especially important in contexts of disagreement. People disagree about the value of culturally significant places and buildings, the value of ecosystems, and the value of a human life. Fine-grained detail is helpful for healthy deliberation about these matters, especially when people may disagree with the value assumptions built into the aggregation function. Third, policymakers are in a position to make a moral judgment about how resources should be distributed, and this will require considering more than the net damages. The relative

importance of *other moral factors* like distribution, vulnerability, and fairness, need to be considered explicitly by the people making decisions.²⁶ When comparing the two hurricanes, for example, the moral issues of global inequality and protection of the vulnerable come into clear focus once the numbers are disaggregated. Disaggregation helps to make the stakes explicit in a way that net figures can obscure.

Conclusion

The aim in this chapter has been to demonstrate a different way of identifying the limitations of climate economics that does not rule out aggregation. The motivation for doing so is belief that there is plenty of conceptual space for a view in climate change ethics that is both friendly to aggregative economic methods and which takes seriously morally significant factors such as suffering harm. We have seen the modest point that there is moral asymmetry in the climate change context that could be aggregated in a way that is morally sensitive, and explored the practical limits to aggregation due to the informational constraints of aggregate figures. Even where measurement and aggregation is helpful, aggregation obscures important information about value assumptions and the moral significance of the effects in question.

Notes

- 1 Earlier versions of this chapter were presented at The Ethical Underpinnings of Climate Economics, University of Helsinki November 2014 and at the Conceptual Analyses in Environmental Philosophy session at the Pacific meeting of the American Philosophical Association April 2015. For helpful comments on various drafts of this chapter thanks to: Ariel Mendez, Ben Miller, Sara Mrsny, Carlos Nuñez, Duncan Purves, Mathew Rendall, Tamar Schapiro, and Debra Satz. Thanks also to John Broome, Josh Cohen, Chris Field, Peter Hawke, R. J. Leland, and Katy Meadows for helpful conversations about many of the ideas in this chapter.
- 2 Climate economists William Nordhaus and Nicolas Stern both emphasize the diversity of effects involved in climate change, which they measure in terms of the monetary value of the goods and services, where labor, savings, knowledge and natural resources generate goods and services. The Stern Review conceives of these goods and services broadly in terms of four dimensions: consumption, education, health, and the environment. (Stern 2007: 31). In *A Question of Balance*, Nordhaus emphasizes that climate change – as well as any other policy issue – requires the proper measurement of what he calls economic welfare. When properly measured, economic welfare includes “everything of value to people” (Nordhaus 2008: 4).
- 3 CBA doesn’t take into consideration historical responsibility. For example, CBA would assign the loss of a Pacific island to sea level rise a relatively small value, which can easily be outweighed by other benefits regardless of whether the loss of the island results from wrongdoing (IPCC 2014b). Further, CBA cannot help us to identify *who* should get compensated for a wrong done. Second, economic methods have difficulty capturing the value of lost lives and other non-market values (e.g., species, ecosystems, works of art), which some argue can’t be valued on a monetary scale. Third, CBA is too insensitive to the enormous economic inequalities present in the climate change policy context, including inequality across time. Finally, CBA

faces challenges when it comes to including the tiny uncertainties of enormous catastrophe from climate change in their analysis in part because calculations of expected utility often assume a normal or quadratic distribution of risk (See Weitzman 2009 and Nordhaus 2011).

- 4 There are several proposals on offer. “Comparative” accounts, like Feinberg’s, define suffering harm in terms of having an interest set back compared to a relevant baseline (where an interest is a discrete aspect of a person’s well-being). Other comparativists define harm in terms of setbacks only to certain core interests. For example, Stephen Perry argues that suffering harm involves the worsening of core interests compared to a historical baseline. What is included in the core set of interests is a matter of some debate (Perry 2003: 1306–7). The so called “non-comparative” accounts define suffering harm in terms of an objective list of evil conditions, where the items on the list can be given some unified justification for making it to the list (Shiffrin 1999, 2012; Harman 2004). Elizabeth Harman appeals to human functioning to identify what unifies conditions of harm, and Shiffrin’s admittedly incomplete account understands harm in terms of what is in accord with a person’s will. David Velleman raises an objection against Shiffrin’s view: fixing what counts as a harm in terms of what a person would will adds a subjective dimension to harm that could open up what can count as a harm in a troubling way (Velleman 2008). There are many more accounts, each of which face difficult challenges in analyzing the concept of harm to exclude mere desire satisfaction while at the same time including important failings, like the failure to achieve precious life goals. For example, disagreement abounds about whether a set back to a genius that leaves her at average intelligence counts as suffering harm, or whether certain seriously offensive activities cause harm (e.g., protests at funerals).
- 5 Sometimes comparative accounts rule hurts and dissatisfactions out by identifying them as *di minimis* harms (Feinberg 1984: 51).
- 6 Some of the conditions on the list present problems for some accounts of harm either because their status varies with circumstance or because some of the conditions – death especially – present notorious puzzles of their own (Feinberg 1984). Comparative accounts of harm that identify whether a worsened condition is suffering harm by comparing that condition to a baseline, may not always identify the items on the list as suffering harm. This will depend on the location of the baseline. For example, if the baseline is defined historically, and a person has been in a disabled condition since birth, her being in a disabled condition is not a case of suffering harm. This strikes many as a problem for comparative accounts. But comparativists can deal with these issues by appealing to moralized baselines or by arguing – like Perry seems to – that the *concept* of suffering harm implies having your condition worsened by some action, omission, or event. The badness of being born disabled (when your parents are not to blame) is serious; it’s just not a harm.
- 7 One disagreement in particular would affect judgments about harm in the climate change context. There is disagreement about whether causing harm to someone requires causing their condition to worsen all things considered. For example, Feinberg (1992) argues that if a benefit is bestowed at the same time as a person is also made worse off in some respect, the action is not an instance of harming if the net effect of the action is positive. Shiffrin disagrees. She thinks that being put in a bad condition harms no matter what benefit accompanies it.
- 8 There may not be much more than a semantic difference between the accounts, because the loss of pure benefits that Shiffrin would count as very important (breaking a promise or failing to give your child a birthday gift), Feinberg might count as harms, because they set back important interests.
- 9 I’m using the Aggressive Carbon Tax scenario to illustrate my point. I don’t offer it as a proposal for a policy instrument, and I don’t offer a defense of it. I consider it only to identify how harm/benefit asymmetries arise in the climate change context.

- Fully evaluating the Aggressive Carbon Tax would be an incredibly complex project that would require taking into account the costs and feasibility of adaptation as well as comparing the costs and co-benefits of the tax to current generations to the reduced residual climate damages in the future, as well as any adverse effects involved.
- 10 Thanks to Sara Mrsny for discussing with me the importance of emphasizing the losses to middle class consumers.
 - 11 See Bovens (2011) for discussion of this idea. See also Hans Peter-Weikard's "A Lockean approach to greenhouse gas emission rights" in this volume.
 - 12 Thanks to Chris Field for pointing out these examples to me.
 - 13 See also Daniel Halliday (2011).
 - 14 Fried discusses a form of threshold deontology that is adopted by thinkers in the contractualist tradition. (Fried 2012: 62).
 - 15 Fried also mentions other important objections to weighting harms, which I don't have space to consider in this paper. First, there is a very serious problem concerning how to figure out what harms weigh under any criteria. Second, she raises concern about paternalism and perfectionism in setting the relative weight of harm either according to what one thinks people will prefer in the future or what they ought to prefer (Fried 2012: 63). This point about paternalism draws on the connection between preferences and autonomy. If people's welfare turns out to be different from what they prefer, the threat of paternalism is live. However, this isn't obvious and a defense of understanding autonomy in terms of people's preferences is sorely needed (Herzog 2000: 914).
 - 16 Another problem with preferences is that people disagree about the consequences of the policies that would combat climate change and about the consequences of the activities that cause climate change (Hausman and McPherson 2006: 285). People who are climate skeptics likely have no preferences at all regarding the predicted bad consequences of the fossil fuel regime, but they may have strong preferences concerning the opportunity costs of dedicating resources to combat climate change. Similarly, imagining the end of human life on Earth leads some to have incredibly strong preferences regarding the tiny chance of doom from even relatively low levels of climate change. However there are at least partial fixes for these issues within the preference satisfaction metric. Hausman and McPherson (2006) consider the argument that satisfying preferences doesn't justify "adhering to preferences that reflect mistaken beliefs" about the badness of a particular consequence. Instead, economics could consider only preferences for those consequences there is good reason to expect. But there are still problems, because preference-satisfaction is simply not the same as well-being, as the absurd consequences of equating harm to preference dissatisfaction involving mere hurt and offense indicate.
 - 17 See also Hausman and McPherson, who argue against a theory of welfare based on "spruced-up" preferences that, "welfare is not the satisfaction of preferences, no matter how spruced up" (2009: 2).
 - 18 Caney describes the lexical priority of human rights as "general," because he doesn't think human rights have *absolute* priority. In exceptional cases, violating human rights of the few may be required in order to protect the human rights of others (Caney 2010: 165, 174 n.12).
 - 19 Because human rights pick out the most basic moral standard, Caney's human rights approach leaves room for other moral ideas and values, including economic efficiency, which can be considered once the threshold is achieved. So there's a space for economic methods in Caney's approach to climate change, but only for effects above the human rights threshold.
 - 20 John Broome (2010) makes a similar argument.
 - 21 Damage estimate for the USA (NJ, NY, CN), including post-tropical storm and land-fall: 71,400,000,000 (unadjusted US\$) (NOAA 2014).

- 22 The \$10 billion figure was cited in Fritz *et al.* (2009). The Myanmar government also announced the \$10 billion figure shortly after the disaster (Sputnik News 2008). However, the official disaster database lists damage estimates at an even lower figure (CRED 2009).
- 23 Calculating the economic costs of damages is highly complex. Most damage estimates sum the direct and indirect effects of a disaster, rather than relying on macro-economic data about the disaster's effects on economic growth. Governments differ in their record keeping as well as in the way estimates are calculated. Because disasters are highly complex, estimates from different countries and different places will differ in the costs they include, and so are quite difficult to adjust and accurately compare. This is the case even when looking at databases specifically designed for cross-country analysis (Kousky 2012).
- 24 John Nolt (2015) argues that casualties should be used as a measure of climate change impacts. I think this is a step in the right direction. However, I don't think that the number of deaths alone is an adequate measure of harm. Very many people suffering bodily injuries could be quite a bit worse-off harm-wise than death.
- 25 See Schneider *et al.* (2000) for recommendations and a discussion of the importance of transparency about values for widening the range of possible policies in the face of uncertainty about climatic change.
- 26 See IPCC (2014b: 220) for a helpful discussion on Multi-Criteria Analysis.

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