**Contractualism and Climate Change**

By Paul Clements

**Abstract**

How would agents who do not know their place in space or time articulate responsibility for climate change? Like any legitimate ethical theory, contractualism insists that people take responsibility for their actions. Distinctively, it takes it that this responsibility should be understood in terms of fairness. Carbon pollution imposes harms, and the physical and institutional momentum of climate change guarantees these harms will increase, probably more than science predicts. The central challenge is to establish international institutions that can allocate costs in proportion to responsibility: for transitioning to renewable energy, adapting to climate change, supporting victims, and mediating conflicts. This is impeded by today’s anarchic international system and resistance from interests that benefit from carbon pollution. Treating victims fairly involves resettling perhaps hundreds of millions of refugees and confronting recalcitrant governments, but this will inspire more resistance.

Institutions that can allocate responsibility fairly will override many established norms, but delay only increases costs. Contractualism highlights obligations of those responsible for carbon pollution to climate victims, the magnitude and urgency of the institution-building imperative, how this threatens established normative orders, and, given the structure of incentives, how overcoming the expected resistance requires moral heroes.

**Introduction**

Over the 800,000 years prior to 1750 the concentration of carbon dioxide (CO2) in the earth’s atmosphere ranged from about 180 to 300 parts per million (ppm), and average global temperatures ranged from 5°C below to nearly 1°C above the average for the last 10,000 years (Hansen and Sato 2011). The industrial revolution, however, fueled largely by fossilized plant remains, moved carbon from the earth to the atmosphere at increasing rates, and in 2018 (at this writing) the global average reached 412 ppm. This level of atmospheric CO2, last observed 3 to 5 million years ago, corresponds to an equilibrium climate 2-3°C warmer than 2016 (World Meteorological Institution 2017, 1). The Intergovernmental Panel on Climate Change (IPCC) projects that by 2100 atmospheric CO2 concentrations will lie between 550 and 1000 ppm, depending largely on human activities (Intergovernmental Panel on Climate Change 2014, Figure 1).

In the view of Sir David King, former chief scientific advisor to the UK government, potential harms from climate change constitute an existential threat to civilization (Taylor 2017).

While these harms are already significant, the physical and institutional momentum of global warming guarantee that they will increase dramatically. Notably, we probably cannot stop climate change from displacing perhaps 200 million people from their homes and livelihoods by 2050; the question is what happens after 2050. We are increasing atmospheric CO2 much faster than ever before in Earth’s history, and science cannot keep up with the profundity and reach of its consequences. The global community has agreed we must not let warming exceed 2°C above pre-industrial temperatures, but average global temperatures reached 1.3°C above pre-industrial levels in 2016 (Dahl 2017a), and plans for reducing carbon pollution are deeply inadequate. Also, harms predicted from 2°C of warming have been increasing.

At this writing the costly efforts needed to mitigate carbon pollution, to adapt to climate change, to support its victims, and to mediate resulting conflicts have been largely voluntary. The ethical approach known as “contractualism” focuses on fairness. It gives attention to victims and suggests that responsibility for climate change should be a significant factor in allocating costs. The fossil fuel industry, however, has effectively blocked reductions in carbon pollution. National governments are key for building the institutions to respond to climate change, but this has been impeded by our anarchic system of nation states. The extraordinary demands from climate change can only be met by stronger global governance. Contractualism offers a framework not only for sketching the outlines of a fair resolution of these demands, but also, allied with comparative political economy, for explaining the magnitude of the institution-building task, the resistance that must be overcome, and, given the structure of incentives, how solutions to climate change depend on moral heroes.

**The Social Contract Tradition and Climate Change**

The social contract tradition in ethical thought takes it that morality – what we owe to one another – is best understood in terms analogous to a contract. Being mutually dependent, humans have developed a sense of right, the foundation of morality, that is best understood in these terms. The two branches of the social contract tradition, however, contractualism and contractarianism, understand the construction of the sense of right differently.

For contractualism our sense of fairness, or right, is itself fundamental. Part of what it means to respect another person, we find, is to be able to justify our actions in terms he or she could freely accept. A task for philosophy is to articulate a framework that explains this act of justification and that can help to work out its consequences. Thus Scanlon argues that “an act is wrong if its performance under the circumstances would be disallowed by any set of principles for the general regulation of behavior that no one could reasonably reject as a basis for informed, unforced general agreement” (1998, 153). Clearly no one could reasonably reject that people should take responsibility when they hurt other people. For Scanlon this proposition has a simple explanation: to be human is to have a sense of right, which implies a sense of responsibility.

The other branch of the social contract tradition, contractarianism, discussed by Moehler in this volume, takes self-interest to be fundamental and the sense of right to result from rational deliberation. Contractarianism “does not demand that agents share substantial moral ideals” (Moehler, *pageref*). It follows Hobbes (1651) in arguing that self-interested agents would contract to establish an authority that can impose rules for long term, peaceful cooperation, or Gauthier (1986) in arguing that self-interest supports the adoption of moral principles.

The central ethical questions from climate change are about what responsibilities arise from the harms from carbon pollution, and, given that they involve stronger institutions of global governance, what principles these institutions should be based on and how they can be built. Like contractualism, contractarianism also finds a basis for a sense of responsibility, if only as a means to secure self-interest. For that matter, any legitimate ethical tradition must articulate a basis for the sense of responsibility, including utilitarianism, the ethical tradition that aims to maximize the good, with which social contract approaches are normally compared. Unless someone wants to argue that people who generate carbon pollution are not responsible for its consequences, responsibility must be a factor in building institutions of global governance for addressing climate change.

Once the momentum of climate change and the breadth and severity of its consequences are taken into account, any ethical approach that says people are responsible for the consequences of their actions will see that new institutions are needed for mitigation, adaptation, supporting victims, and mediating conflicts due to climate change. I don’t know how a Hobbesian authority would approach it. A contractualist approach, most famously in Rawls’ *A Theory of Justice* (1971), argues that to identify just principles for organizing society we should imagine that we do not know our place in society. In this “original position” we stand behind a “veil of ignorance,” a point of view that excludes considerations that benefit us personally, and the same perspective applies to everyone. While Scanlon wants actions generally to be supported by principles that no one could reasonably reject, Rawls’ veil of ignorance conditions reasonable rejection for principles of justice; both demand a consideration of fairness that is foreign to contractarianism. The original position situates persons conceived as free and equal such that unfair bargaining advantages and threats are ruled out (Rawls 2001, 15, 160).

In Rawls’ “justice as fairness” equal liberties are fundamental, a society’s economic inequalities should be in the long term interest of its least well off members, and the education system should support fair equality of opportunity (1971, 302). A fair approach to climate change involves not only rapid reductions in carbon pollution, but also particular efforts to reduce deaths and loss of livelihoods and to support global warming’s victims.

Climate change is an externality from certain economic activities, an instance of the tragedy of the commons. When we burn coal, say to generate electricity, CO2 is a by-product. Neither the seller nor the buyer of the electricity bears the cost of the carbon pollution. Rather it goes into the atmosphere where it may stay for 1000 years. Depending on how much additional carbon pollution is emitted, it contributes to warming the planet and to various consequences. The textbook economic response for a negative externality is to impose a tax equal to the cost of the harms. This forces seller and buyer to internalize the externality’s cost and hence allows an efficient allocation of resources, if not a means to correct the harms. If the tax were set correctly, the level of carbon pollution would be economically rational. Perhaps with American leadership carbon taxes might have been imposed across industrialized countries after 1997, when the Kyoto Protocol, the first major climate change agreement to reduce emissions, was agreed, and CO2 concentrations could have been kept below 400 ppm. But the US government refused to participate in a plan that did not include China and India. Carbon taxes could still be part of an efficient response to climate change, but by now a more pro-active approach to reducing carbon emissions is needed.

Economic activities that produce CO2 have been enormously profitable. Their greater beneficiaries tend to be politically powerful, while the victims of climate change, disproportionately in poorer countries and future generations, generally are not. Moreover, institutions needed to respond to climate change will increase global governance. While a fair approach gives equal consideration to the interests of beneficiaries and victims, this pits the weak against the powerful and it constitutes a threat to established institutions. The critical tasks involve building effective international institutions and covering their costs. But who shall bell the cat? All those in the relevant, privileged positions have other responsibilities if not vested interests in the status quo, and we may already have passed the point at which solutions exist that avoid deep moral conflicts.

Traditional principles of international justice endorsed by contractualism include a duty of non-intervention, and, as Rawls says, “a duty to assist other peoples living under unfavorable conditions that prevent their having a just or decent political or social regime” (1999, 37). Carbon pollution clearly abrogates the duty of non-intervention, but we cannot expect that the institutions needed to take responsibility for its harms will be freely adhered to by beneficiary countries’ citizens. The likely consequences of failing to construct these institutions, however, are apocalyptic. Broadly, the more the task of building the needed institutions can be approached reasonably and rationally, and the sooner it can be carried out, the more harms from climate change can be reduced. Strategies based on superior power and delays tend to lead to more authoritarian approaches, toward the politics of the armed lifeboat. The alternative to building the required institutions, however, is a much darker version of the armed lifeboat.

Another contribution from a contractualist perspective is the idea that institutions are built from principles (Clements 2012). Climate change presents many challenges to the imagination. An important one is to see how principles that constitute existing institutions interact to generate current levels of carbon pollution, and how different institutional scenarios could plausibly keep the level of atmospheric CO2 below 450 ppm (said to be the limit for keeping global warming to 2°C) and manage the harms from climate change. From today’s perspective *any* solution (barring unforeseen scientific advances) is likely to appear utopian, but some are more plausible than others. Moving from one institutional framework to another involves not only constructing new norms or principles, but also overcoming resistance from those committed to principles that form the established framework. We have no metric for measuring the distance from one institution to another or for comparing the plausibility of two proposed institutional reforms, but comparative political economy offers methods for building the required imaginative and analytic capacities.

**Consequences of Climate Change**

While average global temperatures have exceeded pre-industrial levels by 1.3°C, over 90% of the excess heat trapped by greenhouse gas emissions has been absorbed into the oceans. If worldwide carbon emissions were halted, release of heat from the oceans would continue to raise atmospheric temperatures, perhaps by 0.6°C over a period of decades (Hansen 2005; Dahlman 2015). In addition, the economic life of existing global infrastructure commits us to a rise in CO2 concentrations to roughly 450 ppm. Although the Paris Climate Agreement, adopted in December 2015, aims to hold the increase in the global average temperature to “well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels” (United Nations 2015, Article 2:1a), given the physical and institutional momentum of global warming it appears unlikely these targets can be met.

In 2017 the United States saw $85 billion in costs in Texas and Louisiana from Hurricane Harvey, $45 billion in Florida from Hurricane Irma, and perhaps $95 billion in Puerto Rico from Hurricane Maria (Campoy 2017; Disis 2017), and over $100 billion in costs from wildfires in California (Lada 2017). Destruction from Hurricane Maria may cause more than a million Puerto Ricans to move to the United States (Cabranas and Lopez 2017). Starting in 2006 Syria experienced its worst drought in 900 years, forcing perhaps 1.5 million Syrians to move from farmlands to urban areas (Mansharamani 2016). This contributed to a civil war with about 5 million refugees. Climate change has also contributed to droughts across Africa, threatening millions with starvation (Gettleman 2017) and increasing migration to Europe (Sengupta 2016). Conflicting views on immigration within and among European countries threaten the very unity of the European Union (Peter 2016; Schlein 2016; Rankin 2017).

Melting ice and thermal expansion of water are causing sea levels to rise. Roughly between 2013 and 2017 estimates of the likely rise by 2100 doubled, from a one-meter to a two-meter maximum, or even over two and a half meters in an extreme scenario (Dahl 2017b). Today there are about 60 million refugees and internally displaced people (IDPs) worldwide, already more than any time since World War II. One study reports that two feet of sea level rise by 2100 would submerge land home to about 100 million people, while more than 150 million would be displaced by six feet (Rutgers University, 2017). Another study finds that a meter of sea level rise by 2060 could cause 1.4 billion people to become climate refugees, increasing to 2 billion (from a global population of 9-11 billion) with a two-meter rise by 2100 (Geisler and Currens 2017, 323). Antarctica is the planet’s largest repository of frozen water by far, but prior to 2014 the most authoritative estimates, from the IPCC, included less than a centimeter of sea level rise by 2100 from this source. Some thought that Antarctica would contribute more than this, but the processes were not well enough understood to be included in official estimates. Now it turns out that besides Antarctic ice melting at the surface, when meltwater seeps into cracks its ice cliffs can collapse (hydrofracturing), a major contributor to the increased sea level rise estimates (Schlanger 2017). The last time atmospheric CO2 was at current levels, about 3 million years ago, sea levels were 9 to 27 meters higher than today. Apparently we are only spared such effects today by “the time that it takes for the climate to respond and reach equilibrium with levels of atmospheric GHG [greenhouse gasses]” (Environmental Justice Foundation 2017, 40).

It has long been known that global warming increases droughts both by reducing rainfall in some regions and by increasing evaporation, but it is hard to quantify the consequences. A 2018 study finds that aridification (substantial drying, increasing the likelihood of drought and forest fires and changing vegetation regimes) emerges over 24% to 32% of land surface when global temperatures rise 2°C above pre-industrial levels, but aridity is avoided in about 2/3 of this land if the temperature increase is kept to 1.5°C. Most of southern Europe is likely to become arid with 1.5°C warming, but Central and South America, southern Africa, coastal Australia, and southern China become mostly arid only as temperatures rise from 1.5 to 2°C (Park et al. 2018, 70-72).

Like rising sea levels, aridification and drought also displace large numbers of people, although these effects are even harder to quantify. People are also displaced by declining water flows in glacier-fed rivers, melting permafrost, and the loss of economic opportunity due to the death of coral and other sea life as oceans warm and become more acidic. Forest fires, inland floods, hurricanes, and heat waves strike with increasing frequency and intensity, displacing fewer people but leaving death and destruction in their wake.

Besides warming oceans, a quarter of our carbon pollution has been absorbed into the oceans, making them 30% more acidic than before the industrial revolution. Warmer and more acidic oceans make it harder for shellfish to build shells and reduce oxygen levels, harming many species at the low end of the food chain. Effects on micro-organisms, “which represent the vast majority of the biomass (organic carbon) in the ocean, will significantly alter the biogeochemical cycles and the functioning of the food webs at the global scale” (Danovaro, et al. 2016, 57). But these and effects of climate change on ocean chemistry are not well understood. There has also been no comprehensive study of the economic effects of the loss of fisheries due to the death of coral reefs.

In the 1950s the green revolution launched a global increase in agricultural productivity, but growth in yields has slowed for most major crops (Food and Agriculture Organization 2017, 48). Population growth and rising incomes are increasing food demand, and soil degradation and the mining of water supplies undermine agricultural productivity in many areas. Global warming increases agricultural productivity in some northern regions, but these effects are overtaken by factors that reduce yields as warming increases, and warming reduces agricultural productivity in the tropics. Around 1980 the continent of Africa tipped from producing a net surplus of food on average to a net deficit, and since then food imports have consistently increased. Climate change will deepen structural food deficits in Africa and push more regions into deficit. Whether global increases in agricultural production can keep up with global demand is an open question (Bourne 2015). Meanwhile, as the planet warms, weather patterns shift, and droughts and floods increase, temporary food deficits, both regionally and globally, will become more common. Simultaneous disruptions to agriculture in major “bread baskets” will likely lead to worldwide food shortages, which would be exacerbated by regional crises.

**Contractualist responsibility**

Ethical questions about climate change arise at two levels. First, people in general and particularly people in advanced industrial countries bear responsibility for climate change, and some obligation to address both its causes, and, if they can, its consequences, but how do we understand these sensibilities? Of what do senses of responsibility and obligation consist, and how do we account for them? Second, what questions of social justice does climate change raise, and on what principles should they be resolved? What responsibilities does it place on nation states and other institutions, and what needs to be accomplished for these responsibilities to be fulfilled? And further, how do imperatives for institutions affect imperatives for individual persons?

A take on responsibility for climate change from Scanlon’s contractualism might begin like this:

Each of us is involved in systems of production and consumption, global in reach, that allow us to pursue the good as we see it. In these systems, we accept that activities and exchanges between persons and groups sometimes undermine opportunities for third parties. However, a principle that no one could reasonably reject as a basis for informed, unforced general agreement is that such activities and exchanges should not knowingly harm other persons. When they do knowingly impose harms, the parties that cause the harms bear responsibility for them. This responsibility can be discharged by fixing what is broken and removing the cause.

This is a bare-bones, inadequate conception of responsibility. It does not address thresholds, relations between individual and collective responsibility, or culpability and redress. To apply it to climate change and articulate specific duties to which it gives rise of course raises many questions. The point I would like to make is that a large part of moral theory is concerned with the possibility of and basis for a moral sense itself and hence for a sense of responsibility. While contractualism has its own approach, I think that for most people, the concept of responsibility sketched here is not controversial. If one takes account of climate science and the harms climate change is causing and likely to cause, it is clear that we have much to do. Indeed, I think an inkling of the weight of this responsibility contributes to many clinging to worldviews that exclude the science. The work for an ethics of climate change lies in articulating the responsibilities to which it gives rise, not the mere possibility of responsibility (although how one understands the latter may indeed influence the former).

**International Justice**

Given that it is increases in CO2 that drive climate change and that the source can be anywhere on Earth, the starting point for questions of justice is the pathway of global CO2 emissions, and each country’s contributions. Higher CO2 pathways benefit the current generation more (through greater energy production) and hurt future generations more, so the global pathway for CO2 production begins as a question of justice between generations. Then, taking the nation state as the unit of responsibility, the question becomes how the global carbon budget is divided among countries. Under the Paris Agreement the division is based on voluntary national commitments and the “budget” is whatever actual emissions sum to, but this is inadequate. A related question is how the global budget is to be implemented. What international institutions are needed, such as to help countries reach their targets, for monitoring, and for sanctions for exceeding targets?

The harms climate change is inflicting will increase. More than 98% of deaths attributable to climate change occur in developing countries (DARA 2012, 23), and within countries the poor are generally more vulnerable. Wealth is correlated with historic and current energy production and hence responsibility for climate change, and vulnerability is correlated with poverty and living in the tropics, so at present and for the immediate future, harms from climate change tend to be inversely proportional to responsibility. The dangers from climate change are, however, somewhat predictable, and steps can be taken to reduce them, so responsibility for adaptation (adjusting to effects and reducing future harms) and for assisting victims of climate change should be considered together. Harms include not only immediate effects such as from droughts, storms, and floods, but also conflicts precipitated by competition for water and other affected resources and by forced population movements. Questions of justice include what should be done to adapt to climate change, to support victims, and to mediate conflicts, what new institutions are needed, and how costs should be allocated. As with steps to reduce CO2 emissions, questions arise at international and national levels.

For Rawls justice between generations involves moving toward and then sustaining a just society. Behind the veil of ignorance the parties in his original position do not know in which generation they find themselves, so they would select a savings principle such that, whatever their own time may be, all previous generations would have followed it (Rawls 2001, 160). “Each generation must not only preserve the gains of culture and civilization, and maintain intact those just institutions that have been established, but it must also put aside in each period of time a suitable amount of real capital accumulation” (Rawls 1971, 285). Once a just society is achieved, however, there is no obligation of justice to continue economic growth; real capital accumulation may fall to zero (Rawls 2001, 159).

But Rawls conceives of justice between generations in the context of principles of justice for a single people, the domestic arrangements of a nation state, and it is largely addressed by his just savings principle. As noted above, the principles relevant to climate change, discussed in his *Law of Peoples*, involve non-intervention and assistance. Rawls does not consider capital accumulation for one people undermining the gains of culture and civilization, or progress toward just institutions, for another, but his conception of justice would clearly condemn it.

Extreme weather events kill, but not randomly. Death is correlated with vulnerability and failure to prepare. Climate change undermines livelihoods and destroys habitats for segments of a society, sometimes gradually, such as through drought or rising sea levels, and sometimes in single or punctuated events, such as hurricanes or floods. Each country’s polity consists of ongoing cooperation and competition carried out through established institutions and structures of authority. Loss of livelihood causes one to question institutions and authorities. If they are not in a position to secure it, as Hirschman’s classic analysis explains, responses may be considered in terms of exit, loyalty, or voice (1970). Parenti (2011) describes how climate change has contributed to violent conflicts, often with an ethnic dimension, in Kenya, Somalia, Kyrgyzstan, India and Brazil, among other countries. Besides contributing to civil war in Syria, as noted above, drought is a significant factor in civil wars at this writing in Yemen and South Sudan and in the insurgency in northern Nigeria. Climate change is not, of course, solely responsible for these conflicts, but it will, most certainly, contribute to sparking and exacerbating more insurgencies and state violence.

Anthropogenic global warming sets natural cycles in motion that increase greenhouse gas concentrations in the atmosphere, accelerating warming. Methane is a shorter-lived but more potent greenhouse gas than CO2. As warming melts permafrost in the Arctic, vegetation unfreezes at the bottom of ponds, and as it decomposes it produces methane. There are also large stores of frozen methane in sediments on the ocean floor. Some models predict a large-scale die-off of the Amazon rainforest before 3°C of warming, releasing significant carbon into the atmosphere. Like so many areas of climate science, these phenomena are not well enough understood for precise projections (Kopp et al. 2016, 352, 355-6). They indicate, however, that the current generation’s responsibility for global warming could include responsibility for run-away increases even if anthropogenic carbon pollution is ended.

Given the duty of non-intervention, Rawlsian justice demands we keep CO2 concentrations from exceeding 450 ppm and warming below 2°C. It is not that harms at this level are acceptable – rather a lower target is physically and institutionally implausible. In recent years the harms projected from 2°C of warming have risen, increasing the burden of responsibility on countries with higher carbon emissions. The distance between “bottom up” climate science, based on projecting forward observed trends, and “top down” scenarios, based on equilibrium conditions at 400 ppm CO2 and above, has diminished somewhat. Today a reasonable bottom up scenario would involve, say by 2050, the number of IDPs and refugees rising from 60 to 260 million (possibly many more) due mainly to drought and rising sea levels. Many coastal cities are flooded and food shortages become more common and severe. Simultaneous weather disasters on the scale of Hurricane Maria hitting Puerto Rico become common. In this context we have to expect simmering conflicts to flare, governments to fall, and humanitarian institutions in many low- and middle-income countries to fail, so the fate of millions lies with international institutions. But these institutions are stressed not only by increased demands from crises, but also by political and economic repercussions from climate change within donor countries. Even with effective reductions in carbon emissions, ongoing carbon pollution and the physical momentum of global warming continue these harmful trends through the years to 2100 and beyond. And as CO2 levels increase, warming continues, and science advances, we are likely to have more bad surprises.

In 2016 McKibben reported that, “to have a two-thirds chance of staying below a global increase of two degrees Celsius, we can release 800 gigatons more CO2 into the atmosphere.” This is, roughly, our carbon budget. To have a 50-50 chance of keeping the global temperature rise to 1.5 degrees, we could only release 353 more gigatons of CO2, but operational coal mines and oil and gas wells worldwide in 2016 contained 942 gigatons worth of CO2, and new wells continue to be dug (McKibben 2016). According to the IPCC, to have a more than even chance of staying below 2°C, global CO2 emissions need to be lowered from 2010 levels about 50% by 2050 and 90% by 2100 (Deep Carbon Pathways Project 2015, 3). Accounting for population growth, this implies a decline from 7 tons per person per year in 2010 to 2.2 tons in 2050 and 0.4 tons in 2100.

How should our carbon budget be divided? Total national commitments for carbon reductions in the Paris Agreement imply about 2.9°C of warming by 2100. But these commitments are voluntary, and they do not include consistent methods for calculating reductions, independent monitoring, or sanctions for failure to reach targets or for withdrawing from the agreement, as the United States has indicated it will do (Rogelj et al. 2016). After US rejection undermined the effectiveness of Kyoto, it proved difficult to come to a global agreement, and many saw Paris as a victory: the first international climate change agreement to reduce emissions that includes almost all nations of the world. But Paris commitments are clearly inadequate to secure Paris targets.

If most countries are voluntarily reducing emissions, each has an incentive to “free ride.” Given this incentive, an effective agreement needs not only commitments that reach the global target, but also independent monitoring and effective sanctions. From the perspective of social justice, the agreement to reduce CO2 emissions must also address adaptation and harms. Countries that bear greater responsibility for climate change are generally wealthier and more politically powerful than more vulnerable countries, and more vulnerable countries have a greater incentive to come to an agreement. An agreement that favors the stronger parties, however, would exacerbate injustices from climate change, undermine the agreement’s stability, and deepen resentments against the people of industrialized countries.

Rawls’ original position offers a frame of reference for reaching a just agreement. When selecting principles of justice for a country, agents in the original position represent the country’s citizens, but for the law of peoples Rawls’ agents are representatives of each country. These are the parties who must come to a hypothetical consensus. I have argued elsewhere (Clements 2015) that due to the global reach of climate change and the unreliability of many governments in representing interests of their more vulnerable citizens, agents in an original position for climate change would represent individual persons anywhere in the world (as well as anywhere in time, starting with the present). Not knowing whom they represent, they would be particularly concerned to protect those whose lives climate change threatens. But in selecting principles for a climate change agreement they take account of plausibility, so they agree to a 2°C target.

Carbon emissions represent a scarce good; not knowing whom they represent, and appreciating the urgency of reductions, agents would identify equal per capita emissions for each country as the starting point or anchor for their agreement. They would, however, also find responsibility for climate change based on cumulative CO2 emissions and ability to transition to renewable energy, both correlated with wealth, to be relevant. But these are also correlated with higher current CO2, and hence the need for greater, more challenging reductions. The agents would find that countries with greater responsibility and capacity can discharge some of this responsibility by assisting other countries in their transitions (as well as with adaptation and supporting victims, as discussed below). They would find countries like the United States, for example, to have a greater “climate change obligation” than, say, India (Table 1), which could be satisfied in part by reaching the per capita target sooner and by assisting others.

National governments might employ a carbon tax or cap and trade system, along with proactive measures to increase energy efficiency and reduce carbon pollution. International carbon trades, however, where a firm in one country pays a firm in a second country to pollute less so the first firm can pollute more, raise concerns of justice. Even under private ownership, from the perspective of citizens a firm represents a national asset, and agents in the original position observe that neither the firm’s owners nor the government can be relied upon effectively to represent the interests of the people. The agents would aim to balance efficiency gains from international carbon trading with defending the economic prospects of each nation’s people. Of course many more details for a fair and workable mitigation agreement, such as for military activities, international transport, and to protect forests, need to be filled in.

**Table 1**

**Greenhouse Gas Emissions (CO2 Equivalent), 2014**

Total Percent Per Capita GDP per capita Cumulative CO2

(gigatons) of world (tons) (at purchasing 1850-2011

emissions power)

World 49

USA 6.3 14.4% 19.7 $54,657 27%

China 11.6 26.8% 8.5 $13,327 11%

India 3.2 6.6% 2.5 $5,797 3%

Sources: Total and per capita CO2: Climate Watch 2018; GDP per capita: Comstat 2018; Cumulative CO2: Ge, Friedrich and Damassa 2014. Cumulative figures only for CO2, not including other greenhouse gasses.

Agents in the original position would find responsibility arising from cumulative emissions particularly relevant to the costs of adaptation, supporting victims, and mediating conflicts.

Given our anarchic international system this is the most challenging area of climate justice. Each government has an obligation of justice to its own people to protect them from harm and to assist when “weather” destroys their homes or livelihoods. But governments of poorer countries often lack not only the resources and institutions, but also, all too often, the political will to protect and support all their people. Rawls (1999, 5) distinguishes between “outlaw states” and “burdened societies,” the former “regimes that refuse to comply with a reasonable Law of Peoples” (e.g., Myanmar, North Korea), the latter societies “whose historical, social and economic circumstances” make it difficult if not impossible for them to achieve a well-ordered regime (e.g., Afghanistan, Somalia).

With rich countries imposing bad weather on outlaw states and burdened societies, agents in the original position would find governments of countries with greater responsibility and capacity to be obligated to protect and support the likely and actual victims. Behind the veil of ignorance the imperative is clear: to prevent loss of life, protect and restore livelihoods, and build toward just institutions. There is a particular obligation to climate refugees – forced to leave their native homes due first to the failure to mitigate climate change, and then to the failure to protect or restore their livelihoods.

The obligation is to vulnerable and victimized individuals, not to their governments, which may be corrupt and authoritarian, favoring some ethnic groups or sections of society. It clearly conflicts with national sovereignty. But the obligation is also to support movement toward just institutions.

There is a certain fluidity in the content of obligations to mitigate climate change, to help with adaptation, to support victims, and to mediate conflicts. Faster mitigation yields less need for adaptation. More effective adaptation leads to fewer climate victims. Better support for victims in their home countries means fewer international climate refugees. And failures in all areas increase the likely contribution of climate change to domestic and international conflict. The obligation is greater where the impacts of climate change are greater and where institutions are weaker, and outlaw states and burdened societies present particular challenges.

What is the scale of the obligation to help with adaptation and to support victims? Consider that, “Currently, forecasts vary from 25 million to 1 billion environmental migrants by 2050, moving either within their countries or across borders, on a permanent or temporary basis, with 200 million being the most widely cited estimate. … [S]ome 125 million people may be displaced by 2045 as a result of desertification” (Kamal 2017). It costs about $3,000 a year to care for a refugee in Syria, and over $30,000 in, say, Germany or Austria (Williams 2016). For a first approximation, at $10,000 per person per year the financial cost to care for 100 million IDPs and refugees is $1,000 billion, while total economic and development assistance from industrial countries is around $150 billion a year at this writing.

**The Political Economy of Climate Justice**

Obligations for a country such as the United States include:

1. Adapt to climate change and support national victims
2. Reduce carbon pollution from 19 to 2 tons per person by 2050
3. Welcome and integrate a fair share of climate refugees, perhaps 5-10 million by 2050
4. Assist in covering costs for international mitigation, adaptation, supporting victims, and mediating conflicts
5. Assist in building institutions for international mitigation, adaptation, supporting victims, and mediating conflicts

At this writing the US is nowhere near a trajectory to fulfill these obligations, but failure to fulfill them increases the harm, the obligation, and the costs. At some point continuing failure to meet the international obligations (2-5 above) must render the US an outlaw state. Up to now this failure is largely due to concerted opposition from economic and ideological interests that effective action would threaten.

As early as 1978 James Black, a scientist at ExxonMobil, the largest, most profitable private corporation in the world, reported to company scientists and managers:

[I]ndependent researchers estimated a doubling of the carbon dioxide (CO2) concentration in the atmosphere would increase average global temperatures by 2 to 3 degrees Celsius (4 to 5 degrees Fahrenheit), and as much as 10 degrees Celsius (18 degrees Fahrenheit) at the poles. Rainfall might get heavier in some regions, and other places might turn to desert (Banerjee, Song and Hasemyer 2015, 1).

In the 1980s Exxon sought to be a good corporate citizen, sharing its scientific findings on the dangers of global warming. In 1989, however, it switched to protecting its financial interests, launching what turned into a campaign “to corrupt the debate on global warming through the funding of proxy groups that engage in denial and deception concerning climate science and through political lobby activities that involve the dissemination of disinformation and campaign contributions” (Kramer forthcoming). In the US presidential election campaign of 2000, candidate George W. Bush argued that serious action was needed to address global warming. As President, however, apparently due to pressures from oil interests inside and outside his administration, conservative think tanks, and conservative commentators such as Rush Limbaugh, he placed oil company executives in key regulatory positions and took only symbolic action to limit carbon pollution. A well-funded campaign followed the example from the tobacco industry to “manufacture doubt” about the scientific consensus on climate change and to purchase the support of key congresspeople to block climate change legislation (Kramer forthcoming).

We noted above that waves of refugees and other immigrants to the EU have threatened the EU’s unity. Immigration to the United States has provoked similar nativist reactions. These contributed to the election of Donald Trump to the presidency on a platform including promises to expel millions of immigrants who entered the country illegally and to build a wall along the border with Mexico.

Rising sea levels and storm-driven flooding probably present the greatest direct economic threat to the US from climate change, as they undermine the value of coastal properties. The US federal government, however, still subsidizes insurance on these properties. Even though the agency that covers these policies is over $24 billion in debt, efforts to remove the subsidies have been obstructed by congresspeople representing coastal districts. Congress has also failed to have flood plain maps updated so home owners and buyers would better understand the risks they face (New York Times Editorial Board 2017), but a plausible collapse in America’s waterfront property market could have an economic impact greater than the bursting of the real estate bubble that precipitated the 2008 US recession (Urbina 2016).

Besides these domestic institutional failures, the absence of American leadership has also impeded the establishment of effective international climate change institutions. We have noted that voluntary national commitments in the Paris Agreement would lead to about 3°C of warming. Governments made a separate financial agreement to provide $100 billion annually for mitigation, adaptation, and supporting victims, but institutional arrangements are vague, nor is it clear how far this inadequate sum will be additional to current aid. President Trump’s withdrawing the US from the Paris Agreement and cutting foreign aid commitments undermine even these weak agreements.

Recall that agents in the original position would be particularly concerned to protect those whose lives and livelihoods are threatened by climate change, and since each government also has this obligation to its own people, the obligation for countries with more responsibility is greater where government failure is more severe. Today’s relief and refugee support organizations, such as the World Food Program, the UN High Commission for Refugees, and the host of NGOs that assist disaster victims and refugees are struggling to cope with current needs, and supports are often inadequate. Support for refugees and IDPs depends on official arrangements with governments, but some governments are not reliable representatives of victims’ interests. The government of conflict-ridden South Sudan, for example, impedes support for many of its people. As numbers of IDPs and refugees double and triple, simmering conflicts will be exacerbated and government failures in their humanitarian obligations will increase. Drought, declining water supplies, and other degradation of natural resources influenced by climate change will increase conflicts over such resources within and between states. In some such cases the obligation to support victims will conflict directly with state sovereignty, often in a context of violence.

The international community has always had a humanitarian obligation to support victims of war and natural disaster. When climate change contributes to the causes, humanitarian obligation is supplanted by direct responsibility. When state authorities in affected countries fail to facilitate support for victims, such as when they are attacking them in a civil war, engaged in conflict with another state, or simply neglecting their needs, this responsibility may entail taking control over territory and/or institutions against the will of the sovereign (or the warring parties). Then this territory and/or these institutions must be managed and protected, and just institutions (e.g. of self-determination) established in a potentially hostile environment with uncongenial patterns of authority. Yet climate change has already stretched humanitarian institutions to their limits, humanitarian crises will multiply, and crises in burdened and outlaw states are likely sometimes to coincide with crises in advanced industrial countries.

Responsibility for climate change lies with individual states, but states have always used foreign aid and development assistance in part as an instrument to pursue their political interests. “[T]he United States has viewed all multilateral organizations, including the World Bank, as instruments of foreign policy to be used in support of specific U.S. aims and objectives” (Gwin 1997, 195). Control over territory exacerbates this political risk. The only way the allocation of the substantial resources needed for mitigation, adaptation, and supporting victims, and particularly for armed intervention and control of territory, can be protected from the narrow interests of donor countries is to establish firm barriers against national influence. High management standards and accountability are also critical. Not only the independence and resources but also the management capacities of international institutions need to be greatly increased.

The act of building institutions includes overcoming resistance from those whom the new normative order threatens. Costs to a nation such as the US for national and international efforts require cuts elsewhere in the federal budget and/or increased taxes. Coal, petroleum, and natural gas interests will continue to work to maintain the value of their assets. The greater threats to established principles, however, probably involve welcoming and integrating climate refugees and building international institutions to which countries must contribute but which are insulated from national political influence.

National financial obligations and obligations to build international institutions have to be recognized before they can be fulfilled. American political experience suggests that it will take international crises with much loss of life before the legislative and executive branches will come to grips with this question. In such events the alternatives are likely to lie on a spectrum between nativist/nationalistic with militarized responses and cooperative and internationalist. But a nationalistic, militarized response can only lead to worldwide hegemony, or to competing armed lifeboats, and it is unlikely that either could contain worldwide carbon pollution.

Some libertarian individualists, business interests, conservative Christians, nativists, and no doubt others are likely to resist financial obligations, specific mitigation and adaptation programs, and influxes of climate refugees. Federal programs will variously confront individualistic responses and assertions of local and state powers. But the federal government is merely the agent for fulfilling national obligations to climate victims such as the US, or any other country for that matter, has never before experienced, obligations that apply to all residents. It will therefore fall to the federal government to impose obligations, often breaking with precedent. Resistance will follow, in light of established political culture, inside and outside the law, including resistance against climate refugees, and the federal government, along with loyal local and state authorities, will have to quell or transform it. They will have to defend the security and interests of refugees against various attacks. Since directives will sometimes originate from officials in international institutions, the federal government will rightly be accused of compromising national sovereignty. The source of this compromise, however, is the harm imposed on others by carbon pollution from the national territory.

**Stability in Conceptions of Justice and the Instability of Climate Justice**

At this writing, acceptance of responsibility for the harms from climate change has been a voluntary choice of persons or institutions (including states). Decisions to mitigate, to adapt, and to support victims have been, in an important sense, voluntary. As current and expected harms increase, however, free-riding will become increasingly unacceptable, and justice demands that responsibility should be a significant factor in allocating costs. Agents who do not accept responsibility will experience the imposition of costs as a violation, and indeed, absent responsibility, it would often be a violation of individual rights, principles of self-determination, and state sovereignty. And while financial costs can be divided mathematically, the movement of persons who lose their homes or livelihoods creates a variety of responsibilities that necessarily fall more heavily on some than on others. It falls to governments of advanced states to impose and coordinate costs and obligations within their territories, and, given the threat of free riders in an anarchic world, supranational institutions are needed to impose and coordinate costs and obligations on states. Stronger supranational institutions are also needed to support victims in poor countries, sometimes in violation of national sovereignty.

The longer the delay in building these institutions, the worse the harms and the higher the costs. In particular, the sooner mitigation and adaptation are accelerated, the fewer IDPs and refugees climate change will create, and the less conflict it will generate. Opponents of reform, however, have so far been very effective. While they will abandon some strategies as the state of play evolves, they can be expected to launch new ones, and new opponents will arise as costs and responsibilities increase.

A distinctive feature of justice as fairness is its focus on the long-term interests of the least well off members of society, associated with the veil of ignorance. It is this veil that leads us to emphasize lives and livelihoods. Agents in the original position do not know if they represent a banker in New York City or a farmer no longer able to eke out a living in a drought-stricken Sahel. Given that the banker’s wealth is due in part to America’s cumulative carbon pollution, the agents would find the banker to have a positive obligation to protect the farmer’s life and livelihood, mediated by (among others) the American government, possibly including helping to settle the farmer in New York. Notably, due to the banker’s responsibility for the farmer’s loss, this is a stronger obligation than that to provide humanitarian assistance. Notably also, this obligation generates incentives that can undermine the self-reliance of persons and governments, as some may pretend they are less capable than they actually are, or even become less capable, in order to increase eligibility for support.

The strong obligations of the state to the least well off in justice as fairness, such as to support a living income, opportunities for employment, and good education, have led some to question the stability of Rawls’ conception of justice. Can wealthy citizens’ sense of justice bring them to support laws that increase their own taxes and undermine their political power? Or is it more likely that they may “*like to be* less materialistic than they are – indeed they would like to be less materialistic because they recognize that the principles of justice do not impose unreasonable burdens on them — but they remain powerfully tempted to acquire more than justice allows” (Weithman 2015, 108)? If it turns out that human psychology makes a conception of justice inherently unstable, the appeal of such a conception is significantly diminished (Weithman 2015). Weithman argues that “[c]ontractualism itself is underpinned by a kind of moral faith that principles can be freely adhered to by those who are subject to them. Crudely put, this faith is faith in the amenability of human beings to the relevant kind of moral education and in the ability of basic institutions to deliver it” (2015, 93). He suggests that contractualists are likely to believe that this faith is reasonable within a national community, but not to support equivalent duties of justice to the global poor (2015, 133).

The duties of citizens of rich countries to victims of climate change among the global poor are qualitatively different from duties of justice that wealthy citizens may owe the poor in their own national community. The former arise from more direct responsibility for this victimization, due partly to conditions for their wealth, and, particularly in light of the momentum of climate change and the severity of harms, these duties are stronger. While contractualism represents one family of approaches to social justice, duties to climate victims stem from responsibility, which is fundamental to any moral theory.

The recognition of this responsibility leads to duties to build institutions that strengthen global governance, undermine the sovereignty of nations such as by taking control of territory, impose significant financial obligations, and require states to impose not only financial costs on their citizens but also measures to welcome and integrate millions of refugees, most of whom are at a great cultural distance from natives, and, of course, who did not leave their homes simply by choice. To strengthen global governance is to impose new rules on each level of government down to the individual, diminishing liberties, powers, and resources. There is no purpose more fundamental to democracy than to support individual liberty and autonomy, and, of course, in light of climate change, this is precisely what stronger global governance accomplishes, but the necessary “reshuffling” of norms or principles most immediately diminishes many freedoms and threatens established orders. Yet when threatened, individuals and institutions often fight back.

Actions needed to respond to climate change not only threaten many people’s interests but also their principles and worldviews. Heretofore many have responded to this threat, including the current President of the United States and Director of the Environmental Protection Agency, simply by denying reality. To sustain democracy, governments first need to acknowledge responsibility democratically. To do so is costly, but delay increases costs exponentially. Democratic methods for getting democratic institutions to acknowledge their principles include elections, lawsuits, new law, civil disobedience, and other actions that dramatize the injustice. A strong coalition of countries participating in fair global climate governance could leverage participation by free riders. When injustice causes suffering and death, however, responses have often exceeded liberal boundaries, such as with attacks on persons and institutions viewed as perpetrators.

The imperative, therefore, is to forge a democratic consensus for institutions of global governance that can move us from voluntary and decentralized compliance with climate justice – which has proved inadequate – to enforced compliance based on responsibility. This move is, however, massively destabilizing. It threatens powerful interests in order to avoid harms to agents who, for the most part, cannot defend their own interests. It therefore falls to self-selected agents who are prepared to undertake the costs of action on behalf of climate victims and the common good.

Future harms from a given level of carbon pollution massively exceed current harms, and even current harms are so many and widespread, with so many interactions, that their magnitude is hard to grasp. Based on the geological record for concentrations of atmospheric CO2 and the most favorable trajectories, civilization is in mortal peril. Bottom up climate science has greatly underestimated the harms. A current summation is far more terrible than one from just five years ago, and there are sure to be more bad surprises. The consequences of failure to take extraordinarily rapid action to build the required institutions are far greater than those from failure to address other environmental or social challenges such as fracking, plastic in the ocean, opioid abuse, sexual harassment, or gun control.

Only national executives and legislatures can initiate the institutions of global governance required for mitigation, adaptation, supporting victims, and mediating conflicts driven by climate change. In order to sustain democratic institutions as the planet warms, the priority is to elect executives and legislators who support this agenda. It is clear that the scale of each of these challenges – mitigation, adaptation, supporting victims, and mediating conflicts – is such that it can only be managed with much stronger global institutions. We need these institutions today, although of course it takes time to build them. It is also clear that decentralized individual and local actions, to reduce carbon footprints, prepare for floods and heatwaves, care for refugees, and mediate conflicts, are inadequate. Progress in institution building can be made before global consensus is achieved on the full program of global governance, and while the full program is needed today, elements can be achieved incrementally. Delay merely increases harms.

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