

## A SOCIAL CONTRACT CASE FOR A CARBON TAX: ENDING AVIATION EXCEPTIONALISM

*Un caso de contrato social para un impuesto al  
carbono: Poniendo fin al excepcionalismo de la  
aviación*

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### ABSTRACT

The social contract tradition's promise of facilitating just interaction among large groups of strangers remains as salient as ever. Kant in particular recognised that economic activity imposes costs on large and unspecifiable groups of people who cannot be asked in advance for their consent; he concluded that in order to engage in economic activity while dealing ethically with everyone, we require the state and the rule of law to set out the norms under which we can engage in other-affecting activity like commerce. In response to the challenge of coordinating the welter of anonymous interactions that modern economic life consists in, contract theory offers the social conventions of money and law.

However imperfectly these conventions operate in practice, people rely on them to orient themselves in the world. Carbon taxes have been touted by economists for decades as the most efficient way to send appropriate signals to people about their emissions behavior. The widely underappreciated fact that most fuel for international air travel remains untaxed—and is thus effectively subsidized relative to the rest of the economy—provides an especially vivid illustration of the necessity for appropriate social conventions to provide the conditions under which economic activity can be undertaken with less injustice.

In this paper, I explain why people seeking to flourish together fairly in the imperfect world we share today ought to support a universal carbon tax with no exception for international aviation. The argument proceeds in four steps. First, I provide a free-standing analysis of emissions behavior at the individual moral level. Second, I offer a picture of ideal and non-ideal coordination based mostly on Kantian social contract theory. Third, I argue that in a non-ideal context, moral signals about right relation offer a coordinating fulcrum around which meaningful if only partly coordinated action is possible. Fourth, I apply these conclusions to the case of aviation exceptionalism, focusing especially on instances of incomplete, overlapping, partly coordinated climate actions. I conclude that these arguments together amount to a case for reversing the Chicago Convention and applying a universal carbon tax that does not exclude international flights, ending aviation exceptionalism.

**Keywords:** climate justice, climate ethics, aviation exceptionalism, carbon tax, social contract, Kant



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## RESUMEN

*La promesa de la tradición del contrato social de facilitar una interacción justa entre grandes grupos de desconocidos sigue siendo tan relevante como siempre. Kant, en particular, reconoció que la actividad económica impone costos a grandes y no especificables grupos de personas a quienes no se les puede pedir su consentimiento por adelantado; concluyó que para participar en la actividad económica de manera ética con todos, necesitamos el estado y el estado de derecho para establecer las normas bajo las cuales podemos participar en actividades que afectan a otros, como el comercio. En respuesta al desafío de coordinar el conjunto de interacciones anónimas que constituye la vida económica moderna, la teoría del contrato ofrece las convenciones sociales del dinero y la ley.*

*Por más imperfectamente que estas convenciones operen en la práctica, la gente confía en ellas para orientarse en el mundo. Los economistas han promovido durante décadas los impuestos al carbono como la forma más eficiente de enviar señales apropiadas a las personas sobre su comportamiento de emisiones. El hecho ampliamente subestimado de que la mayor parte del combustible para los viajes aéreos internacionales permanece sin gravar—y, por lo tanto, efectivamente subsidiado en relación con el resto de la economía—proporciona una ilustración especialmente vívida de la necesidad de convenciones sociales apropiadas para proporcionar las condiciones bajo las cuales la actividad económica puede llevarse a cabo con menos injusticia.*

*En este artículo, explico por qué las personas que buscan prosperar juntas de manera justa en el mundo imperfecto que compartimos hoy deberían apoyar un impuesto al carbono universal sin excepción para la aviación internacional. El argumento procede en cuatro pasos. Primero, proporciono un análisis independiente del comportamiento de las emisiones a nivel moral individual. Segundo, ofrezco una imagen de coordinación ideal y no ideal basada principalmente en la teoría del contrato social kantiana. Tercero, argumento que en un contexto no ideal, las señales morales sobre la relación correcta ofrecen un punto de apoyo de coordinación alrededor del cual es posible una acción significativa, aunque solo parcialmente coordinada. Cuarto, aplico estas conclusiones al caso del excepcionalismo de la aviación, centrándome especialmente en los casos de acciones climáticas incompletas, superpuestas y parcialmente coordinadas. Concluyo que estos argumentos juntos constituyen un caso para revertir la Convención de Chicago y aplicar un impuesto al carbono universal que no excluya los vuelos internacionales, poniendo fin al excepcionalismo de la aviación.*

**Palabras clave:** *justicia climática, ética climática, excepcionalismo de la aviación, impuesto al carbono, contrato social, Kant*

## INTRODUCTION: THE PROBLEM OF AVIATION EXCEPTIONALISM

According to an exceptionally forthright series of reports from the Intergovernmental Panel on Climate Change (IPCC 2018; Pörtner et al. 2022; IPCC 2023) we must quickly and radically reduce our emissions of carbon dioxide and other causes of effective radiative forcing if we are to avoid the worst effects of climate instability.<sup>1</sup> While there is some evidence of progress in coordinated

<sup>1</sup> I say “effective radiative forcing” (a measure used by the IPCC to estimate climate impact based on the driver’s effect on surface temperature, ocean temperature, and sea ice levels) here because we are concerned about achieving the climate stability under which fair flourishing together now and in the foreseeable future is possible. Climate change attributable to aviation is driven by greenhouse gas emission, but also by other consequences of aviation (soot, contrails) that drive additional temperature rises threatening climate

global action, and some evidence of progress in independent action, still, much more needs to be done in order to achieve the radical reduction of overall emissions by 2030 that is needed to keep the hope of net zero by 2050 alive (Boehm, et al. 2022).

One of the larger drivers of global heating and climate instability is the suite of effects associated with aviation (Gössling and Humpe 2023). Depending on how it is counted, aviation accounts for between two and five percent of global effective radiative forcing --in addition to carbon dioxide, aviation contributes soot, water vapor, and nitrogen oxides, the last three of which together at least double the effects of aviation-associated carbon emissions (Lee et al. 2021; Planès et al. 2021; Delbecq et al. 2023). International aviation emissions make up about 60% of total emissions for the sector, and while domestic aviation emissions are accounted for in national ledgers submitted under the Paris Agreement and are normally subject to domestic taxation regimes, international aviation emissions are not covered in the Paris Agreement and are mostly not subject to taxation (Graver 2018; Delbecq et al. 2023). Moreover, emissions in the international aviation sector are expected to rise steadily, even as other sector emissions are expected to drop ("International Aviation," n.d.).<sup>2</sup>

Estimates of the eventual share of the global carbon budget devoted to aviation vary. In one recent modelling exercise, various scenarios (with different rates of air traffic growth, different technological changes, and so forth) produced proportions between 6.5% and 26.8% for a 1.5° global carbon budget to 2050, or between 2.9% and 9.9% for a 2° carbon budget to 2050 (Planès et al. 2021). When *Carbon Brief* commissioned scientific analysis of the International Civil Aviation Authority (ICAO) estimates of sectoral emissions growth together with Paris Agreement carbon budget targets for 1.5° and 2° of heating, they concluded that the aviation sector's share of the global carbon budget from 2015 to 2050 could be as little as 7% (for the 2° scenario) to as high as 25% in the scenario limiting temperature rise to 1.5° over pre-industrial global surface temperature means (Pidcock and Yeo, 2016; see also Graver 2018).

How are we to make sense of our being on track to a possible world in which one in every four units of effective radiative forcing comes from air travel?

stability. The Planetary Boundaries project measures climate change thresholds using both concentration of atmospheric carbon dioxide and change in radiative forcing, for example (Richardson et al. 2023). Modelling of climate effects of the aviation sector also uses effective radiative forcing to estimate carbon and non-carbon impacts (Planès et al. 2021, 11). Carbon effects are understood well and can be estimated with relatively high certainty, while non-carbon effects are not well understood (yet). However, there is little uncertainty about the fact that non-carbon impacts significantly increase aviation's contribution to the climate change (Delbecq et al. 2023). For simplicity's sake in this paper I speak of 'emissions' and 'emissions reduction', but we should understand that what matters is climate impact and that for aviation, this includes drivers additional to greenhouse gas emissions.

<sup>2</sup> This paper is concerned with the exceptional status granted to international aviation under international law, and so it is the growth and share of the global carbon budget of international aviation rather than aviation in general that concerns us specifically here. However, most of the research on climate impact by sector treats aviation as a whole comprised of domestic (about 40% of total emissions) and international (about 60% of emissions).

At present, there is good reason to presume that fewer than a fifth of people alive have taken a single international flight; we can be sure that a relatively tiny group of frequent fliers account for the vast majority of international aviation related emissions (Gössling and Humpe 2020). Two things follow from this simple fact about the disproportion between flyers and non-flyers. First, there is enormous potential unsatisfied demand for flying, so strong that incremental improvements in aviation efficiency tend to *increase* rather than decrease overall aviation emissions, because they make previously uneconomic routes possible, with growth consistently swamping efficiency gains (Tarr, Smith, and Rodger, 2022; Peeters, et al. 2016). Second, the status quo in international aviation emissions is radically inegalitarian, with a small portion of the world's population enjoying a disproportionate share of the remaining carbon budget.

These conditions—aviation's large and increasing share of the global carbon budget combined with the facts that at most one-fifth of human beings enjoys international flying today and that most of the flying is done by a tiny fraction of them—make international aviation a crucial case for social contract analysis in climate policy. Social contract analysis mediates between individual moral obligations to treat each other rightly and the collective nature of these relationships in our modern, enormously complex trading societies by analysing conditions of coordination among agents. The ethical basis of social contract remains individual, but the theory recognizes the mediated nature of relationships, offering coordination via institutions (financial, legal, political, social) so that individuals may engage in other-affecting action rightly (or, at least, less wrongly). If the question for social contract theorists is “how can we arrange our relationships so that we can flourish together fairly?,” that question is particularly sharp in the international aviation case. As discussed in more detail later in this paper, global rules enacted in the wake of the second World War exempted international aviation fuel from taxation; under the 2015 Paris Agreement that exceptional treatment continued, with international aviation (and shipping) excluded from emissions reduction targets. We find ourselves in a world of aviation exceptionalism, where flying is treated very differently than other sectors. It is hard to imagine those on the losing side of aviation exceptionalism (people vulnerable to the effects of climate change whose climate-related costs are greater than any potential flight-related benefits) actively consenting to the status quo, much less to a mid-century scenario in which a quarter of all emissions are devoted to international flying.

In this paper, I explain why people seeking to flourish together fairly in the imperfect world we share today ought to support a universal carbon tax that does not exclude international aviation. Back in 1947, when the Chicago Convention (more formally, the Convention on International Civil Aviation) was ratified, international aviation was specifically *exempted* from fuel taxes, for moral and pragmatic reasons that should matter from a social contract perspective. Nearly a century later, the context that justified aviation exceptionalism has shifted,

and we must ask whether peace and prosperity, whether flourishing together fairly, justify removing that exception.

The argument proceeds in four steps. First, I provide a free-standing analysis of emissions behavior at the individual moral level. While almost always omitted in the literature on aviation exceptionalism, this level of analysis forms the (nearly always tacit) foundation of subsequent argument about structural change and policy options. Second, I offer a picture of ideal and non-ideal coordination based mostly on Kantian social contract theory. Third, I argue that in a non-ideal context, moral signals about right relation offer a coordinating fulcrum around which meaningful if only partly coordinated action is possible. Fourth, I apply these conclusions to the case of aviation exceptionalism, focusing especially on instances of incomplete, overlapping, partly coordinated climate actions. I conclude that these arguments together amount to a case for reversing the Chicago Convention and applying a universal carbon tax without excluding international flights, ending aviation exceptionalism.

## I. REASONING ABOUT CLIMATE ACTION FROM AN INDIVIDUAL PERSPECTIVE

In this first part of the paper, I offer a free-standing model of ethical reasoning about flying under today's difficult conditions: ongoing and accelerating climate change, an international aviation sector that absorbs an increasing portion of the global carbon budget, and institutions that are not helping individuals navigate these conditions. The model is influenced by arguments in the history of social contract theory and in recent literature on environmental and climate ethics, but it is also a response to their shortcomings as guides for the perplexed.

In order to reason about how to flourish together fairly as people benefitting from and bearing the costs of international aviation, we should first set out some baseline assumptions. Following Hume, we posit that justice matters to human beings under circumstances of moderate scarcity and limited altruism (Hume 1739). Under such conditions we can normally expect to solve resource problems with cooperation and distribution, and outside such conditions (for example, in circumstances of plenty) we would not face such problems in the first place.<sup>3</sup> The goods associated with emission of greenhouse gases are at least moderately scarce: they are subject to increase under the right kinds of cooperation, but they are also subject to physical limits. We can increase scarce, emissions-associated goods like international travel in many different ways, some of which are more emissions-efficient than others. Since there is a limited quantity of greenhouse gases we can collectively emit while reasonably expect-

<sup>3</sup> If we faced conditions of grave scarcity, and were unable to achieve sufficiency for collective flourishing via cooperation and distribution, then we would also find ourselves outside the Humean circumstances of justice. A situation like this one is vividly described by Tim Mulgan in the introductory lecture of *Ethics for a Broken World: Imagining Philosophy After Catastrophe* (Mulgan 2014).

ing to enjoy sufficient climate stability to continue to flourish, production and consumption of emissions-associated goods such as international aviation is a matter of justice in Hume's sense. In other words, it is a matter of flourishing together fairly.

Ordinary reasoners and philosophers alike find themselves struggling for orientation in their multiple roles as agents of environmental harm, as patients of environmental harm, as citizens of states committed under the Paris Agreement to reducing climate harm and subject to "common but differentiated responsibility" for climate harm reduction, as members of various organized groups able to coordinate themselves for climate harm reduction, and as human beings connected with past and future human beings as well as with non-human beings all subject to harm and harm reduction. It is plain to most people that fair flourishing together now and in the foreseeable future<sup>4</sup> requires reducing greenhouse gas emissions among other collective efforts aimed at securing some measure of climate stability. The gap between what is plainly needed for everyone's fair flourishing together and the likely results of present trends presents each of us with motivation for action, just as seeing flames and smelling smoke presents us with motivation for dousing a fire. However, as many others have similarly observed, the way our fossil-fuel energy regime functions under global capitalism undermines our capacities for effective action: individual action is often inadequate and even self-undermining as it distracts us from the key drivers of climate change, while conventional paths to collective action are at best too slow and only partly coordinated (as I discuss later in the paper). Faced with an obvious shortfall in urgently needed climate action combined with the futility of conventional individual and collective responses to that gap, ordinary reasoners and philosophers alike seek productive and ethical orientation. This paper begins to provide such an orientation by working through the case of aviation exceptionalism as an especially clear example of the gap between what climate justice demands and what our present circumstances deliver. In this sense, the paper contributes to the political theoretical work on reconciliation--of ethical end-setters to their historically given circumstances that challenge their ethical ends--as imagined by Rawls and others (see McKean 2017).

International flyers' contributions to climate change exceed average non-flyers' contributions by a wide margin. One way to come to grips with the moral implications of this difference is to model climate harm as if it were a direct rela-

<sup>4</sup> By 'fair flourishing together' I mean to refer to achieving right relations among individuals who cooperate to enjoy more well being than they otherwise would. I use 'right relations' in the sense Kant uses in his *Metaphysics of Morals* (1797) of enabling autonomy via freedom from another's arbitrary choice, which he argues entails submission to common laws (that is, coordination of everyone's other-affecting activity). By 'now and in the foreseeable future' I mean to select the interests of everyone alive now plus the reasonably foreseeable interests of soon-to-be-born future human beings. I am not claiming that non-human beings, far future human beings, or collective entities like species or landscapes have no moral standing, only that this is not the paper to address those questions.

tionship between agent and patient. As I discuss below, things are not this simple, but it is nonetheless instructive to think of these relationships as morally analogous to one-on-one harms. The one-on-one model illuminates our moral obligation not to inflict non-trivial harm, even if we would need social institutions to effectively fulfill this obligation in the case of aviation emissions.<sup>5</sup>

If we think of climate harm as an isolated act done to another person, our obligations would seem pretty easy to derive. John Broome (2017) provides a particularly clear illustration of this kind of argument.<sup>6</sup> Since morality requires us to avoid all but the most trivial kinds of harm to others, and since greenhouse gas emissions certainly harm others non-trivially, we are therefore obliged to avoid emitting greenhouse gases.<sup>7</sup>

I estimate that the gas each of us emits during our lifetime will shorten people's lives in total by a few months. This is not trivial. So the harm done by greenhouse gas does not fall under the triviality exception, if there is one, and nor does it fall under any of the other exceptions to the duty not to harm. Morality does indeed require us not to emit greenhouse gas. I recommend you to meet this duty by reducing our emissions and offsetting any that cannot be eliminated (Broome 2017, p. 9).

Whatever one thinks about offsetting, Broome's basic argument remains powerful. The fact that it sounds "crazy," as Robert Goodin (1994) puts it, to suggest that we may not impose the harms associated with our activities onto others by practicing a fossil-fuel-powered lifestyle doesn't make the argument less valid (and in fact, Goodin reminds us that the Ten Commandments are also not universally followed, but that does not make them less powerful as moral ideals for many people). Any such calculations are necessarily subject to empirical quibbling (see Hiller 2011), but again, their fundamental implication of the wrong of imposing the costs of our decisions onto others remains compelling even though (as we shall see) the worry about effective action will lead us to a different mode of analysis, beyond the individual level.

A less empirically contentious example of the same kind of reasoning could be given by the following analogical thought experiment. Imagine that you own a piece of beachfront property. One day, I arrive with my giant amphibious excavator and remove a few cubic meters of your domain. You are aggrieved, and demand that I return your property. But I say, my removing your beach today with my excavator is no different than what I and my fellow high emitting folks

<sup>5</sup> I thank an anonymous reviewer for constructive suggestions on framing this argument.

<sup>6</sup> Broome means to endorse this argument from the perspective of individual morality, but concludes that since it is impossible to persuade enough people to become virtuous fast enough, we must turn elsewhere for solutions to environmental problems (Broome 2017, p. 10).

<sup>7</sup> There is a large literature engaging this point and the many difficulties it faces. On individual causal efficacy, see among many others: Sinnott-Armstrong (2005) for a classic survey concluding against individual responsibility, Hiller (2011) for a critique of that view, Garvey (2011) for another excellent critique, and Kingston and Sinnott-Armstrong (2018) for a recent retrieval of it and defense of 'joyguzzling'.

are doing all the time to everyone: this is just business as usual, speeded up a bit and made more visible. What distinguishes (1) showing up with an excavator from (2) the impositions of harm associated with daily life in an advanced industrial country, is that in the former case, our “real relations with our kind” (and others!) are on display rather than hidden.<sup>8</sup> From an idealized, individual moral perspective, taking an international flight imposes harms on climate vulnerable people now and in the future, just less immediately and less visibly than the harms imposed by my digging up your back yard.

Robert Goodin’s comparison of pollution compensation regimes with the sale of indulgences offers us a third intuition-refining example. Goodin makes use of an elaborate analogical analysis to argue that we should think of the alternatives to the status quo (i.e. rampant externalization of costs) as including not just ‘polluter pays’ but also ‘no pollution allowed’. Goodin compares the attempt to compensate for environmental harm (for example, via what we now call a carbon offset) to the medieval practice of buying indulgences (paying a sum to the church to atone for some sin).<sup>9</sup> There are many reasons that both practices are wrong (they unfairly distribute permission to do things that are supposed to be wrong in themselves, for starters). Even in cases where we allow compensatory payments for wrongs, we should not see those economic transfers as able to right the wrongs of either sin or pollution:

What is wrong with environmental despoliation is that it deprives us of that context [in which human beings set our lives]; it makes the external world more and more one of our own (perverse) creation. That is ultimately a wrong to humans, rather than to nature as such, to be sure. It is, nonetheless, a wrong that cannot be recompensed by cash payments. (Goodin 1994, p. 587)

<sup>8</sup> “All that is solid melts into air, all that is holy is profaned, and man is at last compelled to face with sober senses his real conditions of life, and his relations with his kind,” (Marx and Engels 1848). This paper’s exercise in modelling defensible behavior under conditions of climate change and only partial coordination starts from the idea that limited rational end-setters in a context of vast anonymous trading societies need institutions to mediate their real relations because they are unable to act rightly towards each other directly. When we drop the Lockean wish that our individual environmental effects are like drinking from a huge river (or Walter Sinnott-Armstrong’s updated version of Locke’s extractive analogy to apply it to pollution, namely that of pouring one quart of water into a river in flood, Sinnott-Armstrong 2005), recognizing that really we are always already affecting one another, we are able to see that we need the mediating institutions of social contract—law, money, social norms—to allow us to engage rightly with the world. The perspective shift that is required to outgrow our Lockean wish and understand our real situation as participants in the late modern fossil-fuel economy moves us away from linear, local, immediate-effect relations and towards exponential, global, lagged effect ones that are no less real for their natural imperceptibility. See for example McNeill and Engelke (2014). The literature on imperceptible wrongs is interesting, but it rests on an outdated, seventeenth-century picture of human interaction.

<sup>9</sup> You can be impressed with Goodin’s prescience, or sad that we have made so little progress in reasoning about climate justice, but many of the most important issues still unresolved today are discussed in this 1994 piece. Goodin is sensitive to the distinction I draw here between ideal ethics on the one hand and practical collective efforts to move society closer to its ideals on the other (Goodin 1994, p. 4). At this point in the paper I am interested in Goodin’s description of the ethical wrong of externalizing environmental harm, not his all-things-considered policy recommendations.



Goodin does not object to using financial incentives to deter the harm of pollution, so long as the payments are not framed as true compensation for some environmental harm but instead as a policy instrument in the service of some political philosophical ideal (589). But he insists that we face the real, irremediable costs of our everyday polluting behavior: just as the medieval practice of indulgence purchasing allowed some to ignore (but not in fact to erase) the blackness of their sins (!), so our nascent systems of environmental indulgences cannot cleanse our world of their harms.

Having worked through these three descriptions or analogies of emissions behavior framed as a one-to-one relationship, it is hard to see how environmental harms could ever be morally acceptable.<sup>10</sup> There is an act I could perform or omit (say, flying internationally). That act, if performed, will contribute a predictable amount to climate change by adding carbon dioxide and other greenhouse gases to the atmosphere, plus contributing to overall radiative forcing via things like contrails and soot. As a direct result of that act, risks will be increased, and increased disproportionately on those most vulnerable already. Harms will be felt. People born onto at-risk land, for example, will be that much closer to becoming climate refugees, because of my act.

It matters little which flavor of ethical theory one applies to the question of whether greenhouse gas emissions can be justified: as long as we are analyzing relationships between independent agents, externalization of the costs of pollution by one agent wrongs the receiver. Reasoning with Peter Singer (1972) about marginal utility, on the one hand, it is clear that the marginal utility for me of attending the conference could hardly outweigh the marginal utility for the climate vulnerable of basic physical safety. Using liberal reasoning about rights and consent, on the other, it is hard to see how I could have a right to impose non-trivial harm onto people I haven't consulted. Even if I resort to a thought experiment as a proxy for their unconsulted will, and ask whether hypothetically those affected could have approved my act, it seems inconceivable that they could have willed such a harm onto themselves with no discernable benefit. Classic ethical analysis, then, almost regardless of the particular flavor of moral theory employed, forces us to acknowledge the fact that we are unable to avoid wronging many people, all the time, with our emissions behavior. Broome illustrates the dilemma here:

<sup>10</sup> To remind the reader: this paper argues that the one-to-one relationship framing of climate harm can only ground individual orientation to collective climate action. Here, the inability of individuals to avoid contributing to climate harm and the inability of individuals to take effective action redressing climate harm are the reasons given for limiting the individual perspective to orientation. There is a large literature offering additional reasons to doubt that individual ethics can make sense of climate justice that I will not be able to address here. Garrett Cullity, writing on his own and with Christian Barry, has introduced important nuances to the discussion of climate harm that I have not been able to incorporate into this analysis (on expected harm, on membership in a collective and the duties of offsetting that imposes on individuals, and on the failure of a deflection to political responsibility strategy, among others) (Cullity 2019; Barry and Cullity 2022).

[I]t is extremely hard for people to cut their emissions of greenhouse gas to zero by their own efforts.... Indeed it cannot be done at all without a restructuring of society and without new technology. For example, how could you survive through the winter without emitting greenhouse gases? You could not use fossil fuels for keeping warm. You could use biomass that you grow during the summer, or wind power, or something else. But these renewable sources of energy need more space than most people have access to. So you probably cannot survive the winter using only your own resources. You need the opportunities of a new economic infrastructure to supply you with carbon-free energy (2017, p. 10).

What, then, is the point of modelling environmental relationships one-on-one? To preview the argument unfolding in the rest of this paper, ethical reasoning about our environmental relationships *orients us* to what would be right relation with others, if only the conditions of that right relation were available; this orientation toward ideal environmental relationships points us to provisional institutions that might at least not foreclose the possibility of realizing less unjust relations in our environmental behavior.<sup>11</sup>

Stepping back from this preview to the question about the point of the model in general and flight behavior in particular, we might remember that Singer's analogical reasoning from 1972 sought to demonstrate that distance and relative invisibility shouldn't affect our moral obligation to relieve suffering wherever we can (Singer 1972). The individual actions prescribed by Singer's moral calculus are demanding, but feasible, in large part because he conceives of ethical relations on a one-to-one basis, from one person's capacities and the marginal utility of that person's next unit of resource, to another's. Singer (in the 1972 piece) didn't demand that individuals end poverty; he demanded that they do what they can to increase pleasure and decrease pain, and a manifestly efficient way to do that is to transfer resources from those whose next unit has relatively low marginal utility (getting to work on time, or getting to my conference) to those whose next unit would be extremely high value (for example, food where there is too little, or prevention of disease). The actions demanded by the one-on-one model in the climate change space seem similar to those demanded by Singer, because by avoiding emissions each of us can in fact reduce our contribution to climate change, and because the relative marginal utility gap is wide in this case, too. However, a critical difference is our individual capacity to effect the relevant improvement in another agent's actual utility.

Singer and his collaborators on various projects in effective altruism have worked within the existing systems of money and law to make it (even more) possible for individuals to transfer units of utility to places where they will do the most good (Singer 2009). But as Broome points out, our existing systems

<sup>11</sup> Some of the ideas that contribute to this formulation can be found in the following works: Higham, Ellis, and Maclaurin 2018; McKean 2016; McKean 2017; McKean 2020; Medearis 2015.

themselves must change before we can alter the effects of environmental harm on the most vulnerable. The model of pollution as a one-on-one relation between agent and patient is a helpful idealization pointing us to the need for orientation and coordination as discussed in the rest of the paper. Ideal reasoning about environmental harm as one-on-one relation thus orients us to a powerful moral imperative, but it cannot equip us with the means to act on it (Broome 2017, 10).

## II. THE IDEA OF A SOCIAL CONTRACT

### The Kantian Contractarian Model

As compelling as this abstract reasoning about responsibility for climate harm is, its application in a strategic and non-ideal setting is far from clear. Even Kant recognized this kind of problem: he may have proposed excessively rigoristic solutions to moral problems in the *Groundwork* and “On the Supposed Right to Lie,” but when it came to ‘bending the knee before right’ in the strategic and non-ideal setting of collective political life, his proposals were if anything too permissive (Kant 1996b [1784, 1793, 1795, 1797]).

To make a long story extremely short: in society, under non-ideal conditions of uncertainty about the future, overdetermination by the past, and always precarious civil order, Kant recommended ‘always preserving the possibility of progress’ (Huseyinzadegan 2019)<sup>12</sup>. Recognizing that policy decisions involved complex tradeoffs and that simple rigor could be counter-productive under many circumstances, Kant argued for distinguishing between circumstances that were morally completely intolerable, and circumstances that contradicted the right but could be temporarily tolerated in the name of comprehensive better outcomes. Even Kant doesn’t expect us to realize absolute justice all at once: citizens in civil society have to be strategic about moving collective life toward justice, and the ideological revolutions necessary for progress occur more slowly than individual enlightenment. Applied principles of civil justice are therefore, for Kant, always provisional (Stilz 2014, see also Ellis 2005).

<sup>12</sup> Early literature on climate justice tended to analyse candidate principles of justice and arguments for responsibility for climate change while presuming that the answers to these questions posed at an ideal level would apply seamlessly to the circumstances we actually inhabit. Kant’s late work on provisional right and the possibility of progress pioneered what we now call ‘non-ideal theory’, considering how we can honor our duties of right relation under circumstances that seem to make that impossible. Rawls famously distinguished ideal from non-ideal theorizing, with the former characterized by assumptions of full compliance and favorable conditions, and the latter applying the principles of the former (Rawls 1999). Recently, climate justice theory has taken up this baton, arguing that “normative theorising has something to offer even in an imperfect world mired by partial compliance and unfavourable circumstances” (Heyward and Roser 2016).

So how does Kant expect us to apply moral reasoning to strategic and non-ideal situations in civil society? Again, to make a long story really short: we need to use *the idea of a social contract* to organize our interactions in our vast, anonymous trading society (O'Neill 2015). Ideally, we shouldn't be able to do anything affecting others without their permission, since civil freedom for Kant is freedom from determination by another's choice. But since we have to live, and interact, and try to flourish together, and since we can't ask everyone every time we do something other-directed, we instead think of what others hypothetically could approve. Because we cannot go around calculating those answers anew every minute of the day, we use civil law as a proxy for what everyone would affirm as fair (Ripstein 2009). The way I like to think of this Kantian idea is that we use the institutions of money and law to ensure that we are not wronging everyone when we take other-affecting actions.<sup>13</sup> These institutions are wildly imperfect, and Kant thought we should continually subject them to progressive critique, but they do facilitate ongoing interactions in modern society.

### **A poor fit between the Kantian contractarian model and environmental reality**

This is all very nice until we confront the problem that climate change is moving to foreclose future possibilities much faster than we are able to adjust the institutions of money and law towards sustainability.

Remember that Kant insists that we distinguish between provisionally tolerable states of injustice and those that must be rejected immediately, those that offend not just justice but the possibility of moral progress (say, tolerating inherited monarchy but not assassination, because the latter undermines the conditions of possibility for peace) (Ellis 2008). There is now a new kind of gap thanks to the rate of change and the seriousness of the consequences of climate change: the conventional Kantian theory can account for a gap between an ideal system of civil justice and the imperfect one we instantiate using money and law, but now we have this second gap opening up between our ordinary imperfect realization of social contract (including the slow processes expected to help it evolve towards justice) and the extraordinary situation that seems to call for more-than-ordinary civil action. It seems, as I shall discuss again in Part 4, irrational in the extreme for us to be taking actions like approving airport expansions or opening new brown coal mines now, with fewer than thirty years to mid-century and its net zero target. Yet under the conventional Kan-

<sup>13</sup> I thank an anonymous reviewer for pointing out the complexities inherent in the concept of law in this paper. We can distinguish between several senses relevant here: Kant's technical use of law as a proxy for omnilateral will that coordinates everyone (at least, everyone under a single national sovereign); my related concept of law as actual rules of coordination coercively enforced by states that are produced and revised slowly in response to political and social change; and finally law as the means of effecting states of affairs under conditions of partial coordination (such as national laws implementing the Chicago Convention regime of aviation exceptionalism as well as the laws that could weaken or remove that regime).

tian model, the institutions of money and law plus the ongoing slow process of civil critique and improvement of those mechanisms are the only means we have of making decisions about our flourishing fairly together. Small wonder that ordinary citizens of the United Kingdom are ever more frequently gluing themselves to the tarmac, and ordinary citizens of Germany are treesitting or protecting those that do, when the actions of airport and coal mine expansion are so obviously out of step with our prospects for fair flourishing. The Kantian model has no room for this kind of extraordinary action despite the urgency of the climate crises (see Mittiga 2022, esp. pp. 1001-2). The Kantian model is supposed to be policy neutral and republican in the Kantian sense of reflecting the will of the people; under the stress of the climate crises we can see that the model's built-in lag time amounts to a status quo bias.

It is this realization that motivates the general calls for climate action on all fronts, on the part of everyone from individuals to civil society groups to governments to intergovernmental and global agencies. From a scientific point of view, there is every reason to take these calls seriously: if we wait for money and law to mediate our response to climate change, we will have done even more serious irreversible harm than we have done already. But what this perspective fails to comprehend is that the call for collective action outside the normal model--outside systems of money and law and the social movements that normally aim to influence and improve them—effectively if only partially returns us to a state of nature with each other.<sup>14</sup>

### Moving Beyond Conventional Kantian Contract Theory

This circumstance is what explains our uneasy feeling regarding calls to climate action, contemplating our contributions to climate sustainability compared with others', contemplating every little internalized gain that comes with externalized costs. In the aviation exceptionalism literature, it has been noted as the belief/behavior gap, especially visible with the failure of *flygskam* (flight shame) to make much difference to people's transportation choices. The ordinary provisional Kantian model of non-ideal but justice-oriented collective life would point us towards the institutions of law and money and the ongoing process of progressive critique of that system: to the Paris Agreement and its regularly revisited distribution of shares of emissions reduction that should in principle cover all of us equitably (according to our common but differentiated responsibility)<sup>15</sup>; to a market in emissions and sinks that sends price signals

<sup>14</sup> Chiara Cordelli offers a similar argument with regard to privatization: "privatization, as currently experienced in many liberal-democratic states, is a regression, albeit partial, to the Kantian state of nature, and thus to a condition of merely provisional justice" (Cordelli 2021), section 1.2.

<sup>15</sup> "The notion of carbon budget is defined at the global scale. NDCs constitute a mechanism designed to share this carbon budget in a distributed manner among countries, but as every country sets its own emission target, there is no guarantee that, once reconciled, the NDCs altogether will comply with the Paris Agreement objectives" (Delbecq et al. 2023, 3).

allowing billions of independent decision makers to trade in their own interest without externalizing their costs.

Kant would normally counsel patience when confronted with the way that civil life facilitates persistent injustices, asking us to focus on the preconditions of progress as such, which he was sure included civil order under law. In one of the rare instances in which Kant recognized that immediate action in contradiction to an institution's position is necessary (when one is convinced that a church is asking one to preach something contrary to the truth), he counseled withdrawal and scholarly expression of difference: resign your post and write a public essay (Kant 1996a [1784]).

These are not the worst counsels in response to climate emergency: withdraw as far as one can from supporting things that are in contradiction with sustainability and express yourself in public on the matter. But they are insufficient: being part of a species that is affecting the planet on a geological scale is a problem of a different order of magnitude than having trouble with your church's doctrines of the moment (see Chakrabarty 2021). Moreover, as has often been noted, shaming climate activists for their flying behavior amounts to expecting them to surrender the field to their fossil-fuel supporting counterparts.

In this case, while pursuing the conventional non-ideal Kantian path of civil society (money and law) plus critique, we must also pursue action at the intermediate, under-coordinated levels of civil society: in our professional societies, civic groups, and even in unstructured collections of individuals oriented to the same moral ends, as I discuss in the next part of this paper. Simultaneously we should try to make action at this level less ineffective than it might be, more like the coordinated systems that are letting us down at present but that are still our best hope for coordinated responses to collective problems.

### III. FOCAL POINTS FOR PARTIAL COORDINATION IN AN IMPERFECT WORLD

Thinking about our analysis from Part 1, we remember that we can use abstract, idealized, individual analysis to orient ourselves toward right environmental relations that do not impose non-trivial harm, but that the system changes called for by this kind of analysis cannot be successfully put into practice by individuals. The Kantian model--of hypothetical coordination among all affected realized provisionally by social institutions and constantly improved by critique--offers individuals a way to use the idea of a social contract to escape moral paralysis, to interact and engage in flourishing together without constantly wronging one another. But we saw further that the scale and urgency of the climate emergency renders the Kantian model even less satisfactory than usual, and that waiting for money and law to solve coordination problems about something like aviation emissions reduction would be tantamount to endorsing climate catastrophe. Thus we ought to attempt to keep the pos-

sibility of progress towards climate stability open by simultaneously adopting and strengthening conventional contractarian institutions like money and law, but also by orienting ourselves as members of civil society towards eventual right environmental relations, that is, towards eventual fair flourishing with everyone else.

Thomas Schelling used to tell a story about coordination among people who could not communicate, but only anticipate what other willing coordinators would do. He asked his students where and when they would meet someone in New York City if they were unable to discuss the time and place. Overwhelmingly, the students selected noon at Grand Central Station. Schelling called this kind of outcome a focal point (Carvalho 2007).

When it comes to the climate emergency, we find ourselves in circumstances much like those of Schelling's incommunicado students. We would prefer to communicate directly and coordinate our actions ideally, so that we can engage in other-affecting activities without wronging people all the time. In the sustainability crises of the Anthropocene, however, even the non-ideal Kantian model of provisional coordination under the idea of the social contract is out of reach. We have to orient our behavior so that at least the possibility of progress is kept open, even as we find ourselves in an intolerable circumstance of ever accelerating environmental damage. On what should we orient ourselves as would-be fair flourishers in the climate emergency? What is our focal point, our Grand Central Station at noon?

I would be surprised if my readers' answers did not converge on what has become the clear focal point for climate action in the world today: we must orient ourselves toward behavior compatible with limiting the rise of the global mean surface temperature above pre-industrial levels to 1.5° or at most 2°C. Additionally, we have clear statements from IPCC and others that in order to meet that goal, greenhouse gas emissions must be reduced to net zero by mid-century, and that in order to have a reasonable chance of being on track for net zero by 2050, greenhouse gas emissions must fall by half by 2030.<sup>16</sup>

There are endless debates about baselines, accounting measures, the legitimacy of various sinks that would bring still polluting societies to net zero, the likelihood that we are already locked in to mean temperatures far higher than 2 degrees, and of course about how we operationalize the international principle of "common but differentiated responsibility." Fortunately, for the purpose of orientation, none of these matter. What matters is that in the absence of at least provisionally civil coordination via institutions like money and law, we can still orient ourselves towards right relations, towards fair flourishing with each other.

<sup>16</sup> Focal points are not the same as moral obligations. Following Kantian social contract reasoning as offered in this paper, individuals under circumstances of partial coordination ought to orient themselves to an available focal point as a proxy for the unavailable full coordination that would allow them to treat each other rightly. Focal points are signals that allow people to approximate coordination in the absence of actual coordination.

We are not going to get an analytic answer to what the fair share for aviation emissions would be, though as we have seen analysis can point us to the need to orient ourselves toward right relations. Fair shares for civil actors are a matter for democratic publics to debate once they have set carbon budgets for themselves. This prospect of limited carbon budgets accompanied by debates about priorities within those budgets, follows naturally from the Kantian model and is in fact beginning to be implemented in many places around the world. For example, Aotearoa New Zealand under its Zero Carbon Act (2019) produced a set of emissions targets, anticipating net emissions of 72.5 Mt CO<sub>2</sub>e from 2022-2025, then 61 Mt CO<sub>2</sub>e in the next period, and 48 Mt CO<sub>2</sub>e after that (Ministry of the Environment 2022). The main debate around GHG budgets in Aotearoa has to do with how much reduction to allocate to agricultural production. So it is possible to allocate responsibility to distribute fair shares of an emissions budget among sectors to democratic publics, without presuming an analytic answer to the question of which sector should bear what burden. However, publics cannot allocate fair sectoral shares when particular sectors have been excluded from the coordinating mechanism. One major gap threatening the legitimacy of this mode of climate action (public distribution of sectoral responsibility) is the failure of commitments under the Paris Agreement to cover international aviation (and shipping). Thus one of the biggest drivers of climate harm—international air travel—is (so far, mostly) not included in emissions budgets related to nationally determined contributions submitted to the Paris process.

#### IV. THE SOCIAL CONTRACT CASE FOR A CARBON TAX: ENDING AVIATION EXCEPTIONALISM

Thinking about lessons from parts 1, 2, and 3, we see that orientation towards the consensus goal of climate stability under 1.5° or at most 2° of heating, achieved by reductions of half by 2030 and to net zero by 2050 allows us to keep the possibility of fair flourishing open now and in the foreseeable future. But what does this kind of orientation mean in the context of international air travel? As useful as individual analysis is in pointing out our duty to orient ourselves towards consensus goals, without coordinated action we cannot hope to achieve the kind of system change that would help us relate to each other rightly. Is partial coordination, acting in groups and seeking to bring more and more of global society into coordinated action over time, all we can hope for? This is the conclusion drawn by Nordhaus and others (Nordhaus 2015), when they advocate for the formation of international climate clubs of high ambition. The call for climate clubs of high ambition has been taken up in modified fashion by Germany in its capacity as rotating G7 president (BMWK 2023). This kind of piecemeal action under overall coordinating signals provided by the IPCC report on 1.5° makes sense under conventional Kantian contractarianism: we act under existing systems of money and law, trying to increase the scope of those institutions to include everyone affected now and in the



future. However, as we know from our analysis in Part 2, conventional Kantian contractarianism cannot respond to the urgent nature of the climate crisis. The sooner we can apply coordinating mechanisms that apply physically realistic limits to our other-affecting behavior, the better; moreover, we cannot afford to pursue overlapping and uncoordinated efforts if they would undermine one another.<sup>17</sup> Insofar as clubs of high ambition increase the coverage of coordinating mechanisms, and increase it more quickly than conventional institutions like the UNFCCC<sup>18</sup>, they could make positive contributions to climate stability. Especially if club members receive specified fair shares of carbon budgets, this would work against the status quo in which would-be emissions increasers rely on some unidentified, often future, often technologically unrealized agent to ensure that their continued emissions do not tip us out of a path to climate stability. The problem with all these kinds of partial coordination is that each non-coordinated agent relies on unspecified, even imaginary coordinators to make the case for sustainability. Under partial coordination, we do not know what our fair share is, so naturally we estimate a fair share compatible with our own short-term preferences. If everyone estimates their fair share in this way, the shares taken together will almost certainly fall short. Thus a coalition of high ambition that organizes even a substantial fraction of emitters seems likely to work as a means to achieve greater coordination and that in turn could contribute to eventual climate stability. But such coalitions do not seem likely to achieve climate mitigation targets directly, because their members will each continue to make self-serving estimates about their own shares of the global carbon budget.

If we think about how partly coordinated climate action is working in the area of international aviation emissions at present, we can see the limits of emission reduction schemes without prescribed fair shares or other means to restrict responsibility shifting already.<sup>19</sup> In particular, under the Chicago Convention and the current state of exception for international aviation and shipping from the Paris Agreement, we see the patchwork of emissions trading systems as partial coordinating mechanisms actually undermining the capacity of uncoordinated actors to take meaningful action at all. Ongoing multiple levels of analysis, all putatively oriented towards 1.5 and net zero by 2050, are undermining each others' efforts by existing in un-coordinated fashion. Let me offer some examples.

<sup>17</sup> Overlapping, uncoordinated climate mitigation institutions undermine each other by providing excuses for continuing emissions as consistent with net zero targets while failing to specify how, collectively, those targets will be met.

<sup>18</sup> United Nations Framework Convention on Climate Change

<sup>19</sup> A global system of coordinated emissions trading systems with sinking lids could in theory provide successful distribution of the remaining carbon budget, leading to achievement of net zero by mid-century, but only in a context of full coordination. Without full coordination among emitters, emissions trading systems can reduce regional emissions and encourage cooperation, but they also encourage externalisation of accounted emissions and provide excuses for ongoing emissions without specifying reasons for confidence that these emissions are sustainable under the global carbon budget.

One of the most controversial issues ongoing since the United Kingdom committed to achieving net zero by 2050 has been the on-again, off-again plan to add a third runway to Heathrow Airport. From the perspective of global climate modelling, all sectors including international aviation must reduce emissions immediately and get them to net zero by 2050 (International Energy Agency 2023). Aviation is often categorized as “hard to abate,” and this is true for a number of reasons ranging from the long shelf life of kerosene-driven-steel-tube technology airplanes (30 years or more) to the fact that volatile fuel prices have driven the industry to realize most available efficiencies under current technology already (Higham, Ellis, and Maclaurin 2018; International Energy Agency 2021). Mainstream climate modeling of international transport anticipates a mix of technology change and demand management will be needed to reduce aviation emissions (Gössling and Humpe 2023). The industry’s international governing body, the ICAO, does not anticipate demand management but instead has committed to a weak, mostly voluntary program of offset purchases for emissions above a 2019 baseline through 2035, known as the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA) (Ellis 2020; International Civil Aviation Organisation 2022). The argument for expanding Heathrow Airport forthrightly expects hundreds of thousands more flights to occur with three runways than with the present two, responding to nearly limitless demand for air travel under present conditions (Moore 2023). How is the expansion of Heathrow Airport consistent with the UK’s commitment to net zero emissions by 2050? The “Jet Zero” program’s unlikely assertions about near-term zero-emission flight technology and widespread efficient use of greenhouse gas removal technology aside, the two things are of course not compatible.<sup>20</sup> However, under conditions of overlapping and partial coordination around the net zero goal, this contradiction becomes difficult to see. With only collective, cross-sectoral, national-level targets specified, and no coordinated decision distributing fair shares of emission reduction accountably to identifiable agents like cities or sectors, advocates of emissions-intensive projects like a third runway at Heathrow Airport can argue that they support fulfilment of general emissions-reduction targets (via unspecified actions of non-identified agents) while themselves taking actions that increase emissions (such as adding a runway). For one thing, while attention has been focused on Heathrow’s expansion, many other competing airports have expanded or received consent to expansion plans. For another, the zero carbon airport goals associated with both the Heathrow expansion and the Jet Zero strategy both rely on speculative estimates of electric vehicle uptake and additional technology change (that is, they rely on action by unspecified others to compensate

<sup>20</sup> A standard justification for airport expansion points to prevailing carbon accounting methods, under which reporting of emissions not directly owned or controlled by the airport itself, but only indirectly related to its operations (‘scope 3’ emissions) is not obligatory. Airports can claim to achieve to net zero emissions under these accounting standards as long as they minimize and offset emissions directly related to their operations (local machinery, food service, and so forth), while setting aside emissions from the combustion of jet fuel that powers the flights operated by their customers. The vast bulk of emissions associated with airport expansion are thus excluded from their ledgers.

for their actions' increases in emissions). Without some kind of coordination of the trade-off decisions made in each case, it becomes possible for each emissions-increasing decision to frame itself as oriented to net zero, while together all of them render the goal unrealizable. With no moment of coordinated assessment of the many decisions trading off local gains against orientation to climate stability, each project is individually justifiable, even as together they undermine each other's stated goals.

Another example of under-coordinated efforts to curtail aviation has to do with overlapping emissions accounting systems. Many countries, including the United Kingdom, Aotearoa New Zealand, the United States, and the countries of the European Union, anticipate adding or have already added international aviation emissions to their Paris accounting efforts. The European Union includes flights within Europe in its Emissions Trading System (an effort which has not only reduced European aviation emissions but which arguably has pushed the International Air Transport Association (IATA) towards more ambitious global action, see Ahmad 2015). While these efforts are all oriented towards the consensus goal of climate stability, one consequence of expanding the remit of emissions accounting and emissions trading systems to new sectors is nonetheless problematic. If an emissions trading system sets a lid on annual greenhouse gas emissions for a collection of regional sectors, under normal conditions (barring things like pandemics and severe economic recessions) the market in emissions will ensure that they reach the maximum allowed. This means that each individual project in which the gains from emissions are greater than the price of an emissions trading unit will be approved up to the limit of total units. A project manager orienting their organization to the consensus goal of 1.5°, will have done their due diligence if the project is able to purchase emissions trading units to cover their emissions. Moreover, such a project manager can expect that every other project manager is operating under similar strategic conditions. The presence of the partly coordinated system of a regional/sectoral ETS (emissions trading system) satisfies the moral condition for orientation towards the consensus goal, while practically ensuring that the consensus goal is not reached.<sup>21</sup>

A particularly vivid example of this kind of reasoning, though outside the aviation sector, occurred in Lützerath, Germany in 2022-23, when the economics and climate minister Robert Habeck, representing a coalition government worried above all else about high energy prices in the wake of the Russo-Ukraine

<sup>21</sup> This is not an argument against cap-and-trade in general, but only against the way partially coordinated ETSs provide cover for projects that increase emissions. Theoretically, a fully coordinated system of cap-and-trade with a sinking lid would reduce actual emissions and contribute to climate stability. Practically, even partially coordinated ETSs with technical problems are capable of moving emissions down somewhat (as in the example of the incrementally improving European ETS). My objection here is to the use of the existence of the ETS as an excuse for high-emissions projects: since existing ETSs are not fully coordinated, when they excuse a project like a new brown coal mine, whose substitutable and very high-emissions product is traded globally, they may not raise European emissions in a given year according to local accounting, but they damage the prospects for global climate stability all the same.

war, defended clearing protesters from a village about to become a new brown coal mine with the argument that even though brown coal is among the dirtiest sources of energy, the opening of this mine would not cause climate harm, because European emissions trading units could be bought to cover it. The International Energy Agency (IEA)'s climate modeling calls for no new coal mines, anywhere, if we are to keep the consensus goal of 1.5°, etc. in view. At the global, fully coordinated level, orientation to 1.5° clearly implies no new coal mines (International Energy Agency 2023). While the principle of common but differentiated responsibility recognizes that less developed countries will need to rely on dirty fuels for development in the short term, there is no such dispensation available to rich countries like Germany. However, under conditions of partial coordination such as our present-day multiple emissions trading systems, a German climate minister from the Green Party (Habeck) was able to argue that the opening of a new coal mine would actually reduce overall emissions, because the new mine allowed a deal to be facilitated that would close other mines earlier than otherwise expected. Of course, Habeck could not identify the agents whose emissions will fall to compensate for the emissions associated with a new brown coal mine; instead, he relies on the ETS to do that work even though under present conditions the ETS systems alone will not provide sufficient reduction and even though the international consensus is that new coal (and indeed all new sources of fossil fuel) are incompatible with climate stability. Both Habeck's and the IEA's positions are, from their respective German regional and global perspectives, defensible. However, collectively, if everyone argued as Habeck argued, there would be no chance of achieving consensus climate goals.<sup>22</sup>

The situation of international aviation emissions under the Chicago Convention and exemption from the Paris Agreement is similarly under-coordinated. Responding to scattered emissions regimes and free by international law from central coordination via a carbon tax, each project to expand international aviation emissions can be justified independently (usually with reference to some other, unspecified, agent of additional reduction). Individually none of them necessarily departs from orientation to the consensus goal, but together, all of them certainly do. Bouncing back from a pandemic-caused low, international aviation is expanding its volume and thus its share of emissions. In a context of real limits to the remaining global carbon budget, increasing emissions from international aviation imply corresponding decreases in other sectors. Social contract logic presumes that our systems of money and law coordinate the externalized costs of our other-affecting behavior, so that we can engage freely in activities like commerce without worrying about harming others all the time. Helping themselves to this prevailing mode of justification, representatives of international aviation claim to be oriented towards global climate mitigation

<sup>22</sup> This problem is made worse at present by the oversupply of cheap carbon credits on most markets, though some managers of regional ETSs are taking steps to reduce that oversupply and thus decrease the incentives for would-be emitters to exempt themselves from the general requirement to transition to net zero.

targets even as they increase their share of the limited global carbon budget (see, for example, International Civil Aviation Organisation 2022). But in a context of partial coordination, these claims must ring hollow. Aviation sector representatives cannot identify the sectors that will compensate for increasing international aviation-related emissions by decreasing their own emissions. Nor would they be likely to try. In many countries, the first vegetable a parent feeds their child is taxed. Internationally (outside the EU), aviation fuel is not taxed at all.<sup>23</sup> When the ICAO claims to be acting in accord with global climate targets while anticipating ever-increasing emissions (International Civil Aviation Organisation 2022), they are implicitly claiming that food, shelter, transport, manufacturing, and every other sector that contributes emissions must reduce their own emissions accordingly.

A global carbon tax would not, by itself, solve the climate crisis. It would, however, provide a coordinated, fair response to the challenge of orienting ourselves to consensus goals that allow us to flourish together in fairness. Aviation exceptionalism's original defenses may have been sound in context: rebuilding international travel and trade in the wake of the second World War legitimated the Chicago Convention's bar on taxing aviation fuel, and difficulties with accounting rules and differentiated responsibilities and capacities among countries legitimated international aviation's exclusion from Kyoto and Paris. Those postwar era justifications no longer apply to present-day conditions. Taxing international aviation is manifestly feasible; some countries are already adding international aviation to their national emissions ledgers, and the European Union has demonstrated that it is possible to manage international flight accounting under an emissions trading system. The ICAO itself in its CORSIA plan for offsetting some of the emissions from post-2021 sectoral growth has proposed a system for fair differentiation among less developed and other countries regarding their obligations to contribute to reducing aviation emissions. On any route serviced by an airline based in a country not obliged to participate in CORSIA, all routes regardless of the status of the airline's host country are exempt from offsetting duties (International Civil Aviation Organisation 2023). The Convention's original goals of international peace and prosperity among other worthy ends would likely continue to justify some level of international aviation emission, though it would be one under 25% of the global carbon budget at mid-century and probably one distributed more democratically than at present.

<sup>23</sup> I offer thanks to an anonymous reviewer for emphasizing the distinction between the Chicago Convention's exemption of aviation fuel from taxation and the proposed global carbon tax. The first policy establishes aviation exceptionalism as the twentieth-century norm, a norm that has persisted beyond its legitimating grounds into the present era of urgency for reduction of greenhouse gas emissions. A global carbon tax that does not exempt aviation could provide both an end to aviation exceptionalism and coordinated orientation towards climate stability in general. The morally relevant matter here is the share of the global carbon budget that is allocated to international aviation. Under full coordination that share would reflect the interests of most people in flourishing now and in the foreseeable future. The mechanisms moving us in partially coordinated fashion toward that goal could end aviation exceptionalism in taxation, in subsidies (not discussed here), or via a global carbon tax with no sectoral exceptions.

Fundamentally, applying a carbon tax generally or at least value-added tax on fuel for international aviation would not only provide a stronger and more efficient market signal than those provided by emissions trading systems. It would also avoid the problem of responsibility shifting that we saw in the airport expansion and new coal mining examples, where high-emissions project promoters pointed to unspecified reductions that would allow a broad target to be met alongside their emissions increases, were they to eventuate. While operating under a *regional* lid on purchasable units of greenhouse gas emissions, each decision-maker's actions to consume a larger than expected portion of the limited *global* carbon budget (by opening a new coal mine after 2023, for example, or by expanding an airport and locking in higher aviation emissions for decades) are rendered meaningless for emissions accounting purposes. Ironically, from this perspective, the aviation sector representation (IATA) has been right all along about what they have criticized as "the patchwork" of regionally variable regulation.

What is needed from a social contract perspective is effective coordination, covering the emissions behavior's real physical effects (and those are necessarily global). Regional ETSs can thus only be steps on the way to such coordination, because while they demonstrably reduce some emissions and demonstrably encourage stronger actions elsewhere, they also undermine actions oriented toward consensus goals by rendering them insignificant. By contrast, a truly global carbon tax, one that reverses aviation exceptionalism by treating emissions from air travel the same as emissions from any other sector, would not undermine action oriented toward climate stability in this way. Like a regional ETS, a global carbon tax would send a price signal to actors to reduce their emissions. Unlike a regional ETS, however, a global carbon tax does not limit any group's contributions to climate mitigation, nor would the carbon tax encourage responsibility shifting. A carbon tax is an effort to redress specific risks to which third parties are subject (Barry and Cullity 2022), while an ETS is an effort to distribute an allocated amount of permission to subject others to risk.<sup>24</sup> Thus, from a social contract perspective aimed at arranging our relationships for fair flourishing now and in the future, it is high time for a global carbon tax and an end to aviation exceptionalism.

<sup>24</sup> There are considerations both moral and practical beyond the coordinating and orientation functions a carbon tax that includes international aviation would offer. One important moral objection would be that increasing the price of flying would only broaden its inequalitarian distribution. A practical political objection could be that governments could come to rely on the steady stream of revenue from carbon taxation and thus have an additional interest in delaying the completion of the transition to a low-emission economy. Additionally, there are plenty of good ideas available for improving the moral and practical problems with the status quo of aviation exceptionalism that I have not discussed here. One of the most promising arose from the 2020 UK Climate Assembly, who recommended taxing frequent fliers and those who fly longer distances (Climate Assembly UK 2020). Though there are many other considerations and policies that matter for climate justice, this paper has argued that an end to aviation exceptionalism via a non-excluding global carbon tax would constitute an improvement over the status quo from the perspective of Kantian social contract theory.

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