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Chapter 2: A Climate of Disorder: What to do About the Obstacles to Effective Climate Politics

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2.1 Introduction

Work in political theory and ethics on the politics of climate change has focused extensively on evaluating burden sharing principles for costs associated with reducing greenhouse gas (GHG) emissions, adapting to climate change, and compensating for climate related damages. Of particular interest have been distributive principles for sharing these burdens between states and over time between generations (e.g. Shue 2005 and 2009; Singer 2002; Caney 2005; Page 2006; Paavola and Adger 2006; Gosseries 2004; Baer et al. 2007; Jagers and Duus-Otterström 2008; Miller 2008; Meyer and Roser 2010). This body of research is directly relevant to the aims of the international climate regime. With regards to mitigation, parties to the United Nations Framework Convention on Climate Change (UNFCCC) have repeatedly agreed to the objectives of i) stabilizing global warming at a level that will protect long-term human welfare, and ii) doing so in a way that recognizes the different capacities, development needs, and development histories of member states (e.g. see UNFCCC 2012). The first objective is premised on some normative account of the efforts that ought to be made today for the sake of future generations. The second objective requires the identification of principles of distributive justice and historic responsibility that can be operationalized into burden sharing schemes between states. Still, despite the direct relevance of the climate justice literature for the practice of climate politics, there are also good reasons to think that additional fine tuning of general distributive principles is not the most pressing area for future research.

Global GHG emissions must be cut to half of current levels by 2050 for a better than 50% chance of keeping global warming under 2°C (IPCC 2014a: 12). Yet, on current trajectories emissions will be nearly 50% above current levels already by 2040 (Marchal et al. 2012: 72; UNEP 2014: 6-7). This situation stands in very stark contrast to the distributive principles commonly defended in the climate justice literature, which overwhelmingly require rapid and immediate emissions cuts. This distance between ideal principles and actual emissions trajectories gives us good reason to think that the climate justice literature has yet to respond aptly to nature of the *political* problem global warming has generated.

Overviews of existing empirical work make it clear that there are serious limits to our understanding about how we could bring the climate threat under effective political control (e.g. see Stern 2011 and Bernauer 2013). It does make good sense to abstract away from this governance problem to some extent in trying to identify normative justifications for burden sharing standards. However, the emphasis on distributive principles has left significant gaps is the normative literature on the problem of weak climate governance. The central argument

of this chapter is that there is an increasing need to shift our focus towards a classic problem that traditionally preoccupied political thought: namely, the means and terms of bringing order to disorder.

Currently, we lack clear accounts of how normative theory could contribute to addressing our apparent political incapacity to respond to the threat of climate disruption. My main contribution in this chapter is to give just such an account. I take the view that tackling the problem of inertia in climate politics requires an analysis aimed at addressing the poor underlying conditions for bringing about effective climate governance (Shue 2005; Victor 2011; Levin et al. 2012; Urpelainen 2013; Maltais 2013). Section 2.2 of this chapter outlines a set of six underlying obstacles to effective climate politics. This description of the political problem can serve, I argue, as a framework around which normative theorizing can be organized. In 2.3 I outline a 'non-ideal' research agenda that seeks to identify policies and other tactics to mediate the six obstacles described in 2.2. By introducing examples for each obstacle, I show that potential reform proposals and mediating strategies raise distinct normative issues in need of deeper analysis. In the final section (2.4) I reflect on some of the advantages for non-ideal theorizing of paying attention to a variety of obstacles to effective climate governance.

2.2 Disorder

Climate change appears to have generated a particularly intractable global commons problem due to six key factors. First, looking at projected emissions over the coming decades, it is clear that GHG emissions in all regions of the world must be reduced significantly from the business as usual (BAU) trajectory (see Marchal et al. 2012). Effective mitigation efforts will also impact most major industries, involving widely diverse business models and market conditions. Having to coordinate a large number of actors that diverge significantly in their characteristics and interests in relation to a commons tends to undercut the prospects for cooperation (Ostrom 1990; Sandler 2004).

Second, when the benefits of a reform for the public good are widely dispersed while the benefits from the status quo are comparatively concentrated on strategically positioned, well resourced, and highly organized agents, there is an expectation that these agents will be able to obstruct political reform (Olson 1965; Wilson 1973). The opposition to reform from the fossil fuel industry appears to be significant (e.g. Oreskes and Conway 2010; Powell 2011; Shrader-Frechette 2011: 26–30; Boston and Lempp 2011: 1006–1007). This industry is one of the largest in human history and it is its core business and the core national interests of producing countries that are most strongly affected by the prospect of effective climate policies. Add the immense scale of the fossil fuel industry and its relationship to economic activity in general, and the conditions for entrenchment of existing energy infrastructures appears strong (Dangerman and Schellnhuber 2013).

Third, highly developed nations are responsible for the majority of the current stock of GHGs, have much higher per-capita emissions levels, have a much larger capacity to invest in energy structure reforms, and will thus face the greatest mitigation costs (e.g. Baer et al. 2007). However, it is developing regions that are expected to be more vulnerable to the effects of climate change due to low adaptive capacity and greater biophysical and socio-economic sensitivity to food security and human health impacts (Füssel 2010; IPCC 2014b: 12). When those who exploit a natural resource or pollute a commons are not the same people who will suffer the brunt of the environmental consequences, the incentives for sustainable management are weakened.

Fourth, according to a recent estimate it takes 100 years to see 60–90% of the warming response from GHG emissions (Hansen et al. 2011: 13426). In addition to these

large time lags in surface temperature change due to the thermal inertia of the oceans, there are lag times between warming effects and harmful environmental impacts associated with temperature stresses persisting over time. Finally, energy infrastructures have long lifetimes creating very large time lags for scaling up alternative infrastructures (Anadon and Holdren 2009: 23). As a result, mitigation investments largely prevent climate-related damage for future generations while it is past and built-in on-going emissions that will have the greatest effects on current generations. This creates serious intergenerational conflicts of interests. The current generation has, and each subsequent generation will have, strong incentives to delay costly mitigation investments (Gardiner 2001: 402–406). Moreover, as time passes, the costs of mitigation increase, we become more locked-in to carbon intensive energy systems, environmental damage increases, and the risks of non-linear climate disasters increase (Vaughan et al. 2009; Luderer et al. 2012; Rogelj et al. 2013). If people are increasingly forced to invest in adaptation while mitigation pay-offs become increasingly costly to secure, the incentives to delay mitigation investments can actually become stronger over time (Shue 2010; Gardiner 2011: 185–209).

Fifth, the prospects for achieving international cooperation to address a shared environmental problem are improved if there is a large influential state or a set of economically powerful states that have incentives to take on abatement costs unilaterally and to incentivize other countries to choose cooperative strategies. The United States was this type of natural leader in the case of ozone depleting emissions (Barrett and Stavins 2003). In the case of climate change, even the largest emitters need most of the world's regions to cut emissions before they can internalize large environmental benefits. Because states face considerable uncertainty about the extent of international cooperation that can be achieved, they also face large uncertainties about the actual costs and value of mitigation investments (e.g. Weyant 2008: 79, 83, 86–7).

Sixth, the investments necessary to implement low-carbon technologies, infrastructures, and policies are massive (e.g. IEA 2014a: 51–53). The prospects for and co-benefits of alternative energy structures are regularly described as very promising. However, there remains major debate about what types of technologies could work in practice (see for examples Shrader-Frechette 2011; Helm 2012; York 2012; Griffin et al. 2013; Kharecha and Hansen 2013a; Kharecha and Hansen 2013b; Sovacool et al. 2013). Combining this type of technological uncertainty with the sheer scale of the reforms needed and uncertainties about environmental and political developments risks creating the conditions for political paralysis (Breitmeier et al. 2011).

2.3 A Non-Ideal Research Agenda

It is the combination of the six obstacles outlined above that makes climate change a so-called 'super wicked' political problem. However, the analysis above is to a significant extent dependent on rational choice assumptions and is thus limited in its ability to explain political and societal responses to climate change. It is also fair to say that such an approach entails a pessimistic bias about the prospects for political reform. Still, to move from more idealized theorizing on burden sharing to more non-ideal theorizing about improving the underlying conditions for climate politics, we need some method for identifying relevant strategies that in turn give rise to politically salient normative questions. Using rational choice reasoning to identify a set of obstacles to effective climate policies is one good candidate for this task. The approach helps to identify at least *some* features of the problem that are especially challenging. Prescriptions on how one could mediate such obstacles have the limited and pragmatic aim of identifying reforms that we have good reason to think can at least contribute to improving the prospects for effective climate politics.

If the environmental impacts of GHG emissions arrived over much shorter timeframes, many of the other obstacles noted above would be diminished. However, it is also the case that we do not currently know the extent to which each of these obstacles has to be moderated to make more ambitious political efforts possible. If climate change is truly a super wicked problem we have good reason to take this complexity seriously and look for a package of policy reforms or other tactics that can *together* significantly improve the underlying conditions for climate politics. Moreover, it is not obvious that the most important obstacles will be those where available mediating strategies are most likely to be effective or are normatively acceptable. This points non-ideal normative theory in the direction of a) highlighting relevant policy prescriptions or other strategies for moderating each of the six identified obstacles and b) analysing the central normative questions raised by such policies and strategies.

Note that the so-called non-ideal problem I am concerned with is the extremely poor political conditions for securing coordination around policies that would lead to a rapid decrease in global GHG emissions. Full theories of climate justice are concerned with mitigation, adaptation and compensation. Ideally one might also argue that climate justice should be subsumed under a broader project of global and intergenerational distributive justice (Caney 2012), or that we need to radically alter our relationships to environmental goods in general. Still, these types of ideals do involve moving onto a trajectory of rapid emissions reductions over the relatively near term. Thus the background normative ideal I am operating with is a state of affairs that is better than current conditions of political inertia from the perspective of a set of plausible theories of climate justice.

Below I introduce some examples of reforms and strategies that have been or might be proposed to mediate each of the six highlighted obstacles. In each section I identify normative questions that these types of proposals can raise. The basic idea is that it will be difficult to make progress on non-ideal normative analysis about the problem of political inertia without fairly specific accounts of what kinds mediating strategies are available. The examples I introduce are indicative. No attempt is made to be comprehensive with respect to each obstacle. As well, I focus on identifying relevant normative questions rather than developing normative arguments about the merits and flaws of various proposals. The aim is to demonstrate the role normative theorizing can and should have in relation to strategic thinking about bringing the climate threat under effective political control.

2.3.1 The large number and variety of actors that must cooperate

It is regularly argued that UNFCCC negotiations artificially make the many actors obstacle more problematic than it needs to be. Agreement must be achieved between 195 states while over 75% of current GHG emissions come from only twenty-five countries.[1] A proposed alternative is negotiating treaties among a small group of high emitting states with more closely aligned interests, making it easier to limit the terms of negotiation (e.g. Keohane and Victor 2011; Carin and Mehlenbacher 2010; Victor 2011). So called 'carbon club' proposals tend to exclude those countries and regions most vulnerable to climate change. As a result, both proponents and critics see a legitimacy deficit as the main drawback of this strategy (see Keohane and Victor 2011; Eckersley 2012). However, the moral legitimacy of a decision to reduce engagement in some harmful activity is not usually dependent on broad agreement. This raises the question of whether the real normative problem at issue is about a trade-off between a multilateral regime that better facilitates financing for developing countries and mini-lateral approaches that are more effective in terms of mitigation by big emitters (Bayer

[1] Figures based on data from WRI, CAIT 2.0. 2014. Climate Analysis Indicators Tool: WRI's Climate Data Explorer. Washington, DC: World Resources Institute. http://cait2.wri.org (accessed 21 May 2014).

and Urpelainen 2013). To the extent that the carbon club strategies appear effective, more work needs to be done to identify and normatively assess the trade-offs this strategy involves.

The Major Economies Forum and the G20 are clubs of top emitters where discussions over climate change occur. However, outputs from these clubs have to date been incremental rather than leading to large increases in mitigation ambition (see Weischer et al. 2012). This may be in part because the major dividing lines between large emerging economies and more developed countries will be present in any carbon club that covers most of the world's GHG emissions. At the same time, it should also be recognized that there does appear to be coordination among major emitters in the sense of shared interests in delaying burdensome emissions cuts and maintaining national flexibility (Depledge and Yamin 2009). To the extent that this later interpretation is accurate normative analysis should also explore alternative forms of governing that are more inclusive rather than narrower. In this vein, political theorists are increasingly pointing to deliberative models of negotiation.

Institutionally it is difficult to represent the interests of all people and future generations at the global level, however it is easier to 'discursively represent' different perspectives (Dryzek and Niemeyer 2008; Bäckstrand et al. 2010). Robin Eckersley (2012) has proposed the adoption of a 'Climate Council' within the UNFCCC made up of countries with the largest capacity to mitigate climate change, the largest historical emissions, and those that are most vulnerable to climate impacts. The small group of states on the Council would make recommendations on mitigation targets, adaptation financing, and burden sharing for the consideration of all negotiating parties (Eckersley 2012). This proposal aims at increasing effectiveness in a way similar to carbon-clubs but in a more inclusive and discursively legitimate fashion. The reform is also fairly modest and as a result attractive from the perspective of feasibility. However, given its limited nature it is not clear that we should expect large deviations from current political dynamics from such a council.

Stevenson and Dryzek (2013) propose a 'chamber of discourses' at the global level that would include a wider spectrum of views through 'discourse representatives' from various actors in civil society. Such a forum would scrutinize UNFCCC negotiations through a process that satisfies as far as possible the conditions for deliberative democracy. If parties to the UNFCCC acknowledged and responded to the chamber, this could be a way of increasing the democratic legitimacy of the international climate regime without positing new international decision-making procedures that are unlikely to be adopted. However, to place justificatory pressure on the international climate regime a deliberative forum must itself be perceived to be legitimate. This raises questions about how participants can be selected to avoid the perception that they are mainly part of an environmental lobby. Could we select by lot, and what new normative issues are raised by attempts to adopt this selection procedure at the global level? By what institutional means could such a chamber approximate the real trade-offs that are at stake for decision makers and their respective publics?

Deliberative proposals have a tendency to be more focused on legitimacy than on the strategic problem of how to get states to act much more aggressively. However, Jonathan Kuyper (2015) points out that effectiveness is not only a function of speeding up the process of agreement but also requires inclusive deliberation to arrive at policies that are fit for purpose (epistemic efficiency) and that can garner sufficient compliance (implementation efficiency). He suggests that flexibility mechanisms such as sunset provisions and escape clauses can be used to accelerate negotiations in inclusive multilateral negotiations (Kuyper 2015).

Elinor Ostrom (2010) argued that it is not a robust strategy to rely on the adoption of international agreements to secure the global public good of climate mitigation. Because of the large disparity between state interests, histories, and contexts the conditions for trust, shared understandings, reciprocity, and monitoring are weak at the international level. As a

consequence, Ostrom called for 'polycentric governance' that exploits the stronger capacity for collective action found at more local levels and leverages local shared benefits associated with cutting emissions (Ostrom 2010). Polycentricism is already happening to some extent, but as a strategy it lacks a strong account of what the local shared benefits are for the kinds of deep GHG cuts that will produce the global and intergenerational public good of avoiding major climate disruption. If local co-benefits are large how do we explain the very low level of efforts that are currently underway (Gardiner 2011: 118 n.25)? A normative concern with mitigation efforts responding to preferences in wealthy communities is that they may be comparatively inefficient and poor candidates for dispersion or scaling up in poorer regions (Karlsson and Symons 2015). What does polycentrism mean for the economic interests of people in developing countries and the poor that are most vulnerable to the impacts of climate change? As it stands, there appears to be little normative assessment in the literature on the actual content of polycentric governance.

Proposals to address the many actors problem are characterized by a tension between the values of effectiveness, legitimacy, and fairness between richer and poorer. Given how difficult it appears to be at an institutional level to deal with the many actors problem there is every reason to expect increasing empirical research in this area. Normative theorizing has an important role to play here both in terms of highlighting what normative benefits and problems various proposals raise, but even more importantly in how to think more foundationally about the tradeoffs involved.

2.3.2 The scale and influence of the fossil fuel industry

One proposal to mediate the influence of special interests in the fossil fuel sector is to make these actors liable for climate damages associate with the sale of coal, oil, and gas (Allen 2003; Faure and Nollkaemper 2007; Dangerman and Schellnhuber 2013). However, the exploitation of fossil fuels has been a central driver of the huge gains in human welfare over the past century. Can we justifiably single out those holding and trading in fossil fuels as liable in a context where our systems of energy production have enjoyed nearly universal political support for good reasons? It is also important to note that some 90% of oil and gas reserves are owned by states and that state-owned oil companies account for over 50% of current production (Carbon Tracker and Grantham Research Institute 2013: 14). Liability for the fossil fuel sector entails a system of state liability for climate change that will be exceedingly difficult to achieve in the current international system. Where the case for punitively singling out the fossil fuel sector appears much clearer is in cases of support for public disinformation about global warming (e.g. Dunlap and McCright 2010). Can we hold actors in the fossil fuel sector responsible for undermining public discourse on climate change? What implications in terms of liability or other regulatory responses, if any, can be justified?

Another response to the special interest problem focuses on non-support, especially through divestment and removing government subsidies for fossil fuels. These strategies are ethically attractive as they entail a reduction in individuals' and groups' complicity in polluting industries. It is clearly beneficial if fossil fuel subsidies are removed, however because the large majority of these subsidies are consumption subsidies in developing countries (IEA 2014b: 321) it does not follow that these resources will then be available to support the development of low carbon energy. More importantly, it is far from obvious that non-support responds effectively to the scale of the fossil fuel sector. It is estimated that meeting the 2°C target will require that we limit future CO_2 emissions to around 1000 $GtCO_2$. Current fossil fuel reserves represent over 2800 $GtCO_2$, nearly three times what can be 'safely' burned. The proven reserves of *private* companies are 762 $GtCO_2$ and their listed potential reserves amount to 1541 $GtCO_2$ (Carbon Tracker and Grantham Research Institute

2013: 10, 14). If nearly two thirds of these reserves are going to be kept in the ground, fossil fuel companies and expected revue in producing countries are spectacularly overvalued. Highlighting this may have some effect on capital flows to this sector, but the most striking point is the massive levels of economic loss for relevant investors and producing states associated with effective climate policies. This raises the morally troubling prospect that it may actually be politically reckless to expect that proven fossil fuel reserves will not be used well past a level that is safe.

Making capturing the carbon associated with extracting fossil fuel (especially coal and natural gas) a licensing condition for access to these resources would exploit the fossil fuel industry's capacity to develop and deploy carbon capture and storage (CCS) technologies and also make the sector a key agent for reform (Allen 2013). Yet, effective regulation is not in its own right a strategy for addressing efforts by special interests to delay or block costly regulation. When the short term economic interests of special interests are in conflict with the public good one strategy commonly prescribed is financial transfers to special interests. Under what kinds of circumstances could we normatively justify buying off those holding fossil fuel entitlements?

The government of Ecuador recently sought over $3.6 billion from developed states *not* to exploit large oil reserves in its Yasuni national park. The government has ended this initiative citing lack of pledges (National Geographic 2013). The Ecuadorian proposal has clear appeal given that it aims to meet both development and environmental objectives. A key normative concern has to do with the risk that we will create perverse incentives when we pay agents not to engage in harmful activities. Moreover, what if a government takes in capital but fails to produce any long term benefits for its population? Should poor political communities suffering from previous governments that were incompetent or parasitic be compelled to continue to keep commitments not to use their natural resources? What about transfers to some of the most profitable companies or wealthiest governments? Such transfers allow those who have already benefited the most from polluting activities to use their leverage to shift mitigation costs onto large collectives. Could there be strategic benefits to such transfers that outweigh associated violations of fair burden sharing?

2.3.3 Spatial divergence between mitigation costs and environmental impacts

UNFCCC negotiations regarding adaptation financing and so-called 'loss and damage' raise the prospect of a system of state liability or international risk pooling for impacts associated with cumulative GHG emissions (e.g. UNFCCC 2012: Decision 3/CP.18). Such a system could significantly change the incentive structures of many developed states with regards to spatial divergence between mitigation costs and environmental impacts. This type of proposal raises a host of important normative and legal questions about causation and responsibility. However, the Warsaw Mechanism for Loss and Damage agreed at COP 19 in 2013 did not use terms such as compensation or liability but instead focused on capacity building. Possible financing was left under the pillar of adaptation (UNFCCC 2013: Decision 2/CP.19). In a context where there is also slow movement on realising the adaptation financing promised in Copenhagen (Khan and Roberts 2013: 179–182), it is safe to say that high emitting states are far from internalizing the costs of climate impacts in low emitting, vulnerable, and/or poor regions.

Another response is more focused on how accurate perceptions of spatial divergence really are. Scientific assessments have a tendency to understate the risks of climate change by omitting potential impacts where the data are too poor or the mechanisms too poorly understood to be able to model satisfactorily. Recent economic analysis suggests that this conservatism creates the conditions for large underestimations of economic costs and risks.

One concern is that economic models often assess damage over time by summing economic impacts of warming levels in separated time periods and tend to do poorly in assessing the effects of damages to the capital stock and other factors of productivity in previous periods on outputs in subsequent periods (Stern 2013: 846–847, 849–851). Another worry is that integrated assessment models (IAMs) tend to do a poor job of assessing the dynamic interactions of damage in specific sectors and regions on economic outputs in other sectors and regions (Greenstone et al. 2011: 24–26). Robert Pindyck notes that IAMs tend to 'ignore the possibility of a catastrophic climate outcome' because they 'are calibrated to give small damages for small temperature increases, and can say nothing meaningful about the kinds of damages we should expect for temperature increases of 5°C or more' (Pindyck 2013: 14). Nicolas Stern argues that the types of modelling limitations noted above combined with the assumption that future growth rates will continue along a positive historical trajectory means that 'future generations are more or less assumed to be much better off' (Stern 2013: 849).

Given increased global interdependence in economic activity and the fact that we are currently on emissions trajectories far above those needed to meet a 2°C target, it appears that we should have low confidence in assumptions that some regions can expect acceptably low climate impacts over the medium term. Yet at the same time, it appears that we have limited capacity to make claims about the dynamic effects of climate impacts and about when and where economic impacts will pass tolerable thresholds in more developed regions. Given this type of uncertainty, can normative arguments for adopting precautionary policies with regards to the long-term problem of global warming in general be straightforwardly applied to perceptions of spatial divergence of impacts? What kinds of expectations on policy making are legitimate given the poor empirical grounds available to assess potential knock on effects of climate impacts in different regions?

2.3.4 Temporal divergence between mitigation costs and benefits

The licence to govern is dependent on securing and maintaining sufficient support from relevant constituencies among the governed. Where the governed reveal largely myopic interests the incentive for elites to govern to the long-term problems is not strong. This challenge becomes more acute the longer into the future current activities or failures to act have impacts on human welfare. Environmental degradation, climate change, nuclear waste, and nuclear weapons have inspired a body of literature in political theory on long-term governance. One category of proposals involves new institutional reforms aimed at representing future generations in contemporary decision-making procedures (e.g. Kavka and Warren 1983; Dobson 1996; Ekeli 2005). Representing future generations in the legislative branch, entrenching future generations' interests in constitutions, or delegating decision-making authority over sectors and policies with long-term impacts to expert boards or independent councils are large institutional reforms that lead directly to concerns about political legitimacy. Questions about how to weigh protecting environmental goods against future generations' interests in inheriting institutions that given them political autonomy in their own times are also raised (Beckman 2008). At a practical level, can the reorganisation of how our economies and societies operate gain broad public support through reforms aimed at imposing new and significant limits on popular influence on the policy process? How likely is it that major institutional reforms of the types envisioned above can be effectively implemented over the next few decades?

Another category of approaches involves more modest institutional reforms designed to ensure that governments publically account for the long-term implications of their policies (see Caney *forthcoming*). One example is independent commissions or advisory boards tasked with auditing the ability of government policies to meet long-term goals and providing advice on policy design. Other examples are the institutionalization of future impact

statements or the establishment of a ministry or committee for future generations in order to create forums for public accountability (Caney *forthcoming*). These proposals aim to improve the deliberative quality of public discourse on the interests of future generations and there appear to be few costs in terms of legitimacy and democracy. However, such deliberative approaches involve fairly slow processes for achieving changes in values. This suggests that we should also look for alternatives that could be more immediately effective in mediating the obstacle of weak motivation.

One common argument for governing to long-term problems is to adopt policies that create path dependencies, for example in energy policy or pollutions standards (e.g. Bosetti and Victor 2011; Levin et al. 2012; Urpelainen 2013). In part the idea is to make it easier for politicians to make future-oriented reforms by creating some temporal distance between policy adoption and the arrival of significant costs (e.g. Müller and Slominski 2013). In part the idea is to lock-in controversial reforms (Lazarus 2008). Are strategies to pre-commit future governments non-transparent threats to democratic legitimacy or a justifiable feature of democratic politics? This type of question has been well-debated in the political theory literature with respect to constitutionalism, but less attention has been paid to policy areas characterized by deep intergenerational conflicts of interests.

Recognizing that GHG emissions produce negative economic externalities that play out over generations, there has been increasing attention to the idea that the current generation can finance emissions reductions by borrowing from the future. Using debt financing for mitigation investments and shifting costs to future taxpayers is thought to produce better outcomes for future generations while the present incurs no net costs (e.g. Foley 2009; Broome 2012; Rendall 2011; Rezai et al. 2012; Rozenberg et al 2013). If such debt financing could actually eliminate the problem of motivating the current generation, it appears to be a very attractive option in comparison to business as usual. Can this type of cost shifting to the future be justified on so-called non-ideal terms or even be a morally preferable form of burden sharing? In practice, reductions in the consumption of carbon intensive goods and increased investments in mitigation must be compensated with increases in the consumption of low-carbon goods and decreased investment in the conventional capital stock. These represent opportunity costs today and suggest important limits to existing agents' willingness to be compensated in these forms. The ability to debt finance is itself both a valuable and scarce resource and it is not obvious why existing governments would be motivated to use this resource for mitigating future climate impacts instead of for present oriented goods.

Despite the feasibility concerns noted above, the non-ideal normative argument that we should at the very least shift costs to the future in a safer way than simply letting unabated climate change continue is of great importance. If those in political power today could find ways to commit the young to significant investments in mitigation without requiring large upfront changes in behaviour this would clearly be a form of hypocritical paternalism. However, given how severe the intergenerational cooperative problem appears to be, there may be a normative case for this type of strategic buck-passing as an insurance policy against a pattern of perpetual delay (Maltais 2015). Climate change has specific features, such as intergenerational conflicts of interests combined with a short timeframe for action, which should compel political theorists to at least consider strategies outside of the typical tool kit.

2.3.5 No natural leaders

The case for treating the lack of a natural leader as a fixed feature of the problem over the coming decades remains quite strong as there are few obvious mediating strategies. Still, bilateral constellations of major states can approximate some characteristics of a natural leading state. For example, the United States and China account for over 40% of global CO_2

emissions (United Nations 2013). China is now the world's largest emitter; it is expected to converge on the US's accumulated historical emissions over the next two decades, and China and the US appear to have similar energy interests and sectors going forward (Stavins 2013). Are there ways in which the US and China's common interests and converging economic and political positions can create incentives to bilaterally lead the world in bringing GHG emissions under effective political control?

The possibility of large state leadership (unilateral, bilateral, or mini-lateral) raises questions about what terms leading countries could justifiably impose on international trade relations and the international climate regime. In a context of weak international climate politics, what types of carbon border adjustments, if any, could major trading states justifiability use (e.g. Brandi 2013)? Andrew Light (2013) has recently argued that conceiving of CO_2 emissions as a good to be distributed instead of a pollutant to be controlled tends to undermine the ability of the US government to affect emissions reductions through US Environmental Protection Agency regulation. This example raises the general question, how should non-ideal normative analysis of climate justice respond to the domestic political constraints of the most important states?

2.3.6 High technological cost, complexity and uncertainty

One clear approach to mediating perceptions of high costs and uncertainty associated with new energy pathways is to emphasize the capacity for domestic leadership by economically powerful states. Even where unilateral efforts do not provide international assurance for the payoffs of mitigation investments, economically powerful states have both the resources and institutions needed to invest in new low-carbon energy infrastructures. Even if this leadership does not bring about significant emissions reductions it appears necessary for creating capacity and constituencies for more widespread shifting to low carbon energy infrastructures (Haas 2008; Gallagher 2009). These observations raise normative questions about who, if anybody, has an obligation to lead and to what extent (Shue 2011; Maltais 2014).

Normative theory can also contribute to debates on technology pathways by evaluating the distribution of risks and benefits across different agents for specific technologies (e.g. Shrader-Frechette 2015), and by assessing underlying assumptions about the goals of energy transitions. Is the aim to give nine billion people access to the same levels of energy consumption enjoyed among the world's wealthy minority, to converge on a less resource intensive way of organizing our societies, or to maintain societally transformative patterns of economic growth? Are different perspectives on how big a role energy efficiency can play under or overestimating the scope for efficient social and political responses to the energy challenge? Should a diverse portfolio of energy strategies be pursued to reduce the risk of failure or are opportunity costs a more serious threat to effective reform? These broader types of questions are central to developing compelling prescriptive accounts about what types of technologies are most important in reforming our energy systems.

2.4 Mutually Reinforcing Strategies

I have presented a few examples of how strategies for mediating conditions that produce delay in climate politics can raise important normative questions. We have also seen that there is work being done by normative theorists that fits into the research agenda proposed in this chapter. However, to my knowledge there are few efforts to use the type of analytic framework I have proposed above to identify and normatively assess a package of reforms or other tactics that can *together* meaningful improve the underlying conditions for effective cooperation. The argument of this chapter is that framing a research agenda around a set of obstacles to effective mitigation policies introduces enough complexity to allow normative

theorists to engage in a deeper way than they have to date with non-ideal features of this political problem. This is not only because this approach does not single out some of these features as the most important or the most philosophically interesting, but also because it opens up for the possibility of thinking in terms of interactions between efforts to mediate different types of incentives for delay. Strategically and/or normatively attractive prescriptions to redress one obstacle may nonetheless be dubious due to feasibility limitations imposed by other obstacles. Normatively attractive prescriptions for addressing one obstacle may be rejected because they disproportionately exacerbate efforts to mediate other obstacles. Some strategies may be normatively unattractive as a means to redress one obstacle, but be justifiable given that they help to mediate several obstacles at once. The ultimate aim should be to identify reforms and mediating strategies that are as far as possible feasible over relevant timeframes, normatively justifiable, and mutually reinforcing or at least not in conflict with each other.

One example of a proposal that potentially has a reinforcing structure is to offer companies selling oil, gas, or coal reductions in royalty rates relative to how much carbon they can capture or how much low carbon energy they can provide by other means. The aim would be to structure such royalty rebates to produce strong incentives for engaging in the development and deployment of low carbon technology. Large fossil fuel interests would have incentives to compete with each other today based on their ability to promote future publics interests in energy reform (Howard 2012). The proposal aims to leverage capacity in the fossil fuel industry while at the same time making special interests in this sector a constituency rather than a barrier for the low carbon energy sector. Reduced future revenue streams from royalties may be perceived by the public as less demanding than carbon taxes/prices. Royalty rates may be more immediately under the control of the executive branches of governments. This proposal is only indicative and it is not obvious that it is worth developing to a point where we can say something about its feasibility, efficacy, and desirability. However, the example does highlight how I hope the research agenda above could open up the possibility for new creative ideas about how to simultaneously address a set of key political obstacles to bringing about massive reductions in GHG emissions.

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