OMITTING TO EMIT

Moral Duties to Reduce Emissions in Global Supply Chains

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Abstract

Climate change occurs when the emission of greenhouse gases (GHGs) causes an increase in global temperatures, thus negatively affecting life on Earth. This thesis is about the ethics of producing and consuming GHGs in global supply chains. My aim is to defend the claim that individual agents of the different stages of a supply chain of a product or service—such as suppliers of raw material, retailers, and consumers—cause harm through their emissions, and that they thereby are morally obligated to reduce them. I also claim that if they should fail to do so, they can be morally blameworthy for their harmful emissions. In order to argue for this, I first defend an account of the causation of emissions, according to which agents of the supply chain of a product or service jointly cause GHG emissions. Then, I set out to show that the effects of emissions are harmful. This sets the stage for arguing that moral agents of supply chains bear moral duties to avoid doing harm through their emissions, and that their failure to do so can merit moral blame. Apart from duties not to do harm, I also consider—but ultimately reject—an additional moral basis for reducing emissions, in the form of being morally *complicit* in the climatic harms brought about by others. In the final chapter of the thesis, I consider the implications of my arguments on climate policy, and argue that states have an obligation to induce agents of supply chains to comply with their duties to reduce emissions.

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Contents

Introduction

Climate change is arguably one of the most morally important issues of our time. It occurs due to an increase in global temperatures that has adverse effects on sentient beings all across the Earth. Some of the impacts include malnutrition due to food shortage, heat-related deaths, and displacement of people. These, as well as other harmful consequences of climate change, are expected to affect humans and animals for many generations to come. The source of this problem is the emission of greenhouse gases (GHGs), which trap heat in the atmosphere, thus leading to a warming effect. While some of these emissions occur naturally, a significant amount are man-made. In fact, due to human activities, the atmospheric concentration of CO_2 has increased by around 40% since 1750, with around half of those emissions occurring during the past 50 years (IPCC 2014: 45). This is not surprising, given that emissions permeate our entire economy. Virtually everything we buy has either been manufactured in ways that cause GHGs, or cause GHGs upon usage. We heat our homes with energy produced from burning coal, we fuel our cars with gasoline, and methane is released as a by-product from farming the meat that we eat.

Due to the link between emissions and the harmful impacts of climate change, there appears to be a case to be made for agents to refrain from emitting GHGs. It is uncontroversial that, other things being equal, causing harm to others is morally impermissible and, in some cases, morally blameworthy. Insofar as our actions cause emissions that give rise to harmful climatic effects, there thus seems to be a strong moral reason against performing them and that those who continue to emit might be blameworthy for doing so. Nonetheless, arguing that the actions of those engaged in the emission of GHGs cause harm is, for a number of reasons, far from straightforward. First, the production and consumption of emission-intensive goods are not the work of any one person. Rather, this involves a multitude of different individuals, often scattered across national borders. This seems to imply that we cannot condemn the emissions of a particular agent based on the consequences of that individual's actions alone. Take the example of producing a car. Each stage of this supply chain involves countless of participants, from those who extract or source the raw materials, to those who assemble the actual product, to those who transport

it to retailers and, finally, to the end-consumers who purchase the car. How can we say, then, that the emissions caused at any one stage—or by any one agent—are culpable when the occurrence of those emissions depends on the contribution of agents along all the stages of the supply chain?

A second problem for saying that emissions ought to be reduced because they are harmful—and that failing to do so is blameworthy—concerns the difficulty of establishing a causal link between GHGs and their effects. The way in which emissions affect the climate is through their combined impact on the global temperature. GHGs are emitted in different places all over the world, yet in time come together in the atmosphere to exercise a joint effect on temperatures. Thus, we cannot attribute any effect of climate change to a particular action or individual, and even if we could do so, it remains an open question whether discrete actions have enough of an impact on the global concentration of GHGs so as to cause harm.

In order to come to terms with these difficulties, what we need is a careful analysis of the causation of emissions, as well as their effects. We have to say what exactly constitutes a cause of emissions, when the effects of climate change are harmful, and whether individual agents cause harm through their emissions. The purpose of this work is to argue that we can establish that there is a causal link between emitters and climatic harm. Furthermore, I want to argue that these agents thereby bear a moral duty to refrain from emitting GHGs.[1] In addition, I believe that their failure to comply with these duties can result in them being morally blameworthy for their harmful emissions.[2] I shall specifically focus on the obligations of individual agents—such as employees of production firms, retailers, as well as consumers—who participate at any stage of the supply chains of goods and services that contribute to GHG emissions.

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1. I shall use the terms 'obligation' and 'duty' synonymously. They refer to morally weighty considerations to act, or to refrain from acting, in certain ways. A related concept is that of moral *responsibility*. We can distinguish between a forward-looking—or prospective—sense of 'responsibility', that is equivalent to the notion of duty, and a backward-looking—or retrospective—sense of 'responsibility', which attaches to morally considerable actions or outcomes of the past. Unless otherwise noted, I shall reserve the term responsibility for the retrospective sense of the term. Ultimately, however, I take the distinction between the prospective notion of a duty/obligation and the retrospective notion of responsibility to be two sides of the same coin. There is a symmetry between obligation and responsibility in the sense that "whenever there is responsibility for an action after the fact, there will also have been an obligation to not have performed that action before the fact. And in reverse, wherever there is an obligation not to perform an action, there is responsibility for having performed it if that obligation is violated" (Lawford-Smith 2015a: 241).

2. Moral blame, like moral responsibility, is a retrospective notion (see Footnote 1). The difference between the two, however, is that blameworthiness involves a further, negative moral evaluation. While being blameworthy for an outcome implies responsibility for that outcome, responsibility for an outcome does not imply blameworthiness for it. So, as we shall see in subsequent chapters, being blameworthy for something requires additional conditions to be met.

In this thesis, I shall limit my focus to *negative* duties. These are duties to refrain from acting in certain ways. They stand in contrast to *positive* duties, which are duties to act. Correspondingly, I shall only be concerned with blameworthiness for failing to discharge these duties, and not blameworthiness for any other types of actions or omissions. As we shall see, negative duties have more far-reaching implications than what might first seem to be the case. In fact, duties not to do harm through emissions have radical consequences for how we should lead our personal, as well as professional, lives. On a more general level, this means that negative duties, which have standardly been taken to be of rather limited scope, demand action over a wider set of cases than previously thought.

In the remainder of this introduction, I will provide a chapter-by-chapter overview of the thesis. The topic of Chapter 1 is the causation of emissions. Here, I will explain how global supply chains play an important role in bringing about emissions as well as assess who or what the relevant agents in doing so are. With the use of a Counterfactual Account of Causation, I then set out to analyze how GHG emissions are caused and what this implies for the different stages of the supply chain of a product or service. Roughly, I take an event to be a cause of emissions insofar as there is stepwise counterfactual dependence between that event and the emission of GHGs. From this, I conclude that the agents of supply chains cause emissions in virtue of their actions forming parts of sets of joint causes on which the emission of GHGs counterfactually depend. This implies, among other things, that particular actions can be causes of emissions and that each stage of the supply chain of a product or service plays an essential role in emissions occurring. I also defend this account against common objections of causal preemption and overdetermination.

In Chapter 2, I look into the effects of emissions. More specifically, I will first consider the moral importance of the impacts of climate change and argue that harm is the most significant effect thereof. Then, I consider the so-called *non-identity problem*, how the impacts of climate change affect the interests of future generations and how our GHG emissions can be harmful to them even if the emissions appear to constitute necessary conditions for their existence. In short, I argue that individuals' emissions rarely have enough of an effect to determine the identity of future persons and that the non-identity problem thus does not arise for these emissions. Lastly, I set out to investigate whether particular emissions, such as those caused by individual agents, can be harmful. After reviewing a range of alternatives, I conclude that some, but not all, of our emissions are harmful.

With the two first chapters of the thesis setting the stage, Chapter 3 focuses on the duties of supply chain agents to refrain from causing harm through emissions. In this chapter, I begin by presenting the No Harm Principle, according to which moral

agents have duties not to cause harm to others. Under my preferred interpretation of the principle, this means that agents ought to refrain from performing actions which are expected to cause harm, even if we cannot be certain that they actually will be harmful. I then proceed by applying this principle to individual participants in supply chains and argue that they hold a duty not to cause harm through emissions, which implies that they ought to reduce their emissions. Additionally, I argue that individuals can fulfill their duties not to do harm by *offsetting* their emissions. This is the practice of paying someone else to make a reduction in emissions. As will be shown, this also means that individuals can refrain from doing harm through emissions by influencing other agents to reduce their emissions.

In Chapter 4, I turn to the morality of emissions in a broader perspective. First, I consider what the relation is between agents' duties not to do harm through emissions and their other moral duties. I conclude that duties to avoid doing harm through emissions trump other kinds of duty, but that duties not to do harm through emissions can be overridden by duties not to do harm in other ways. Second, I turn to the issue of blameworthiness for harmful emissions. Here, I argue that agents who participate in the supply chain of a product or service and who violate their duty not to do harm through emissions can be morally blameworthy for doing so, provided that they fulfill necessary conditions of knowledge and moral demandingness. In other words, in order for an agent to be blameworthy for their harmful emissions, they need, first, to have the necessary knowledge and, second, it cannot be overdemanding for them to reduce or offset their emissions. I conclude that these two factors rarely are grounds for excuse from being morally blameworthy for emissions.

Chapter 5 presents an additional basis for moral obligation of the agents of supply chains. This is based on the notion of *moral complicity*, which is the culpable involvement of an agent in the wrongdoing of others. In the chapter, I explore the claim that agents can bear duties to avoid standing in a relation to climate harm that is weaker than that of being a cause thereof. After considering two different accounts of moral complicity, I conclude that agents of the supply chain of a product or service do not bear such duties. This is because complicity, as I argue, is a redundant notion that can be explained away either as referring to cases where agents do nothing wrong, or to cases of agents wrongfully causing harm.

The final chapter of the thesis shifts focus away from the agents of the supply chains themselves, to those who have the power to influence what those agents do, namely states. Specifically, it asks whether states can have a duty to promote the compliance of the duties of supply chain agents that I defended in Chapter 3. By using a proposal originally put forward by Simon Caney, I argue that states have so-called

second-order obligations to promote the compliance of the agents of the supply chain of product or service to refrain from doing harm through emissions. In concluding the chapter, I provide a number of examples of what kind of public policy can promote compliance and answer some possible objections to my proposal.

Chapter 1
The Causation of Emissions

An extraordinary number of actors are involved in the supply chain of any one product; from the process of supplying raw materials, combining the material into a product, transporting and selling the product, and to consumers purchasing it. In this chapter, I will look at the role played by all of those involved in global supply chains in bringing about emissions. The purpose is, first, to determine the scope of the inquiry, and second, to establish how the different actors within that scope cause emissions. To that end, I will introduce the notion of a global supply chain and then try to establish which type of activities within supply chains count as causes of GHG emissions. I will argue that an action generates emissions in virtue of those emissions being counterfactually dependent on the action.

The chapter is divided into 6 sections. Section 1 considers the notion of a supply chain and how production and consumption on a global scale plays a big part of causing emissions. Section 2 looks closer at the causation of emissions and introduces the Counterfactual Account of Causation. In relation to this account, I will then look closer at three challenges to the counterfactual account in Sections 3, 4 and 5, in the form of joint causation, causal preemption and causal overdetermination, respectively. Section 6 concludes the chapter.

1. GLOBAL SUPPLY CHAINS

In this section, I will introduce the role of global supply chains in the causation of emissions. This will set the scope of the present inquiry. Before we look at the notion of a supply chain itself, however, let us first say something about the context in which supply chains contribute to climate change. The United Nations' Intergovernmental Panel on Climate Change (IPCC) has identified what it takes to be the main "drivers" of global emissions trends, including *consumption*, *international trade*, *economic growth*,

changes in service economy structure, *energy consumption*, and *population growth* (Blanco et al. 2014: 364–5). These drivers represent elements that are used to indicate general increases in GHG emissions, and thereby give us a general idea of what types of human activity give rise to emissions. In short, all but one of the six identified drivers refer to trade in some form or another.[3]

It appears, then, that trade is a main driver of emissions. Let us look closer at this claim. According to one study, corporate entities have contributed almost two-thirds of the carbon dioxide and methane emissions of the last 150 years (Heede 2014). Another study, by Ekwurzel et al. (2017), shows that since 1980, only 90 industrial carbon producers were responsible for about a third of the rise in global surface temperature. Furthermore, an increasing amount of the products manufactured by these actors—such as oil, coal, and cement—are traded internationally. In fact, the amount of CO_2 emissions due to the production of internationally traded goods nearly doubled from 1990 to 2008 (Peters et al. 2011: 8903). The emissions embedded in a particular product, meaning those emissions resulting from all stages from production to end-consumption of the product, are thereby not restricted to any one country. A growing number of products today are rather manufactured between—or are composed of parts from—several different countries before they are complete. The supply chain of a product can thus be fragmented across national borders.

So far, we have seen that the emission of GHGs rely heavily on the activities surrounding global supply chains. In order to better understand the causal processes underlying emissions and climate change, it thus appears that we have good reason to consider how the actions of agents within supply chains contribute to the emissions of GHGs. In this thesis, I will limit my focus specifically to the activities which give rise to emissions in the context of the supply chain of a product or service. This restricts the topic to a manageable subtype of emission activities, that has so far largely been overlooked in the ethics of climate change. Particularly, this shifts the focus away from the actions of states, governments and the political preconditions

3. The sixth—population growth—merits some additional commentary. The current world population is approximately 7.5 billion and is predicted to reach 10 billion sometime after the year 2050. It might be argued that the main reason for rising emissions is a growing world population. This, however, treats the current levels of economic growth and consumption as constant. It is quite conceivable that we are able to reduce emissions without reducing, or limiting the growth of, the global population. Furthermore, there are indications that the effects of population growth on the climate are less severe than those of economic growth. For instance, the IPCC states that "The contribution of population growth between 2000 and 2010 remained roughly identical to that of the previous three decades, while the contribution of economic growth has risen sharply" (IPCC 2014: 46). For these reasons, I shall—for the time being—set the population problem aside. We will return briefly to this issue in Section 3 below.

for emissions and instead lets us consider the production and consumption of emissions directly, in the context of supply chains.

Next, let us therefore take a closer look at what a supply chain is. I shall be concerned with what is referred to as an *ultimate supply chain*, which includes "all the organizations involved in all the upstream and downstream flows of products, services, finances, and information from the ultimate supplier to the ultimate consumer" (Mentzer et al. 2001). Looked at in this way, a supply chain includes every step in the life cycle of a product or service, from the extraction of raw materials all the way to usage by the end-consumer, including general service providers, such as those responsible for transportation, logistics, marketing, information and finance. Other terms have been used to describe supply chains and related phenomena, including *global commodity chain*, *global value chain* and *global production network*.[4] I have chosen to use the term *supply chain* instead of the alternatives since it appears to be the vocabulary preferred in the applied ethics literature.[5]

Three main classes of actors are usually presumed to lie at the heart of any supply chain. These are *Suppliers*, *Distributors* and *Consumers*. *Suppliers* are firms that provide raw material, or manufacture products, while the *Distributors* mainly coordinate and retail goods in bulk for the *Consumers* to purchase. *Suppliers* can be further divided into first-tier and second-tier suppliers. First-tier suppliers are extractors of raw material, like those who drill for oil, raise animals, or fell trees. Second-tier suppliers then process these goods before production, for example by refining the crude oil, carving up the animals for the hides, and processing the wood to planks. Production of the raw material into finished products is then handled either by further *Suppliers*, or by the *Distributors*. Usually, however, *Distributors* do not produce goods themselves. Instead, they are typically wholesalers who sell products in bulk to other businesses. In doing so, they purchase a finished product from the manufacturers—such as gasoline made from the oil, clothing made from the animals, and furniture made from the wood—and sell it on to retailers. *Distributors* often take the form of multinational corporations who also coordinate and organize the production according to consumer demand. On that note, *Consumers* include anyone who purchases the product in question. They might be end-consumers—like individual motorists and consumers of clothing and furniture—or retailers—like gas stations and clothing or furniture stores, who sell the products to end-consumers in smaller quantities than the wholesaler. In contrast to *Distributors*, the *Consumers* typically do not coordinate production and do not deal in wholesale. Outside of the

4. Each of these notions are variations on the same theme. For a genealogy of the different terms, see Bair (2009).

5. For example, a search for the terms "supply chain", "value chain", and "commodity chain" produced 198, 42, and 7 results, respectively (PhilPapers 2019).

main trio of *Suppliers*, *Distributors*, and *Consumers*, we finally find the *Service Providers*, who provide general services to the other actors, in the form of transportation, waste management, logistics, funding, marketing, finance, and more. These include such diverse actors as storage providers and individual shareholders, as well as banks and marketing firms.[6]

What I am ultimately interested in here is the *activities* which these agents are engaged in, as parts of the supply chain of a product or service. The kinds of actions with which I am concerned are such that they contribute to the project of the supply chain of a product or service in a certain way. These, then, are the actions with which agents participate in a supply chain. I shall say that an agent performs such an action if and only if (iff) the agent contributes toward the supply or consumption of a product or service, and if the agent under normal circumstances either pays for it, or receives payment (or remuneration in kind) for their services. What I refer to as normal circumstances are situations in which nothing atypical transpires, such as a breach of a business contract, or that one business partner fails to receive payment for unforeseen reasons.

Some examples include the marketer of a product who receives payment in exchange for providing a service that facilitates the sale of that product, or the consumer who participates in the supply chain of a product when they purchase that product. Agents are thus participants in a supply chain in virtue of performing such actions. To be part of a supply chain is therefore to be participating in the economic project of a product or service in a certain way. It should be mentioned that in order to participate in a supply chain, agents are not required to have a goal of making a profit, or to be a commercial actor. Agents of universities and not-for-profit non-governmental organizations (NGOs) can belong to supply chains in virtue of trading goods and services with others, even if they do not represent commercial institutions.

Limiting my scope to actions related to supply chains in this particular way means that I shall not focus on agents who might have an influence on emissions but who are not actively participating in a supply chain (Caney 2009a: 135). Examples include "celebrities who endorse emissions-intensive goods, regulators … who incentivize energy efficiency improvements, or advocacy groups who affirm or discourage a high emissions lifestyle" (Steininger et al. 2014: 77). On my view, then, these agents do not take part in the relevant activities of a supply chain since they do

6. It should be mentioned that different supply chains partly overlap. The transporters of goods, for instance, rely on the producers of trucks, who in their turn rely on transporters. The conglomeration of different supply chains is in this sense largely circular.

not typically receive payment for their services, and they are therefore not part of my focus in this thesis.[7]

A case that merits special attention here is states. States have generally been thought of as the central actors in moral and political discussions of climate change.[8] However, in my analysis of the causes of emissions, I shall only focus on those parts of states that actively take part in the activities of the supply chain of a product or service. Naturally, I shall therefore be concerned with the actions of state-owned enterprises (also called "government business enterprises"), but also with the activities of any government agencies that engage in commercial activity with other parts of the supply chain. So, even though other parts of governments do exercise an influence on the emission of GHGs, such as through policies which facilitate or constrain the actions of others, these do not perform the relevant types of action as parts of the supply chain because they do not contribute to the supply or consumption of goods and services in the relevant way (for discussion, see Roser & Tomlinson 2014: 237; Lawford-Smith 2017: 499n5). Consequently, they are not relevant to my focus in this thesis.

There is a further question here that has to do with the types of agents with which I shall be concerned in this thesis. As we have just seen, there are not only individual agents that are active along the supply chain of a product or service, but also collective entities, such as firms and government institutions. It might thus be thought relevant to consider whether the activities of such groups can be treated as actions in their own right, and that the entities should be considered proper intentional agents.[9] For a number of reasons, however, I have chosen not to focus on collective agents in this thesis. First, space does not permit of a comprehensive investigation of the claim that there are genuine collective agents. Second, I do not think that the overall purpose in this thesis commits us to the existence of such agents. It seems entirely possible to make the claims that I do—about the causation of emissions by individuals and the resultant moral implications—without making reference to collective agency.[10] As a result, when I do make reference to the activities of collectivities or groups, such as firms, and government-enterprises, I

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7. There are of course exceptions in the mentioned categories, that participate in supply chains, such as celebrities who are sponsored to endorse certain goods, or profit-based advocacy groups.

8. For further discussion of which emissions belong to states and which belong to non-state actors, see Heede (2014: 234), and Lawford-Smith and Eriksson (forthcoming).

9. For overviews of the topic of collective agency, obligation and responsibility in general, see May and Hoffman (1991), Sepinwall (2016), and Smiley (2017). For discussion of the responsibility of collective agents in the context of climate change, see Arnold and Bustos (2005), Newell (2009), Cripps (2011), Vanderheiden (2011), Banks (2013), I. Smith (2013), Hormio (2017), Isaacs (2017), Jamieson (2015: 41), Shue (2017), Schwenkenbecher (2018), and Grasso and Vladimirova (forthcoming).

10. We shall return in part to this topic in Section 2.1 of Chapter 3.

shall be using this as a shorthand for the actions performed by the individual agents who are members of said institutions. What I shall be referring to when I say that a company emits GHGs is therefore that the CEO, a number of employees, or a combination thereof, perform the necessary individual actions of emitting, albeit in the name of the company.

In order to summarize this section, the production and consumption of certain goods and services play a large—perhaps the largest—role in the emission of GHGs. This is a process that increasingly occurs across national borders. To encompass the international scope of emissions, while limiting the scope of the present inquiry not to comprise every single activity that contributes to emissions, I have chosen to focus on the supply chain of goods and services, including each step in their life cycle, from the extraction of raw materials to usage by the end-consumer. My focus on the activities of supply chains is thereby primarily about the scope of the thesis. As we shall see, however, this particular focus will bring to the fore certain aspects of the emission of GHGs that so far have been overlooked. The actions of *Suppliers*, *Distributors*, *Consumers* and *Service Providers* are the types of activities we shall be concerned with. They perform the relevant type of actions in virtue of contributing to an economic project (typically by receiving payment for a given service, or by paying for a product or service). Next, we shall look closer at the emissions that result from these activities.

2. Causing Emissions

Different industries produce different amounts of emissions. The burning of fossil fuels for producing electricity, for instance, results in more emissions than those burned for transportation, which, in turn, still produces more GHGs than agriculture (Edenhofer et al. 2014: 44). Furthermore, the emissions of the *different stages* of these supply chains also vary. For some products, emissions come about when we extract or create raw material, such as through raising cattle, and others in production, like when we burn coal to produce energy. Further emissions come about due to the transportation of products, either by truck or by plane, and still others due to the use of the products, such as when we burn fuel in our cars. Finally, most products and services produce emissions at more than one stage.

In the previous section, we saw how different types of actors of supply chains—like *Suppliers* and *Consumers*—stand in different relations to the production or consumption of goods and services. We said that agents perform certain forms of

actions which make them participants in the supply chain of a product or service. The question now is whether we can establish a causal link between emissions and the actions of these agents and their respective stages of the supply chain. The difficulty of doing so is well-documented.[11] Many philosophers, for instance, acknowledge the causal efficacy of *both* producers and consumers in the emission of GHGs along supply chains (see e.g. Caney 2009a: 135; Hiller 2011b: 354–5; Broome 2016: 163). So, how can we say whether the actions that contribute to the supply or demand of a service or product, performed by a *Supplier* or *Consumer*, cause emissions? In order to settle this issue, we need a principled way of deciding what counts as a cause of emissions. More precisely, we need to establish what qualifies what I shall refer to as an *emission-generating action*. Such an action is any action that causes emissions.

In most debates in the ethics of climate change, a thorough discussion of the causation of emissions has so far been lacking.[12] I believe that this failure of philosophers to acknowledge what exactly they take causation to consist in has led to unnecessary confusion, which has sometimes been mistaken for genuine disagreement. In order to try to reverse this trend, I want to ask in virtue of what emission-generating actions *cause* emissions.[13] My proposal is that it is *counterfactual dependence*. This rests on a Counterfactual Account of Causation (CAC), as presented by David Lewis (1973). In a nutshell, Lewis defines causation in terms of chains of causal dependence. This dependence, in turn, is taken to be *counterfactual*, such that an event *e* depends on another event *c* iff, if *c* were not to occur, *e* would not occur. Before we go into more detail about this account and how it applies to the causation of emissions, however, we shall first look at my reasons for adopting it. While I am not going to engage in a comprehensive defense of Lewis's account, I will give two reasons for accepting it.

First, I want an account of causation which provides an informative explanation of what causes emissions. Counterfactual dependence captures an arguably important feature of causation: difference-making. If an event would have

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11. For discussion, see Attfield (2009: 232), Caney (2009: 135), Hiller (2011b: 354–5), Nolt (2011a: 4), Broome (2012: 85, 2016: 163), Roser and Tomlinson (2014: 237–8), Steininger et al. (2014: 77–8), Hormio (2017: 320), Moss (2017: 415), Shockley (2017: 267–8), and Duus-Otterström and Hjorthen (2019).

12. There are, however, a number of notable exceptions, such as Barry and Øverland (2015), Corry (2016), and Gunnemyr (2019).

13. Philosophers sometimes use terms in addition to the notion of a cause, such as *causal contribution*, *causal factor*, *facilitation*, *enablement*, and so on, that seem to refer to a weaker relation between cause and effect than causation admits to. While my terminology will vary somewhat—from something being a cause of something else, to an event being causally responsible for another event, and so on—I make no such further distinctions, except where otherwise noted.

happened in the absence of the action, then the action is probably not a cause of the event. In Lewis's words:

> We think of a cause as something that makes a difference, and the difference it makes must be a difference from what would have happened without it. Had it been absent, its effects — some of them, at least, and usually all — would have been absent as well. (Lewis 1973: 160–1)

Presumably because of the intuitiveness of this idea, accounts like CAC are often invoked when thinking about morally relevant effects of particular actions (see, for instance, Jackson 1987; Regan 1980; Kutz 2000).[14] What I am assuming, then, is that part of the explanation of what causes emissions is difference-making.[15]

The second reason for choosing a counterfactual account of causation is how it fares in relation to other accounts. To be fair, the counterfactual account has faced a lot of criticism (for an overview, see Menzies 2014), especially regarding cases of so-called *redundant causation*, where there is more than one candidate for the event that is to be considered the cause. Unlike cases of joint causation, where each cause still plays a causal role, the causes in cases of redundant causation are not even making a difference together, in a way which suggests that at least one of the causes are superfluous to the occurrence of the effect. In subsequent sections, however, I will show that these are not serious problems. Furthermore, there appears to be a consensus that no theory of causation handles all counterexamples generated by redundant causation (Paul & Hall 2013; Schaffer 2016). In fact, generally speaking, most theories of causation, such as regularity theories (Psillos 2009; Wright 1985), transference and causal process theories (Hall 2004; Schaffer 2016), as well as probabilistic theories (Hitchcock 2010) face serious problems of their own.[16] At least as compared to how counterfactual analyses of causation fare in the current context, then, there appears to be no obvious better alternatives.[17]

Since CAC accounts for causes being difference-makers, and given that there are no obvious better alternatives in the current context, the counterfactual account

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14. For further discussion of the relevance of the concept of difference-making to the ethics of climate change, see Sinnott-Armstrong (2005), Sandberg (2011), Lawford-Smith (2016a), Gesang (2017), Vance (2017: 563), and Cullity (2019: 38).

15. It could, of course, be argued that other theories of causation do a better job than CAC of accommodating the difference-making datum. However, of those I have encountered—such as regularity theories, causal process theories, and probabilistic theories—none does.

16. In particular, regularity theories appear to fall prey to cases of preemption (which will be further explained in Section 4) (Paul & Hall 2013: 75, 100). While transference accounts seem to handle such cases, they tend instead to overgenerate causes in cases of *disconnection* and *misconnection,* as discussed by Schaffer (2016). Probabilistic accounts of causation face other worries (Schaffer 2016; Hitchcock 2010).

17. For other accounts of causation applied to the climate context, see Gunnemyr (2019), who defends a later formulation of Lewis's account, and Corry (2016) who defends a probabilistic theory of causation.

therefore seems well-suited to analyze the causation of emissions. Let us then take a closer look at CAC. As mentioned, Lewis analyzes causation in terms of counterfactual dependence. This means that he takes the causal dependence between events to be counterfactual.[18] For two distinct events *c* and *e*, *e* causally depends on *c* iff, if *c* were not to occur, *e* would not occur. Lewis then uses the notion of causal dependence to define a *causal chain*: "Let *c*, *d*, *e*, … be a finite sequence of actual particular events such that *d* depends causally on *c*, *e* on *d*, and so on throughout" (Lewis 1973: 166–7). Such a sequence is a causal chain. Finally, *causation* is the relation that holds between a cause and an effect in virtue of there being a causal chain leading from the cause to the effect. Let us formalize this slightly as follows.

CAC An event *c* is a cause of another *e* iff there is a chain of stepwise causal dependence leading from *c* to *e*

Next, in order to better appreciate the implications of the account, let us consider a case.

> *Direct Shot. P* aims a gun at *Q* and pulls the trigger. The bullet hits *Q*, thus killing them.

P's pulling the trigger is a cause of *Q*'s death because there is a causal chain leading from that event to *Q*'s death. What this means is that there is a causal sequence leading from *P*'s act to the event of *Q* dying, such that each event between *Q* dying and *P*'s pulling the trigger counterfactually depends on the preceding one. Had *Q* not pulled the trigger, the gun would not have been fired, and had the gun not been fired, the bullet would not have flown through the air, and had the bullet not flown through the air, it would not have hit its target, and, finally, had the bullet not hit its target, *Q* would not have died. It is in virtue of this chain of intermediate events that *P*'s action qualifies as a cause of the event.

Applying CAC to emissions, an action is a cause of emissions iff there is a chain of stepwise causal dependence leading from the action to the emissions.[19] To give an example, say that a driver goes for a 10 km drive and that their car emits 100 g of CO_2 for each km.[20] The act of driving thus causes 1 kg of CO_2 emissions to occur iff

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18. Like Lewis, I take the causal relata of cause and effect to be *events*, like "flashes, battles, conversations, impacts, strolls, deaths, touchdowns, falls, kisses…", and most important for our purposes: *actions* (Lewis 1973: 161).

19. On CAC, at least some omissions are causes, paradigmatically those for which an agent had a duty to avoid particular outcomes, such as the omission of a lifeguard's rescuing action when a swimmer drowns. For reasons of space, though, I will set omissions aside and focus exclusively on actions as causes of emissions in this thesis.

20. In reality, this number is probably slightly lower. In 2005, the average American automobile emitted 564 g of CO_2-e (carbon dioxide-equivalent) per mile (National Research Council 2010: 180). Since 1 mile equals

there is a causal chain leading from that act to the emissions occurring, i.e. if there is a sequence of events, from their driving the car, to the combustion of fossil fuels, to the CO_2 escaping through the exhaust pipe and into the atmosphere. If they had driven further—say 15 km—the action would have caused a different event: the emission of 1.5 kg CO_2. This analysis of the causation of emissions appears to get at something essential about causing emissions, namely, that had it not been for the person going for a drive, the emission of 1 kg of CO_2 would not have occurred. Insofar as that person's driving is a cause of emissions, then, it is so in virtue of those emissions not coming about without them doing so.[21]

Before we end this section, I want to highlight an important point regarding the scope of this work. In line with what I said in the previous section, I shall only be concerned with actions performed by agents of a supply chain acting in their capacity as such. Several of the roles that we occupy professionally involve carrying out emission-generating actions, like operating machinery and traveling. Even in our private lives, GHGs come about by such simple things as heating our homes, going out for lunch, or having a shower. Each of these actions bear a direct relation to us participating in different supply chains. On the analysis of emissions just presented, however, some actions that are not performed in our capacities as agents of a supply chain nonetheless cause emissions. For example, by *breathing*, we each emit CO_2 by a daily average of 1 kg.[22] I am not, however, going to focus on such actions in this thesis. I am only going to be concerned with those emission-generating actions which involves the agent contributing toward the supply or consumption of a product or service, and where the agent under normal circumstances either pays for it, or receives payment (or remuneration in kind) for their services.

It should be noted, though, that with very few exceptions, we are acting in a supply chain capacity when emitting more often than we might think; we do so when we feed ourselves, when we work, and when we recreate. This is because activities such as these cannot be done without consuming energy of some sort, and the process of generating this energy most often gives rise to GHG emissions. One of the few examples of supply chain agents causing emissions outside of their capacity as such—apart from the aforementioned act of breathing—includes influencing others to emit, thus indirectly contributing to emissions, even though they do not do so by directly

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1.609344 km, the average American automobile causes 908 g of CO_2-e being emitted for every 1 km traveled (564 x 1.609344 = 907.670016).

21. I am here assuming away cases of causal preemption, which we shall return to in Section 4 below.

22. It has been noted that by breathing we merely return the CO_2 to the atmosphere that was recently sequestered from it and then stored in plants (Broome 2012: 22). It could thus be argued that by breathing, we do not contribute with a net increase in emissions. This, however, should by no means lead us to conclude that breathing fails to be emission-generating actions. Doing so would imply that other interventions in the natural carbon cycle, like burning rain forests, fail to count as emission-generating actions as well.

participating in the supply or consumption of a product or service.[23] These types of actions, then, lie outside of the scope of this work.

In summary, this section introduced the issue of how emissions are caused along global supply chains. I presented the Counterfactual Account of Causation (CAC) and how it applies to emissions. So far, we have seen how actions can be causes of emissions in virtue of there being a chain of stepwise causal dependence between the two. I will now spend the remainder of this chapter fleshing out this idea. It is not obvious, for instance, how all the complex features of emissions occurring along global supply chains should be paired with CAC. How do we make sense of the fact that some emissions only come about through the joint effort of several agents? The extraction of raw material, for example, is seldom the result of individuals acting alone. This problem will be the topic of the next section. A related issue is that some emissions come about regardless of whether a given agents acts. For most services provided in a global market economy—including those that produce emissions—there are competitors ready to act, such that if someone does not provide them, someone else will. This suggests that the counterfactual dependence at the heart of CAC is inhibited. This problem will be the focus of Sections 4 and 5.

3. JOINT CAUSATION

Some emissions only come about through the combined effort of several agents. In fact, some agents rarely make a difference with regard to emissions by themselves. For instance, if it had not been for the gasoline provided by upstream producers, the driver in our example above would not have been able to cause any emissions. Had it not been for the raw material provided by first-tier *Suppliers*, to take a different example, a production company would not be able to emit GHGs in manufacturing either. In this section, I shall solve this apparent problem and argue that CAC allows for the counterfactual dependence of an event on *a set* of actions that functions as a *joint cause*.

23. We shall further consider the causal efficacy of such actions, albeit from a different perspective, in Chapter 3, Section 4.

3.1 Parts of Joint Causes

Joint causation occurs when two or more events jointly cause a further event (Lewis 1986: 196). More precisely, I take a set of events {*c*, *d*} to be a joint cause of an event *e* iff there is a causal chain leading from each member of that set to *e*.[24] This means that there is stepwise causal dependence between *c* and *e*, as well as between *d* and *e*, at the same time. Let us consider a case.

> *Joint Shot. P* and *R* take aim at *Q* and pull their triggers. Both shots hit their target at the same time, each individually necessary, but only jointly sufficient, for causing *Q*'s death.

In this case, it is true that if *P*'s action had not been performed, *Q* would not have died. However, it is also true that if *R* had not shot *Q*, *Q* would not have died either. *Q*'s death thus causally depends on each of *P*'s and *R*'s shots. Since this means that there is causal dependency, and thus a causal chain, leading from each agent's shots to *Q*'s death, *P* and *R* jointly caused it.

We might thus treat emission-generating actions performed along supply chains as parts of a joint cause of emissions.[25] That is, the generation of emissions causally depends on each of the different parts of the joint cause, not because they each caused more emissions on their own, but because they were part of the cause of more emissions. This relation of causal dependency between different parts of a joint cause can be highly complex. The emission of GHGs might causally depend on sets of actions which depend on other actions which, in turn, depend on further actions, and so on.[26] To take an example, the emissions that are due to the individual motorist's driving their car not only causally depend on the motorist's action, but also on the set of actions performed by the retailer and the transporter of the gasoline, in conjunction with the distributor's actions, as well as the actions of those who drilled for and processed the oil.[27]

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24. It is unclear whether Lewis would have accepted my formulation here. He only mentions the term joint causation in passing and in terms of causal dependence, without the mentioning of causal chains.

25. Several philosophers have suggested that emissions might be jointly caused (Hiller 2011b; Roser & Tomlinson 2014: 237–8; Steininger et al. 2014; Pellegrino 2018: 816; Duus-Otterström & Hjorthen 2019: 873–4). It is not clear, however, that these authors draw the same conclusions from this as I do. In particular, they are silent on whether joint causation is compatible with particular agent's actions being causally efficacious.

26. A discussion that parallels several of these points, but has a slightly different focus, is that of *intervening agency* (Zimmerman 1985; Bazargan-Forward 2017). While this discussion is framed primarily in terms of *moral*—and not exclusively *causal*—responsibility, it acknowledges the possibility of agents' actions being mediated through the agency of others. Kutz calls this *interpersonal causation* (Kutz 2000: 169–71). For a related discussion set in the climate context, see Attfield (2009).

27. Again, I am here assuming away cases of preemption, which will be treated separately below, in Section 4.

Let us call those actions that only cause emissions jointly with other agents' actions *indirect* emission-generating actions, and those that singularly cause emissions *direct* emission-generating actions (Moss 2017: 415–6).[28] The case of the individual motorist emitting GHGs by driving is an example of an indirect emission-generating action because, as we saw, those emissions only occur given the actions of the other agents of the supply chain, such as the retailer of the gasoline. As we shall see, direct emission-generating actions are far rarer; very few of our emissions are caused unilaterally. Felling trees without the use of tools that emit, or have been manufactured in ways that emit, GHGs might be an example. Indirect emission-generating actions, however, are no less proper causes of emissions than direct emission-generating actions. On the contrary, this analysis lets us grant causal efficacy to particular emission-generating actions, regardless of whether they cause emissions jointly or singularly (Attfield 2009; Hiller 2011b; Sandberg 2011; Lawford-Smith 2016a).[29] As long as the emission of GHGs causally depends on an action, it is a cause of the emissions, even though they also depend on the presence of further actions. In line with what I assumed in Section 1 above, this lets us explain the causation of emissions in collective settings without making reference to the notion of collective action, or collective agency. All the actions I am concerned with reside at the level of *individual* agency. For instance, when a firm emits GHGs, this means that the individual employees of that institution each act so as to together cause emissions.

It should be noted that parts of a joint cause can include the actions that are performed outside of the supply chain. Examples include government actors who pass emissions regulations. Had it not been for the environmental regulations just passed, say, less emissions would have occurred. All that this means, however, is that supply chain actors can cooperate (in a loose sense of the term) with non-supply chain actors so as to produce emissions. My focus is still on the emissions of those who contribute toward the supply or consumption of some product or service, and either pays for it, or receives payment for their services (see Section 1). We shall further discuss this in Section 3.2.

As we can see from the example of the individual driver, some joint causes are extended over time. The emissions that come about through the motorist's driving

28. Actions qualify as both direct and indirect emission-generating actions if they singularly cause emissions at the same time as they constitute parts of a joint cause of further emissions.

29. These issues also mirror those made in debates on the causal efficacy of individuals in relation to meat consumption and vegetarianism (see, for instance, Singer 1980; Matheny 2002; Norcross 2004; Kagan 2011). For a related debate, see that on the causal efficacy of voting (Brennan 2016). There are, however, those who object to the individual efficacy of individual actions in producing GHG emissions (see, e.g. Sinnott-Armstrong 2005; Cripps 2013). We shall look at some of their arguments in Section 3.2 below.

is jointly caused, even though the distributor's action was performed at t_1, the transporter's at t_2, the retailer's at t_3 and, finally, the consumer's at t_4. The consumer is thus given a choice at t_4 that could retroactively inhibit the causal effect of the preceding actions. If the consumer chooses not to burn the gasoline, for example, then the actions of the transporter, distributor, retailer etc. might fail to contribute to what would subsequently amount to a particular amount of emissions. Whether a given action is part of a joint cause of emissions is thus sometimes decided by whether an additional, later action is performed as part of that set. Some downstream actions might thus have a *trumping* status in the causation of emissions. This, however, should not be taken as evidence that such actions somehow count as causes to a greater extent than the other parts of the joint cause; each action that forms part of a joint cause of emissions is as much a part of that cause, regardless of when such an action is performed. (We shall further investigate the issue of parts of joint causes having relative causal efficacy in Section 3.2 below.) To qualify as a direct or indirect emission-generating action, then, it does not matter when in time a part of a joint cause is located, as long as there is causal dependence between the part in question and the emissions coming about.

So far, we have seen how the notion of joint causation applies to CAC and how emission-generating actions form part of joint causes of emissions. Next, let us go through the different supply chain stages to see how the joint causation of emissions works out in further detail. Let us start by looking at *Suppliers*. To recapitulate, first-tier *Suppliers* are extractors, or creators, of raw material, like in the case of drilling for oil or raising animals. Second-tier *Suppliers* then process these goods for production, for example by refining the crude oil or carving up the animals for meat and clothing. There are two primary ways for *Suppliers*' actions to cause emissions. The first is emitting through the handling of raw materials. One example would be farming, where the first-tier raising of cattle results in methane emissions. Other industries deal in goods which do not produce as many emissions at the supply stage as compared to downstream stages. Drilling for oil, for instance, is not as emission-intensive as when consumers burn the oil for fuel. The second primary way for *Suppliers* to cause emissions is thereby to enable the more immediate emissions of other agents of the supply chain. But even though *Suppliers*' actions thereby depend on the actions of other supply chain stages in order to cause emissions, there can still be causal dependence between their actions and emissions occurring. That would just mean that the *Supplier's* action is part of a joint cause of emissions where there is causal dependence between *each* part and the emission of GHG.

As we saw above, *Distributors* are typically wholesalers who sell products in bulk to other businesses and typically do not (but might) produce goods themselves.

Rather, they often purchase products from *Suppliers* and sell them to retailers. Thus, the emission-generating actions performed by *Distributors*, such as transporting goods from manufacturer to retailer, is causally dependent on the extraction and production stages of a supply chain. Other emission-generating actions of *Distributors* mediate upstream or downstream emissions of others, for example by enabling emission-generating activities of end-consumers, or by facilitating demand of emission-intensive products and services. Again, though, as long as there is a chain of stepwise causal dependence between the actions of *Distributors* and the emission of GHGs, these actions qualify as emission-generating actions.

A *Consumer* is anyone who purchases a product or service in the supply chain in question. It might refer to end-consumers, like individual motorists and firms who purchase energy, or retailers like gas stations and clothing stores, who sell the products in smaller quantities than the *Distributors*. In the consumption case, some emission-generating actions amount to the use of products, like when we burn fuel by driving cars. Mainly, however, consumers cause emissions through the demand that purchases create.[30] For any number of purchases that causes a resupply of products—and thus emissions, in conjunction with upstream emission-generating actions—this effect causally depends on each of the individual purchases that add up to that number.[31] Insofar as there is stepwise causal dependence between an individual purchase of some product or service and emissions occurring, then, this means that it is causing emissions.[32] It should be mentioned, though, that by the time a *Consumer* purchases a product, the emissions related to upstream supply chain stages will often either already have occurred, or at least already have been determined. For each product that goes through the supply chain, the emissions embedded in it are thus not going to be causally dependent on the actions of those *Consumers* who purchase *that* product. Rather, those emissions are dependent on the

30. There is an exception to this, in the form of those products that are made to order.

31. It should be mentioned, though, that refraining from making a particular purchase might have the opposite effect too, such as when a diminished demand leads to lowered prices, which, in turn, increase sales and thus emissions (Lawford-Smith 2016a: 67). Cases like these, however, are arguably rare. In general, it seems sound to assume that an increased number of individual purchases leads to increases in supply.

32. A related argument about the causal efficacy of demand can be made with reference to purchases over time. According to this reasoning, the effects of buying a certain product or service add up diachronically to create a causally efficacious demand in aggregate, even though the same actions would have no effect on particular occasions. This type of argument, however, has been criticized by Russ Shafer-Landau (1994: 88–9) and Julia Nefsky (2018: 285n5). The objection is that businesses arguably deal with stocktaking and inventories in such short timespans—perhaps on a weekly, or monthly basis—so that the effects cannot accumulate in the way that the argument assumes. Instead, any added effect of multiple purchases is cancelled out once a resupply occurs. The market has a short-term memory in this regard.

purchases of *Consumers* who bought a previous batch of products.[33] Some emission-generating actions of *Consumers* can in this respect be treated as the *first* in a series of temporally scattered parts of a joint cause.

Lastly, *Service Providers* are the agents who provide general services to the other actors of the supply chain, in the form of transportation, logistics, marketing, information, and finance, to name a few. Transporters, for instance, perform emission-generating actions when transporting goods, most notably by truck and by plane. Furthermore, the emissions embedded in a given product sometimes depend in part on the marketing, storing and finance connected to it. While these might only make small differences in the amount of emissions that come about, they can nonetheless play indispensable roles in the way that GHGs are emitted. Therefore, the successful marketing of a product, to take one example, could very well constitute a part of the joint cause of the emissions related to that product. For instance, the marketing of a new car model can ensure that more cars get sold, so that more gasoline is consumed, which—in conjunction with the actions of the manufacturer of the car, the processor of the gasoline, and so forth—leads to more emissions than otherwise.

Before we consider some objections to the idea of joint causation of emissions, let us conclude this subsection by saying something about distinguishing causally efficacious actions from inefficacious ones. What has appeared so far is a quite complex picture of the causation of emissions. Consequently, few agents have the ability to track their contribution through the intricate network of parts of joint causes along the supply chain that ultimately leads to emissions. As a matter of fact, not all actions that contribute toward the supply or consumption of a product or service are causes of emissions. Some of them are causally inefficacious, meaning that a particular agent's influence is too small for the occurrence of emissions to be causally dependent on that agent's actions. There are many actions performed along supply chains that do not form parts of joint causes of emissions. The individual cleaners at a multinational energy company, for instance, contribute to the company's economic endeavor and receive payment for their services (under normal circumstances), and thus participate in the supply chain, but it is not obvious that they make a difference to the amount of emissions produced by the company. It is quite conceivable that the emissions of the energy company do *not* causally depend on the actions of an individual cleaner, such that, had it not been for the particular actions of that agent, then the subsequent step in the causal chain that ultimately

33. This is with the exception of the first batch produced, in which case the emissions associated with the products will not depend on any consumers' purchases of previous products. In such cases, the number of products manufactured are probably determined by other factors, such as the demand on similar products available on the market.

concludes in the emission of GHGs would not have occurred. But this issue is notoriously difficult to resolve. In such cases, it is sometimes not possible to determine whether the action in question is part of a joint cause of emissions or not. This can be because the complexity of the supply chain makes it difficult to ascertain whether the agent's contribution was large enough to make an actual difference to the occurrence of emissions. But this also occurs in cases where joint causes of emissions are extended over time, and there is a possibility of downstream actions inhibiting the causal efficacy of prior actions. It is therefore sometimes not possible to know whether temporally prior parts of a supply chain actually contribute to emissions. (We shall return to the moral import of this epistemic opacity in Chapters 3 and 4.)

3.2 Objections to Joint Causation

We have thus far looked at how joint causation applies to each stage of the supply chain of a product or service. It is now time to consider some objections to this thought. First, some have objected to the idea that an event can be caused by more than one prior event, such that each part of the joint cause is causally responsible for the effect (Parfit 1984: 25; Sinnott-Armstrong 2005; Jamieson 2014: 181; Nefsky 2011). The thought according to this objection is thus that an event *c* which does not singularly cause an effect *e* (but instead requires additional events to come about) fails to be a cause of *e*.[34] There might, indeed, appear to be something odd about the attribution of the status of cause to events that do not by themselves suffice for causing the effect in question.

I think, however, that denying the status of being a cause to parts of joint causes goes counter to the way we arguably conceive of causation. Upon closer scrutiny, few instances of causation are really cases of singular causation. The heat from a stove does not cause the water to boil without the necessary pressure, and a bowler does not cause the pins to be knocked down without the requisite gravity. Most of what we cause is thus conditional on the rest of the fabric of the world; many seeming cases of singular causation are properly understood as examples of joint causation. This is no less true of the events that we cause together with other agents, such as emissions coming about. Denying that parts of joint causes are causes would thus force us to conclude that close to none of our actions are causes of their seeming effects. This is

34. For related criticism of CAC's ability to account for cases of joint causation of emissions, see Pellegrino (2018: 816–7).

arguably not true, and parts of joint causes therefore appear to retain their status as causes of their effects.

Some might respond to this by saying that CAC is too promiscuous. In granting the status of cause to parts of joint causes, CAC (so the argument goes) will count every necessary condition of emissions as a cause thereof (Steininger et al. 2016; Corry 2016: 478).[35] For instance, if we go far back enough in time, emissions will causally depend on an indefinite number of preceding events. Without a particular agent's grandparents falling in love, for instance, that person might not have been born and less GHG would thus have been emitted. But it is arguably odd to say that the grandparents' courting would be an emission-generating action.[36] CAC therefore seems to be saying that there are more causes of effects than what there really is.

I do not find this implication too worrisome, however. The reason why the grandparents' actions might seem secondary or peripheral to the causation of emissions is because we regularly think of some causes as being more salient than others (see Mackie 1965; Hart & Honoré 1985; Miller 2007: 76–7). In lighting a match, for instance, we tend to single out the friction created by striking the match as the cause of the ignition, while the presence of oxygen—although necessary—is treated as a mere condition for that effect (Sinnott-Armstrong 2005: 298). In the case of GHGs, this means that certain actions, such as flying, are taken to be causes of emissions, while others, like the actions of the airline passenger's grandparents, are treated as nothing but background conditions (Sinnott-Armstrong 2005: 297–8; Barry and Øverland 2015: 168; Duus-Otterström forthcoming). By contrast, the concept of causation is most commonly thought of as a *non-discriminatory* (Lewis 1986: 162), or *egalitarian* (Hall 2004: 227–8) notion. This means that in cases where more than one event exerts a causal influence on an effect, we do not single out any particular causes as more relevant than others, but treat each preceding cause of the effect as equal in status (for discussion, see Schaffer 2016). The reason for this is that it does not seem possible to find reliable criteria for distinguishing between seeming salient and non-salient causes.[37] So, since we cannot sustain the distinction between salient and non-salient causes, the grandparents' actions are just as much a cause of

35. Corry objects to certain events being causes of effects of climate change, rather than being causes of emissions, but the argument applies similarly to both.

36. Identifying parents as the causes of their children's emissions has given rise to similar controversy. For discussion of the position that parents cause their children's emissions, see Young (2001), Kawall (2011: 24–5), Cafaro (2012: 55), Cripps (2016a: 119–120), and Broome (2012: 71–2; 2016: 163).

37. Although there have been proposals for such criteria, such as salient causes exhibiting *abnormality* (Hart & Honoré 1985) or being intentionally brought about (Sinnott-Armstrong 2005: 297), these seem to fall prey to counterexamples (Gunnemyr 2019).

their grandchildren's emissions as any other event on which those emissions causally depend.

If someone is still worried about this conclusion, we can mitigate the worrisome implications of this by noting that we have so far only talked about *causal*—and not *moral*—responsibility for emissions. If part of what is counterintuitive about CAC granting the status of cause to the grandparents' actions is the moral implications thereof, we should suspend judgment on that issue until further conditions of moral responsibility and obligation have been met.[38]

Another implication of the perceived promiscuity of CAC pertains to the scope of the thesis. As I mentioned above, in Section 3.1, for any given event taken to be caused in part by agents of a supply chain, there will be multiple further parts of that joint cause located outside of the supply chain. This means that there are many actions which are performed outside of a supply chain but nonetheless affect the levels of GHG emissions. Someone might thus be worried that events that are not part of the supply chain are as causally responsible—if not more responsible—for the emissions of GHGs as those events picked out by the notion of the supply chain. The causal responsibility of the agents of a supply chain might thereby seem severely diminished and we might ask why we should focus on them in the first place.

There are two things to say in response to this. First, it should be clarified that my focus on the supply chain is primarily a scope claim; I have chosen to focus on these types of activities since they appear to comprise a sizeable portion of emissions without having to consider further, peripheral factors that impact the levels of emissions. It would be unmanageable to try to track *all* of the preceding causal events leading up to the emission of GHGs. Instead, I have tried to focus on those agents involved in the emission of GHGs that are central to the process of emitting, without having too broad of a focus. The fact that agents of supply chains share causal responsibility for emissions with further events is not a reason against focusing on the supply chain as a source of emissions.

Second, even though there are other parts of the joint causes of emissions, in addition to the actions of supply chain agents, we have seen that this does not lessen the causal efficacy of the supply chain agents' actions. They can still be causes of emissions, in virtue of the emissions being causally dependent on those actions, even though multiple further events exercise the same type of causal influence on the emissions. So, the fact that there are additional events involved in the causation of emissions beyond the supply chain does not mean that the activities of supply chain agents are of less importance. On the contrary, I think focusing on supply chain

38. This is the topic of Chapters 3 and 4.

agents' actions gives us an important—although still limited—look at the causes of emissions.

Another worry is that treating sets of actions along supply chains as joint causes will obscure the relative shares of emissions that each agent causes. How can we, one might ask, accommodate the fact that certain parts of a supply chain emit bigger amounts of GHG than others? This inability to account for degrees of causation has been raised both as a problem for CAC more specifically, as well as for any account of causation that tries to say something about the causation of emissions:[39]

> the only robust statement that we can make is that consumers and producers both contribute emissions, but it is hardly possible to justify a statement to the effect that one of them contributes more than the other or that they both contribute equally much. (Steininger et al. 2014: 78)

To be sure, there have been suggestions that try to explain how there can be degrees of causation.[40] I will not directly entertain that possibility here, however. Instead, I take causation to be binary—an event is either a cause or it is not a cause. While I will not defend that proposition further here, I will try to make sense of the implications of this view for the case of emissions. Let us start with a case.

> *The Scale*. Three persons stand on a scale. Together, they weigh 300 kg. Individually, however, they weigh 95, 100, and 105 kg.

The case is one of joint causation of exerting a particular weight on the scale, in that the effect of the scale showing a total weight of 300 kg causally depends on each of the persons standing on it. Does it not make sense, however, to say that the person who weighs 105 kg caused the scale to show 300 kg to a greater extent than the others? Likewise, maybe this effect was less dependent on the contribution of the person weighing 95 kg.

The case is relevant to supply chains in that particular emission-generating actions might seem to give rise to greater shares of emissions than others. Even though the emissions that come about through a joint cause—like the drilling, processing, transporting, selling, and eventual burning of gasoline—are causally dependent on each action that constitute parts of that cause, it might be that some

39. Someone might object that this is not an issue of degrees of causation, but rather of different amounts of GHGs being caused. But since we are concerned with joint causation, where a number of different events—actions of supply chain agents—each form part of the cause, then we cannot say that the different individual actions each cause different amounts of emissions, since this would require that they singularly cause their respective parts; I have argued above that they do not.

40. See, for instance, recent discussion by Braham and van Hees (2009), Bernstein (2017), and Kaiserman (2018).

actions merit greater shares in the causal responsibility than others. Say that the transporter chooses to drive their truck in a less environmentally friendly way than they could have, or that the processors of the oil used means of production which were less sustainable than those they could have used. Suppose that this means that these emitters thereby made a bigger difference to the amount of emissions that came about than the other parts of that supply chain, and so should arguably be attributed more causal responsibility for it. In such a case, does it not make sense to say that the individual parts of the joint cause call for relative shares of emissions?

I do not think so. Remember that the effect in *The Scale* as well as in the gasoline case is causally dependent on each part of the joint cause. This means that there is counterfactual dependence between each of the intermediate steps in the causal chain leading from cause to effect. Hence, in *The Scale*, we can say that if any of the three persons were to refrain from standing on the scale, it would not show 300 kg. They are thus parts of the joint causes to equal extents. It makes no sense to say that one event is more of a cause of the effect of the scale showing 300 kg than any other event—no single event out of the three accounts for this fact more than the other two. What we can say, however, is that if it had not been for one of the persons standing on the scale, then a *different* effect would have been caused. If only the two persons weighing 95 and 105 kg stand on the scale, for example, then they jointly cause the scale to show 200 kg. But this counterfactual does not inform us of what actually transpires, in terms of causal shares, if all three persons stand on the scale, namely that it shows 300 kg. What would have happened, had one of the three persons refrained from standing on the scale does not say anything about the causal share of that person's action in the joint cause. I thus conclude that the notion of relative causal shares of joint causes is untenable in this case. Likewise, in the case of the supply chain of gasoline, the emissions that come about is jointly caused by the actions of the providers, the processors, and the transporters of the oil, and so on. There is a causal chain leading from each action to the emission of GHGs, such that without the preceding step, the subsequent intermediate event would not have come about. The actions are thus equally causally responsible for the resultant emissions. There is therefore no room for relative causal responsibility.

One possibility is that the reason why this conclusion appears worrisome to some is because of its perceived moral implications. Again, however, we have yet to consider the moral issues connected to causing emissions. We have so far only talked about causal responsibility for GHGs and will return in subsequent chapters to the issue of moral responsibility and obligation in relation to emissions. In particular, I shall argue in Chapter 3 that there is more reason for agents to emit less rather than more because this increases the probability of harm coming about. Until then, we

should suspend judgment on the perceived counterintuitive normative implications of my account of the causation of emissions.

An additional reason why there appears to be a worry here is the ostensibly easy measurement of emissions. GHGs are something which we are used to hearing about in quantifiable terms, such as kilograms (which, as it happens, is also the unit of measurement in *The Scale*). This suggests that the relative causal contributions to GHG emissions can also be expressed in such terms. In turn, this indicates that there are quantifiable shares of the cause that can be portioned out to the actions of each participating agent. If we were talking about other effects of joint causes, however, the intuition about degrees of causation would not have arisen as easily. In the case of *Joint Shot*, for example, the effect depends on both shots being fired, but since it is harder to quantify the relative causal contributions of *P* and *R*'s shots, the intuition that one of them should be more of a cause than the other is not as strong.

Thus, the way that we express the effects in question—in terms of quantifiable amounts of GHG—misleads us to think that parts of the total effect can be portioned out to each part of the joint cause of that effect. However, when it comes to cases of joint causation, where the effect is dependent on *each* of the parts of the cause, it is not a matter of a particular part having a relative role to play in the effect coming about, but rather of that part contributing to whether the effect occurs at all. It is not as if the emissions which result from the supply, production, and usage of a car can be portioned out in a clear-cut manner to all the agents engaged in the supply chain thereof. If a given set of agents are necessary in order to produce a particular amount of emissions, then the absence of one of those agents will result in a numerically different effect—perhaps one that does not give rise to any emissions at all.

It is of course possible that this shows that CAC is inappropriate to apply to these particular quantitative issues. We could argue that a different account of causation would have been able to predict the relative contributions in a case where we can put a quantifiable measure on causal contributions. But an account of causation—such as CAC, on my particular understanding thereof—is arguably not conceived as a tool to ascertain epistemic issues of the contributions of parts of joint causes, but rather as a way of identifying what counts as a cause. Being able to predict measurable degrees of causation is at best a side-issue for an account of causation. Besides, I suspect that what turns out to be the correct account of causation will not only appear to be true in relation to a specific subset of cases—either where the events are quantifiable or not—but to all imaginable cases. I do not think, therefore, that it is a shortcoming of CAC that it cannot handle the epistemic issue of measuring degrees of causation, at least not in cases as complex as climate change.

To summarize, this section has looked at the notion of joint causation and how it applies to emissions. Specifically, we looked at how CAC can apply to sets of events and how there could be counterfactual dependence between emissions and several actions of supply chain agents. As long as there is stepwise counterfactual dependence between each of the parts of a joint cause, then those parts can qualify as causes. This is because CAC allows for the counterfactual dependence of an event on a set of actions that function as a joint cause. Lastly, I looked at a number of seeming complications due to this account. None of these were deemed to pose serious problems to CAC as applied to the causation of emissions.

In conclusion, we have seen that considering emission activities of agents contributing to supply chains in this way illuminates several important ways in which emissions are brought about. For instance, it makes it undeniably clear that the emission of GHGs mainly is a joint enterprise. Furthermore, to take another example, it shows how the extension of joint causes of emissions over time bestows a trumping choice to certain agents of the supply chain. We shall return to the moral import of this information in subsequent chapters. Focusing on the particular supply chain of a product or service thus arguably gives us important insights to the causation of emissions which we would otherwise not necessarily have been aware of. In the next section, we shall look further at a number of alleged problems for the application of CAC to the complex causal system of climate change.

4. Causal Preemption

A number of challenges face any account of causation in complex causal networks where there is more than one candidate for the event that is to be considered the cause. In such cases of causal *preemption* and causal *overdetermination*, it can be difficult to establish that there is a causal chain leading from the presumed emission-generating action to the emission of GHGs. Preemption and overdetermination are examples of *redundant causation*, which, in L.A. Paul and Ned Hall's words is "a kind of causation where there is more than one event that is, in some sense, enough for the effect that occurs" (Paul & Hall 2013: 70). Redundant causation has been taken to pose problems for CAC (as well as for other accounts; for an overview, see Paul & Hall 2013). To see whether this is so, I will consider preemption in this section and look at overdetermination in Section 5. I will argue that cases of preemption, in the form they take in this context, do not pose a problem to my analysis of causation.

4.1 Early Preemption

In preemption cases, one event appears to cause the effect while another does not cause it, but would have if the former had not; the actual cause seems to be accompanied by a preempted backup cause (Ibid: 74). We shall begin, in this subsection, by looking at so-called *early* preemption, before we turn to cases of *late* preemption in the next. Let us look at a case.

> *Backup Shot.* *P* and *R* take aim at *Q*. *P* pulls their trigger, while *R* does not. *P* shoots *Q*, thus causing *Q*'s death. Had *P* not pulled their trigger, though, *R* would have pulled theirs.

The seeming problem for CAC is evident: *Q*'s death does not causally depend on *P*'s pulling the trigger. If *P* had not pulled the trigger, *R* would have pulled their trigger instead, and so *Q* would have died anyway. Therefore, it appears that CAC is committed to saying that *P*'s pulling the trigger, contrary to our intuitions, is not a cause of *Q*'s death. Preemption thus seems to pose a problem for our analysis of how emissions are caused. In fact, several cases of preemption seem to be present in the context of global supply chains, paradigmatically due to the abundance of services that are available on a market (see e.g. Hale 2011).[41] Had it not been for a particular set of transporters or consumers that actually causes emissions, it is likely that an equal amount of emissions would still have come about, because others would have been there to take their place in doing their part to emit GHGs.

Let us look closer at one such case. A one-way flight from London to New York emits roughly 166 tons of CO_2 in total.[42] Assume that the airline keeps meticulous records of the number of passengers and that, in order to maximize profit, they take account of each flight ticket that is being purchased. In fact, they have found out that the most profitable business strategy is to suspend every flight that carries fewer than 100 passengers. So, every 100^{th} sold flight ticket results in an additional departure, which in turn results in 166 further tons of carbon dioxide emitted. These emissions are thus causally dependent on *each* of the actions of the 100 consumers of airline tickets (as well as the actions of the airline employees and the suppliers of the fuel, and so on). Let us now further assume that an additional 10 persons buy tickets, so that had any of the 100 customers not bought their particular ticket, one of the extra

41. For further discussion of preemption of emissions, see Johnson (2003), Sinnott-Armstrong (2005: 297), and Cullity (2019: 38–9). For a general discussion of how cases of preemption threaten the causal efficacy of individual actions, see Kagan (2011), Nefsky (2011), and Chartier (2006: 240–1).

42. Flying from London (LHR) to New York (JFK) burns approximately 52.8 tons of aircraft fuel, and each ton of fuel that is burnt produces 3.16 tons of CO_2, which results in a total of 166.3 tons of CO_2 emitted (ICAO Carbon Emissions Calculator 2016; ICAO Carbon Emissions Calculator Methodology 2017: 6). All data in this thesis is in metric tons.

10 would have. Since the causal dependence between each purchase and the emissions coming about therefore appears to be inhibited, they each fail to qualify as emission-generating actions. This is because the demand on an additional flight is preempted: The additional 10 purchases constitute a backup cause for each of the 100 initial purchases. This is thus a case of preemption of a joint cause of emissions.[43]

So, what are we to do about preemption cases like this one? They have been used extensively to criticize counterfactual analyses of causation and seem to undermine the efficacy of individual emission-generating actions. I believe, however, that this rests on a superficial reading of CAC. In particular, it glosses over the stepwise causal dependence between events. People routinely mistake CAC for simply saying that 'but for *c*, *e* would not occur', thus overlooking the intermediate steps that link the causal chain together. If we take these intermediaries into account, we can see that despite there being no seeming difference in counterfactual dependence between an actual preempting cause and a possible preempted cause, there is still a causal chain leading from the actual cause to the effect. So, while it appears that the effect would still have come about even if the actual cause had not occurred, there is nonetheless a number of intermediate events leading from the outcome to the actual cause, such that each step causally depends on the preceding one (Lewis 1973: 171–2). There is no corresponding causal chain leading from the potential cause to the effect.

To see how this works out, let us return to *Backup Shot*. In this case, there is a causal chain leading from *P*'s action of pulling the trigger, to the bullet flying through the air, to the bullet hitting its target and, finally, to the impact killing *Q*. For each intermediate event in that chain, there is causal dependence. If the bullet had not flown through the air, for instance, it would not have hit its target. But notice that for this particular event of the bullet flying through the air, it is no longer true that had it not occurred, *R* would have made their shot, because once *P*'s shot has been fired, *R* defers from firing theirs. Thus, *Q* would not have died if it had not been for the bullet flying through the air. And so, because each intermediate event—from the pulling of the trigger to the bullet hitting the person—causally depends on the preceding one, there exists a causal chain from the first to the last event such that *P*'s

43. Cases of preemption in the joint causation of emissions might vary a bit. We can distinguish the preemption of a joint cause from the preemption of *parts* of a joint cause. In the flight case, the additional purchases are only a backup for part of the actual cause. The causal dependence of each of the 100 purchases is threatened by any number of additional purchases. In order for the entire joint cause to be preempted, 100 additional tickets need to be purchased. This distinction applies to joint causes extended over time too. Take the case of the individual driver from the previous section again. At t_4, the choice of whether to burn the fuels or not lies with the consumer. But at t_2, the transporter had a choice of whether or not to do their (necessary) part as well. It could be, though, that the transporter's action is preempted, while the driver's action is not.

action is a cause of *Q*'s death. *R*'s potential action is not a cause, since no such chain exists for their pulling the trigger.

The same analysis can be applied in the case of supply chains. For example, in our airline case, there can be a causal chain leading from each of the 100 first purchases to the booking of the additional flight, provided that there is a number of intermediate events leading from each purchase to the booking, such that each step causally depends on the preceding one. Let us imagine, for example, that there is a causal chain leading from each passenger's purchase to the booking of the additional flight, such that, had it not been for a particular passenger making a reservation on the airline's website, then the airline's reservation system would not have reserved a particular seat for the passenger, and had that reservation not been made (together with 99 other reservations), the airline would not have registered enough reservations in order to book a flight. It does not matter that there were 10 additional prospective fliers ready to buy those tickets if any of the 100 had not made their purchases. Once the causal chain from each passenger's reservation is set in motion, no additional purchase can inhibit that causal chain. This means that each of the 100 first purchases—although accompanied by backup causes—necessarily are parts of a joint cause of 166 tons of CO_2, and thus count as emission-generating actions.[44]

4.2 Late Preemption

Backup Shot and the airline case were examples of *early preemption* (Lewis 1986: 200). By contrast, other—more worrying—cases of preemption are instances of *late preemption*. In cases of early preemption, the backup cause is inhibited well before the chain of dependences from the actual cause to the effect has run its course (Ibid). For example, in *Backup Shot*, *R* refrains from pulling the trigger already upon seeing that *P* pulls their trigger, and in the airline case, the additional fliers are prevented from buying tickets when enough passengers have made their reservations. In late preemption, the process running from the preempted alternative is cut off only when the causal chain has gone to completion (Paul & Hall 2013: 99). The backup cause can thus be said to be preempted by the effect itself. Consider another variation on our shooting case.

44. There is a further question here about the causal efficacy of the actions of the surplus passengers. It is likely that these will form parts of joint causes with regard to the next 100 purchases and thus the next scheduled flight of the airline. In this case, this is true of every purchase of flight tickets that forms part of a set of purchases that is divisible by 100 (for discussion, see Kagan 2011).

> *Succeeding Shots.* *P* and *R* take aim at *Q* and pull their triggers. Both shots hit their target, but *P*'s shot hits first, thus causing *Q*'s death. Had *P*'s shot not hit first, though, *R*'s would have.

Here, both shots hit their target in quick succession. As opposed to the case of *Backup Shot*, there is therefore nothing that prevents the preempted causal chain from going to completion. In Paul and Hall's words: "at no point in the sequence of events leading from cause to effect does there fail to be a backup process sufficient to bring about that effect" (Ibid). There are thus no intermediate steps between *P*'s pulling the trigger and their shot hitting *Q*, on which *Q*'s death causally depends; had it not been for *P*'s bullet flying through the air, for instance, *Q*'s bullet would still be flying through the air. Consequently, *P*'s pulling the trigger does not, according to the theory, appear to be a cause of *Q*'s death. This is a troublesome conclusion for CAC. This would amount to granting that the preempting cause is not a cause. (That the preempted cause is not a cause is uncontroversial; CAC has already shown that the effect does not depend on it.)

The question for our purposes, however, is whether cases of late preemption arise in the context of emissions in global supply chains. I think we have reason to think that they do not. All of the examples of services and purchases that we have considered so far are instances of early preemption. For example, the effects on emissions of purchases—such as in the flying case above—cancel out the effects of other potential purchases well before the causal chain has run its course. The same applies to the abundance of emissions-related services that are offered in a supply chain. The potential emissions related to particular goods or services are inhibited before the competing actor has provided their goods or services.[45] Likewise, the causal chain that leads from the action of outsourcing production to emissions occurring goes to completion well before the preempted actions of competing companies are performed. Due to the way that actions interrelate with each other along the supply chain of a product or service, there is always a buffer between actual causes and preempted backup causes. The effects of actions are thereby always mediated in a way that prevents other actions from exerting their causal powers well before the causal chain has gone to completion. Thus, there are no cases of late preemption of causes of emissions in global supply chains. (We will return, however, to the issue of late preemption in the next chapter, when we consider the preemption of harmful effects of emissions.)

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45. For instance, if a distributing company chooses to sign a contract with transport company *A* rather than *B*, even though *B*'s actions are potential causes of emissions, *A*'s actions inhibit the potential causal chain leading from *B*'s actions to emissions well before they occur.

In conclusion, I fail to see how cases of late preemption arise in the context of supply chain emissions. This, together with the fact that we have seen that early preemption is no problem for my analysis of the causation of emissions, gives us reason to conclude that causal preemption overall is not a problem for an application of CAC to the emissions of global supply chains.

5. Causal Overdetermination

We now turn to the second type of redundant causation: causal overdetermination. In preemption cases, it is intuitively clear that one of the potential causes counts as the cause. In overdetermination cases, this asymmetry is lacking; each event's claim to be the cause is on a par (Lewis 1986: 199).[46] Let us look at a final variation of our shooting case.

> *Simultaneous Shots.* *P* and *R* take aim at *Q* and pull their triggers. Both shots hit their target at the same time, each individually sufficient for causing *Q*'s death.

Again, had either one of *P* or *R* not pulled their trigger, *Q* would still have died. *Q*'s death thus appears causally overdetermined. And the same holds true of the intermediate events that form the two causal chains. So, if no causal chain obtains between the shots and the death, it seems we must either grant that both *P*'s and *R*'s shots—or none of them—count as causes (Ibid: 200).[47]

While several authors have identified cases of overdetermination of emissions in the climate ethics literature (see, for instance Cripps 2013: 69, 123–4; Barry & Øverland 2015; Pellegrino 2018: 815–6; Gesang 2017: 8), I think we should be hesitant about this conclusion. First of all, we should be wary of over-diagnosis. A lot of causes described as overdetermining causes are actually either preempted causes, or parts of a joint cause (Bunzl 1979; Paul & Hall 2013: 143). Second, cases of overdetermination involve certain metaphysical oddities which call into question the probability of these occurring in the actual world. Let us look at these two points in turn.

Martin Bunzl has argued that *all* alleged cases of overdetermination are underdescribed cases of preemption or joint causation (Bunzl 1979: 138). While we might think that both potential causes of *Simultaneous Shots* are on a perfect par, there

46. For this reason, overdetermination is sometimes called *symmetrical* overdetermination, while *asymmetrical* overdetermination is reserved for preemption.

47. Lewis's views on this in his 1986 *Postscript* differ from the original 1973 formulation (Lewis 1986: 208).

is probably some fact of the matter regarding which shot actually caused *Q*'s death. It would be a massive coincidence and somewhat odd (to say the least) that both *P*'s and *R*'s bullets hit *Q* in such a way as to kill *Q, at the same exact time*. Instead, such cases are more likely to be instances of preemption. That is to say, there is a fact of the matter of which shot actually hit *Q* first, but that shot is not causally efficacious since there is a backup shot that would have killed *Q* if it had not been for the first. While this would be an instance of *late* preemption, and, as we have just seen, cases of late preemption seem to be problematic for CAC, we have also seen that it appears likely that such cases do not show up in the causation of emissions in the context of global supply chains. To clarify, I am so far only talking about the possible overdetermination of causes of emissions, and not about the overdetermination of any of the *effects* of emissions. The latter is a topic to be dealt with in the next chapter. For now, it thus suffices to say that some alleged cases of overdetermination can be explained away as cases of late preemption, and since there presumably are no such cases in the present context, we shall resume this topic in the next chapter.

Other ostensible cases of overdetermination are those that are actually cases of joint causation. These cases are such that two seemingly overdetermining events actually each make a difference, however minute, to the effect. For example, let us say that the combined force of *P* and *R's* shots is powerful enough to produce a further event, such as *Q* falling over in a particular manner, thus breaking the cell phone in *Q*'s pocket. So, even though the two actions are individually sufficient to kill *Q*, they are not individually sufficient to produce this numerically different event of killing *Q* as well as breaking their phone.[48] This then, is a case of joint causation. In contrast, pure cases of overdetermination are such that the way in which the event occurs does not differ at all, had but one of the overdetermining causes been present (Paul & Hall 2013: 144).

One might respond by stipulating that *Simultaneous Shots* is a pure case of overdetermination and that *Q* gets hit by both shots at exactly the same time, but that *Q*'s death, as it occurred, does not depend on both shots. This appears to be part of what Jonathan Schaffer is arguing for in his criticism of Bunzl's argument (Schaffer 2003: 27).[49] Schaffer objects to Bunzl's assumption that our concept of causation

48. I grant that the success of this response depends on how the effect of a cause is identified. There might be less obvious cases where it is not as easy redescribing the case in question as one of joint causation. It should be kept in mind, however, as we noted in Section 3.2 above, that cases of joint causation are far more common than what might first seem to be the case. If we remember this, maybe it will be easier to see that more cases are in fact examples of joint causation rather than overdetermination.

49. There is also a third point made by Schaffer in response to Bunzl: that mental causation serves as an actual instance of overdetermination. Paul and Hall, however, have argued convincingly that the type of non-reductionism in philosophy of mind that grants overdetermination of mental causation faces the same worry of additivity that I address below (Paul & Hall 2013:155–61).

should be subsumed under the actual laws of nature (Bunzl 1979: 146–7). If we limit our analysis to cases that occur in the actual world, overdetermination might be rare, or even impossible. But if we stipulate a case involving non-actual laws, overdetermination seems perfectly conceivable. Furthermore, since we have reliable intuitions regarding cases involving non-actual laws, such as the modified variation on *Simultaneous Shots*, and since such cases appear to have something in common with cases involving actual laws of nature, as instances of causation, we should not limit our analysis to actual-world cases (Schaffer 2003: 27). But my purpose here is not to give an analysis of causation for all possible worlds—I am concerned with applying a notion of causation to the actual world, given the actual laws of nature. If there are problems with applying this notion under non-actual laws of nature, that does not give me reason to reject using CAC to elucidate actual causal processes.

This brings us to the second reason against worrying too much about overdetermination cases. Part of the puzzle surrounding causal overdetermination is that there, in Paul and Hall's words, simply is "too much causation to go around" (Paul & Hall 2013: 152). If two or more causes are individually sufficient to bring about an outcome, yet the removal of one of them would not make a difference to the occurrence of the event, we might wonder where the extra amount of causal efficacy goes. Paul and Hall call this *the problem of additivity* (Ibid: 148–9). Given this issue, they conclude that cases of overdetermination (or at least most of them) are impossible in the actual world.[50]

One might wonder why we should worry about this issue when we have already accepted the implications of CAC's promiscuous allocation of causes to any given event. After all, we saw above that the Counterfactual Account of Causation commits us to there being an almost indefinite amount of antecedent causes to any given effect, and these implications might appear similar in nature to the problem of additivity. Therefore, it appears reasonable to ask why we should not accept the conclusion of the latter if we accept the conclusion of the former. The answer is that while CAC might be promiscuous in counting every necessary condition of an event as a cause thereof, that account still does not posit the existence of seeming causes from which no causal chain leads to the effect. The problem of promiscuity for CAC does not ascribe the status of cause to events which arguably have no causal efficacy, but the problem of additivity does, as in cases of (genuine) overdetermination. The problem of additivity should thus not be confused with the problem of promiscuity, as discussed above in Section 3.2 and, most importantly, as I hope to have shown, the metaphysical implications of the former are far more implausible than that of the latter.

50. For discussion, see L. A. Paul (2007).

To summarize this section, it appears that cases of overdetermination are reasonably explained away either as cases of preemption or of joint causation. Furthermore, the metaphysical implications of accepting real overdetermination cases would be counterintuitive. In conclusion, then, overdetermination seems impossible in the actual world and so alleged cases thereof will most likely collapse into instances of preemption and joint causation, respectively. What this implies is that we should be wary of overdiagnosis—a lot of cases, not least cases of joint causation, are persistently mislabeled as either cases of overdetermination or preemption, and given the improbability (and impossibility, given the actual laws of nature) of the former, we should at least look for less controversial explanations of the causally puzzling cases we encounter.

There are thus no overdetermination cases in the causation of emissions in global supply chains. While I will keep it open whether there is overdetermination cases in the causation of *harm* in the context of climate change, that is an issue that we shall treat separately in the next chapter.

6. Concluding Remarks

To summarize this chapter, I have looked at how emission-generating actions cause emissions along global supply chains. We have seen that production and consumption of goods and services on an international level play a large role in the emission of GHGs. I have therefore chosen to limit the focus of this thesis to each step involved in causing emissions along *global supply chains,* from the extraction of raw materials to usage by the end-consumer. This also narrows the scope of the inquiry to a manageable subgroup of agents who seem centrally involved in the emission of GHGs. The agents that are active along the stages of a supply chain can be divided into *Suppliers*, *Distributors*, *Consumers* and *Service Providers*. They each form part of a supply chain in virtue of their contribution to an economic project (typically by receiving payment—or by paying—for a given product or service). Those actions which qualify as contributions to a supply chain of a product or service in this way are those actions which I will be primarily concerned with in this thesis. To find out whether these actions are part of the causation of emissions, I introduced a Counterfactual Account of Causation (CAC), according to which the actions are causes of emissions in virtue of there being a chain of causal dependence between the two. For the remainder of the chapter, I spelled out this idea in more detail and defended it against a number of objections.

A set of conclusions can be drawn from this. First, it means that emissions primarily are jointly caused. Emission-generating actions form parts of joint causes of emissions in virtue of there being stepwise causal dependence between each action and the occurrence of emissions. A second point to note is that this analysis of the causation of emissions implies that the emission-generating actions performed in everyday activities are legion. A great deal of actions relating to both our professional and private lives give rise to emissions. Third, since emission-generating actions are mainly performed together with other agents along the supply chain, this means that it can be hard to distinguish between parts of the joint causes of emissions. We cannot, for instance, account for degrees of causation of emissions. This also means that it can be hard to know which actions actually qualify as emission-generating activities and which do not. Due to the joint causes being extended over time, it is sometimes not possible to know whether temporally prior parts of the cause actually contribute to emissions. Fourth, the temporal extension of joint causes of emissions bestows a trumping choice to agents active further downstream of the supply chain. For some emissions, this means that if it had not been for these subsequent actions, the efficacy of the antecedent actions is cancelled out. If I go for a drive in my car, this means that the retailer of the gasoline causally contributed to the emission of GHGs. If I choose to not burn the gasoline, however, then the retailer did not contribute to any emissions (of mine). So, whether the retailer's action is an emission-generating action or not partly depends on what I do in that context.

It remains to be seen in subsequent chapters how these factors affect the *moral* import of emissions. But so far, we have said nothing about the effects that the emissions have. Before we can start to talk about the moral significance of emissions, we need to say something about what these effects are. That is the focus of the next chapter, before I come back to the ethics of emissions in Chapter 3.

Chapter 2
Effects of Climate Change

Due to GHG emissions, the Earth is warming and, as a result, the climate changes. This negatively affects persons, animals, and nature at large. Particularly, a warmer climate gives rise to events like heat waves, rising sea levels, droughts, and floods. This chapter focuses on these impacts and how they adversely affect Earth's sentient beings. The purpose is three-fold: first, to look into the effects of climate change; second, to establish their moral significance; third, to see how these effects relate to particular emission-generating actions. Regarding the first and second point, I will argue that climate change has impacts which are harmful to both current and future generations of sentient beings, and that *harm* is the most significant effect of climate change. Regarding the third point, I shall argue that some, but not all, of our emissions cause considerable amounts of harm.

The chapter is structured as follows. In the first section, I will give an overview of the adverse effects of climate change. In Section 2, I then use this information to defend a Comparative Counterfactual Account of Harm, and the thesis that harm is the morally most significant effect of climate change. Section 3 considers the so-called non-identity problem and how climate change harms future generations. I then turn to the issue of how climate harms relate to individual emission-generating actions. In particular, Sections 4 and 5 consider and reject the two respective positions that *every* and *no* emission-generating action are harmful. Instead, in Section 6, I present my thesis that *some* actions which cause emissions are harmful. Section 7 concludes the chapter.

1. EMISSIONS AND THEIR IMPACTS

In the previous chapter, I looked at one of the major causes of emissions, namely international trade. Let us now turn to the effects of emissions. Generally speaking, emissions increase the global temperature. This is because some solar energy that reaches the surface of the Earth is re-emitted back toward space—in the form of infrared radiation—but gets trapped by GHGs in the atmosphere. In what follows, we shall first see what particular gases are at work here, and then, in Section 1.2, look at their effects.

1.1 Greenhouse Gases

Among the different gases emitted, the most important are the "Kyoto gases", which include (in order of abundance): carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF_6).[51] Each of these have different effects, depending on their respective *abundance*, *lifespan* and *radiative effect*. In other words, the relative warming potential of a type of GHG depends on how much of it stays in the atmosphere, how long it will stay there, and how much heat it absorbs. Drawing out the different impacts of particular types of GHGs is something which has often been lacking in climate ethics research. Most philosophers either concern themselves only with carbon dioxide, or measures of carbon dioxide equivalents. I think it is important, however, to point out the comparative differences in impacts between the types of gases that are emitted.

Let us look closer at each type of gas, starting with CO_2. Carbon dioxide is the most important of the Kyoto gases. Of total human impacts on the climate, roughly two thirds are due to CO_2. The reason for this is two-fold. First, carbon dioxide has a long lifespan. The IPCC states that "about 15 to 40% of CO_2 emitted until 2100 will remain in the atmosphere longer than 1000 years" (Ciais et al. 2013: 472). Second, we release massive amounts of CO_2. While some CO_2 is emitted as part of the natural carbon cycle, humans have been intervening in this process since the Industrial Revolution, thereby returning CO_2 from forests, the soil, and other reservoirs, to the atmosphere at a rate that the Earth cannot sustain. Currently, we thus emit more carbon dioxide than these so-called *carbon sinks* can absorb at a natural rate.

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51. Other greenhouse gases include ozone (O_3), chlorofluorocarbons (CFCs) and water vapor (H_2O). While water vapor is the GHG that has the biggest impact on the greenhouse effect, humans cannot directly alter the levels thereof. We do, however, have an indirect effect on water vapor levels through the global warming we cause, since warm air absorbs more water vapor. This is an example of a positive feedback effect.

But it is not just carbon dioxide that we should worry about. Methane is a much more powerful gas than CO_2, albeit released in smaller quantities. It also does not last nearly as long as CO_2; about 12 years on average. N_2O, however, like CO_2, has a long mean lifetime, averaging 121 years. It also has a very strong ability to absorb heat, yet is fortunately released in rather small quantities. Lastly, the fluorinated gases HFC, PFC, and SF_6, are each very powerful but also released in relatively small amounts. The longevity of these gases differs considerably from type to type (Myhre et al. 2013: 731).

If we were to look at the combined effects of lifespan and heating potential of the Kyoto gases and compare the cumulative radiative effects of each over a 100-year period, we would see that methane has more than 20 times the impact than CO_2 does, that N_2O has 265 times the impact than CO_2 does, and that the fluorinated gases each have warming potentials that vastly outweigh all of the other gases (Ibid: 714). Over a smaller timescale, then, the latter gases have greater warming potential than CO_2, while CO_2 has a greater effect over larger timespans. Before we look closer at the topic of the effects of emissions, we should note that these varying lifespans of emissions have a crucial implication. The IPCC states that "Nearly all climate-altering gases have atmospheric lifetimes sufficiently long that it does not matter where on the planet they are emitted. They spread worldwide and affect the climate everywhere" (Victor et al. 2014: 139). Regardless of whether emissions occur in Sweden or China, the gases stay in the atmosphere long enough to produce an effect on the global temperature together. We thus cannot attribute the effects of climate change back to any particular geographical location. Stephen Gardiner refers to this phenomenon as a *dispersion of cause and effect* (Gardiner 2011: 24).[52]

1.2 The Effects of Emissions

Let us now turn to the effects of emissions. As already mentioned, the direct effect of increased atmospheric concentrations of GHGs is an increase in global average temperature. This, in turn, considerably affects life on earth. The IPCC states that global warming has an effect on persons in three ways. First, directly through weather events like droughts, floods, heatwaves, and rising sea-levels due to the melting of polar ice. Second, it also has an effect mediated through changes in the environment, "such as shifts in patterns of disease-carrying mosquitoes and ticks, or increases in waterborne diseases due to warmer conditions and increased precipitation and runoff" (K. Smith et al. 2014: 741). Third, there are indirect effects

52. For further discussion, see Page (2011c: 416), Jamieson (2015: 30), and Roser and Tomlinson (2014: 223).

mediated through *human* systems. These include, among other effects, undernutrition due to a negative influence on food production. Likewise, climate change will also probably exacerbate the situation of global poverty, increase displacement of people, and increase the risk for violent conflicts (Field et al. 2014: 73). So, on the one hand, climate change causes direct adverse effects through phenomena such as heatwaves, rising sea-levels, droughts and floods, but, on the other hand, also exacerbates existing problems like diseases, food shortages, displacement of people, and conflicts. The latter category of effects is the larger of the two.

Furthermore, it is important to stress that those who are most affected by these events are the poor, a disproportionate number of women, children, as well as people of color.[53] The IPCC says that "People who are socially, economically, culturally, politically, institutionally, or otherwise marginalized in society are especially vulnerable to climate change" (Field et al. 2014: 50). Furthermore, "most assessments indicate that poor and disenfranchised groups will bear the most risk and, globally, the greatest burden will fall on poor countries, particularly on poor children, who are most affected today by such climate-related diseases as malaria, undernutrition, and diarrhea" (Ibid). Additionally, there is another marginalized group among the victims of climate change in the form of *future generations*. As we saw above, due to the lifespan of some GHGs, climate change will have effects that reach far into the future. Among those affected by climate change are thus those not yet born, who naturally can neither voice their concern, nor influence present-day emissions. We shall return to the effects of climate change on future generations in Section 3 below.

Thus far, we have seen examples of the negative effects of global warming. But there are also beneficial effects of climate change, such as a warming weather leading to agricultural improvements and fewer cold-related deaths. In short, though, the negative effects far outweigh the positive ones. Working Group II of the IPCC states that they identify "many more negative impacts than positive impacts projected for the future, especially for high magnitudes and rates of climate change" (Ibid: 94). Regarding human health, for instance, they write that "globally over the 21st century, the magnitude and severity of negative impacts are projected to increasingly outweigh positive impacts" (Ibid: 71).

To sum up, it seems safe to say, then, that the emission of GHGs, such as carbon dioxide, methane and nitrous oxide, through changes in the climate, have considerably negative effects. They each have different impacts due to varying lifespans and radiative effects, with CO_2 having the overall most severe effects even

53. For an overview on issues of gender and climate change, including the increased vulnerability of women to climate impacts, see Pearse (2017). Another overview is provided by Moosa and Tuana (2014). See also Cuomo (2014: 693–5).

though the other Kyoto gases each have greater warming potentials. Due to their lifespans, the gases each stay long enough in the atmosphere to feed into a common pool of emissions. This dispersion of cause and effect makes it irrelevant where they are emitted. The effects of emissions come about in different ways. While climate change causes harm directly through various climate-related phenomena, it exacerbates already existing problems to a greater extent. Furthermore, those affected by these events include a disproportionate number of marginalized individuals, like the poor, women, children, people of color, as well as future persons. In the next section, I am going to ask exactly how we should understand these effects in value terms.

2. Climate Change and Harm

So far, we have an overview of what climate change is causing. The question is how we should think of this issue in terms of evaluative notions. In other words, what is bad about the effects of climate change? That is, does it involve rights violations, harm, reductions of well-being, or something else? A number of different responses to these questions have been discussed in the climate ethics literature. Some philosophers, like Simon Caney (2009b, 2010a), argue that climate change threatens basic human rights.[54] Others phrase the values at stake in impersonal terms, such as casualties, reduced well-being, or poorer quality of life.[55] Still others have focused on the non-anthropocentric values affected, such as the flourishing of species, ecosystems, or biodiversity (Palmer 2011, 2014; Nolt 2011b; Cripps 2013; McShane 2016; Svoboda & Haqq-Misra 2018). Additional things that might be worth taking into account include aesthetic values (Brady 2014).

However, the issue that arguably has been given the highest priority in discussions of the effects of climate change is the *harm* that it causes (see, among many others, Cripps 2011, 2013; Nolt 2011a, 2013; Broome 2012; Sandberg 2011).[56] Harm is a central concept in moral and political philosophy. In fact, I am going to argue that harm—and particularly *unjust* harm—is the morally most significant effect of climate

54. For an overview of rights-based approaches to climate ethics, see Bell (2013).

55. In fact, Brian Berkey (2016) argues that we have to appeal to impersonal moral considerations in order to justify mitigation obligations. His arguments, however, mainly deal with the effects on future generations, something which I will deal with in Section 3 below. For another related approach, see Nolt (2015).

56. Further examples include Sinnott-Armstrong (2005), Hiller (2011b), Fragniére (2014), Rentmeester (2014), Kyllönen (2018) and Godoy (2017), not to mention the burgeoning literature on the implications of the non-identity problem on climate change. This latter issue will be discussed separately in Section 3 below.

change. Before we look at some of the reasons why this is the case, though, we must first say something about what harm consists in. While there are a number of competing accounts of harm, I am going to subscribe to a Comparative Counterfactual Account of Harm (HCA) (see, e.g. Feinberg 1986: 34; Parfit 1984: 69).[57]

HCA An event *e* is harmful to someone *S* iff *S* is made worse off than if *e* had not occurred

This should not be confused with the Counterfactual Account of Causation (CAC), which I discussed in the previous chapter. CAC is an account of causation; HCA, by contrast, is an account of harm. A few additional points call for clarification. First, the *objects* of HCA are events. This means that the things which we take to be harmful are actions, shootings, floods, insults, storms etc. Second, I am going to understand being made worse off in terms of a setback of interests (Feinberg 1986).[58] This means that one is made worse off insofar as one's interests are thwarted, or frustrated. Third, subjects of harm must have the capacity to bear interests; a potential victim cannot be harmed unless it can form and possess interests. I am going to assume that sentience is a requirement for the capacity to bear interests.[59] Only those beings who have the ability to have phenomenal experience, then, can be harmed.

With these clarifications out of the way, let us next look at the implications of adopting HCA. A generally intuitive appeal with this account is that harmful events appear to be the type of events that make a difference (Sandberg 2011: 231; Bradley 2012: 397; Johansson & Risberg 2019: 351). Insofar as a subject *S* is harmed by an event *e*, this should on balance make *S* worse off than if *e* had not occurred. In turn, this means that the account can therefore explain why minor setbacks which prevent greater harms do not count as harmful. Consider the following case.

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57. For an example of a different account of harm, see Harman's causal account of harm (2004, 2009).

58. According to Feinberg, we can make a distinction here between two types of interests. The first, *welfare interests*, are interests "in one's own physical health and vigor, the integrity and normal functioning of one's body, the absence of absorbing pain and suffering or grotesque disfigurement, minimal intellectual acuity, emotional stability" and other shorter-term conditions that are necessary (but not sufficient) for achieving well-being (Feinberg 1986: 37). Welfare interests are prerequisites for fulfilling the second type of interests, called *ulterior interests*, which are "a person's more ultimate goals and aspirations", such as "producing good novels or works of art, solving a crucial scientific problem, achieving high political office, successfully raising a family" etc. (Ibid). A person's well-being thus depends on the promotion of both types of interests.

59. For a different view, see Nolt, who entertains the possibility that any living organism, or even ecosystem, can be harmed (Nolt 2011b: 702–3). Palmer (2014) also discusses the possibility of climate change harming species.

> *Hillside Rescue*. *P* is about to be hit by a rock that is rolling down the hillside. If *P* gets hit, they will be severely injured. Fortunately, *Q* pushes *P* out of the way just in time, leaving *P* with only a bruised knee.

Intuitively, we do not want to say that *P* is harmed by being pushed by *Q*. After all, *Q* might just have saved *P*'s life. On HCA, *P* is not made worse off than *P* otherwise would have been as a result of *Q*'s action. This is because, had *Q* not pushed *P*, *P* would have been even worse off than bruising their knee. It is commonly held that the main advantage of HCA over rivalling accounts is its ability to make sense of cases like *Hillside Rescue* (see, for instance, Klocksiem 2012: 287).

Another important advantage of HCA is its ability to account for the harm of death (Purves 2016). Accounts that lack a counterfactual element typically fail to explain how non-existence can be bad *for* someone. In contrast, death is harmful, according to HCA, for those who would have been better off if they continued living than they would have been if they did not. Conversely, death is harmless for those whose continued existence would be worse for them than dying. These benefits notwithstanding, HCA has faced some serious objections (see, for instance, Bradley 2012; Klocksiem 2012). Of these, I take *the non-identity problem* and *the objection from preemption* to be the most relevant for my purposes.[60] These will be treated separately below, in Section 3 and Section 5.3, respectively.

Next, let us see how the account applies to the case of climate change. According to HCA, an event brought about by climate change is harmful iff it makes someone worse off than if the event had not occurred.[61] Furthermore, such harm should be understood as making the victims worse off in terms of having their interests thwarted. As we saw in the previous section, climate change brings with it many potentially harmful effects, like shortening peoples' lives, causing suffering, disease, displacement and food shortage, just to name a few. These effects, then, count as harms insofar as they are events which thwart peoples' interests, which I

60. There is further criticism in the form of *the objection from omission*, which states that HCA counts certain omissions as harmful while they intuitively are not (Bradley 2012: 397). If I, for example, refrain from paying for my date's dinner, it does not seem that I have harmed them, even though it counts as harmful according to HCA, because, had I not paid for the dinner, my date would have been worse off than if I had payed. As I have mentioned before, however (see Footnote 19), I shall not concern myself with omissions in this work, and rather focus exclusively on the effects of *actions*. It could be argued that I still need to determine whether certain omissions are harmful, such as the failure of the CEO of a multinational corporation to adhere to certain environmental standards. Yet, if such an omission appears to be harmful, there are arguably other ways to account for this. We can, perhaps, say that it is the particular environmental degradation brought about by the CEO's actions that is harmful, and not their omission to rectify it.

61. If an event makes a small number of subjects worse off and a larger number of subjects better off, it is harmful to the former, even though it is on balance more beneficial than harmful. This is because HCA does not weigh interests intersubjectively and thus does not measure the net balance of an event's differential impacts on different subjects.

believe most of them are. It is arguably in few persons' interest to have their life shortened, or to experience suffering, have a shortage of food, or to be forced to move homes.

In addition, there are not only humans who can be harmed in this sense. So far, we have only talked about the victims of climate change in terms of persons. But as we saw above, as long as a potential victim has the capacity for sentience, it can have its interests thwarted. Polar bears, to take a famous example, rely heavily on the polar ice to meet their most fundamental needs, like hunting, traveling, and mating. With that ice currently melting, it seems that we can say that this is contrary to the polar bears' interests and that they are thus harmed by climate change.

It is important to note that in order to be harmed, the victim in question must be overall worse off than if the harmful event had not occurred. If a heatwave destroys the local farmers' crops, and their crops would not have been destroyed without the heatwave, then it is harmful to them. Had the farmers been made slightly worse off, but at the same time considerably better off, then it does not overall harm them. If the heatwave would have resulted in a better crop yield than otherwise, for example, then it is in fact beneficial, even if this also results in a more stressful work environment. Another way for an event to fail to be harmful is if an even more harmful event preempts the harmfulness of the first. For example, if someone's home is flooded due to rising sea levels, that person is only harmed provided that they would not have been negatively affected in a similar (or worse) way for other reasons, perhaps if a mudslide would have hit their home if the flood did not do so first. We shall return to discuss such cases in more detail in Section 5.2 and Section 5.3 below.

There are a number of advantages of understanding the adverse effects of climate change in the way described above. In fact, I want to argue that harm is the morally most significant effect of climate change. I think there are three reasons for accepting this claim. First, if the effects of climate change are morally wrong, then it ought to be reasonable for those who have been wronged to be able to complain on their behalf of having been subjected to the wrong (Berkey 2016: 418). The concept of harm provides a good explanation of why such complaints are legitimate in that harm is bad *for* someone (Parfit 1984: 363).[62] Harm is in this sense *person-affecting*. By contrast, impersonal explanations of the moral wrongness of climate change—such as reductions in aggregate well-being—do not make reference to the effects that climate change has on particular subjects.

Second, the notion of harm captures something which several other evaluative and normative concepts, such as rights and impersonal good, are concerned with too.

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62. That is not to say, though, that all harm is unjust or wrongful. We shall return to the relationship between harm, injustice and blameworthiness for causing harm in the next chapter (in Section 1), as well as Chapter 4.

Concerning rights, we shall see more closely how harm and rights-violations are related in the next chapter, but it suffices for now to say that the typical harmful effects of climate change often will count as rights-violations as well. A similar point can be made about impersonal effects of climate change: The things that are harmful to persons tend to have a negative effect on impersonal goods, like aggregate well-being. Treating the notion of harm as the most significant effect of climate change thus appears to account for something that is central to each of the main proposals of what is at stake due to climate change. The intuitive support for the opposing views is therefore not likely unique to them alone.

Third, the capacity for having interests neatly specifies the scope of moral concern in the climate context. I assumed above that sentience is required in order to bear interests. Focusing on harm as the primary morally relevant effect at stake thus grants moral status to sentient subjects, and to these alone. In contrast, a rights-based approach might, for example, only extend to a subset of such entities, and some non-anthropocentric approaches might be too inclusive. This is not to say, though, that there is nothing at stake in our stewardship of non-sentient nature. There can still be strong indirect reasons to care for the parts of the natural world that fail to have interests themselves. For instance, many have a strong interest in the preservation of nature since it provides us with basic necessities like food, clothing, aesthetic experiences, and so on.

In summary, then, I take harm to be the morally most significant effect of climate change. Harm, on the Comparative Counterfactual Account (HCA), consists in making someone worse off than they otherwise would have been. Being made worse off is, in turn, understood as suffering a setback of interests. Equating the capacity to bear interests with a necessary condition of sentience yields the result that any subject with the capacity for phenomenal experience thus qualifies as a potential harm recipient. This notion of harm successfully explains how climate events like floods, droughts, and food shortages qualify as harmful. In addition, HCA provides us with a proper basis for making the argument (in subsequent chapters) that climate harms are morally wrong, first, because they are person-affecting, second, because they have indirect importance for other moral concerns and, third, because the account neatly defines the set of moral subjects affected. Much remains to be said about emissions and harm, however. For instance, we have yet to see how harmful specific quantities of emissions are. That is the topic of Sections 4 through 6. Another issue pertains to the future harms of climate change. That is the focus of the next section.

3. THE NON-IDENTITY PROBLEM

I have so far argued that climate change has adverse effects and that the most morally significant effect of climate change is that of harm. While HCA can straightforwardly account for climate harms in the present as well as the near future, it appears to encounter problems when faced with the task of accommodating the harmful effects of climate change on future victims. To be more precise, it appears problematic to say that we harm others if our harmful actions are necessary conditions for their existence. This is the so-called non-identity problem (Parfit 1984). This section will present this problem and how it appears in the context of climate change. I will then argue that the non-identity problem is not an issue for my analysis of individuals' emissions being harmful, first, because the effects of individuals' emissions rarely have an effect on the reproductive choices of future people at the same time as they make them worse off, and second, because accepting the conclusion of the non-identity problem in general is not as implausible as it might first seem.

3.1 The Problem

The non-identity problem arises out of the fact that the identity of a person depends on the precise numerically distinct sperm and egg with which they were conceived. Had the set of sperm and egg been different, the person would be someone else. Thus, variations in the timing of conception will alter the identity (and sometimes also the number) of who comes into existence. As we shall see, this has important implications for the case of climate change (see, for instance, Page 1999). But before we consider the non-identity problem in the context of climate change, let us look at the following pair of cases:[63]

> *During Pregnancy*. *P* is pregnant and is one month from giving birth when *P* suddenly experiences a rare medical condition. The condition is mildly uncomfortable, but not seriously threatening to *P*'s or to the child's health. There is a treatment available, in the form of a medicine that is to be taken each day for a month, but it is strongly discouraged during pregnancy due to the adverse effects to the child. In fact, if *P* takes the medicine while pregnant, the child will be born blind. *P* can thus wait one month and begin the treatment after the child has been born, or begin the treatment now, thus causing the child to be born blind. *P* does not want to wait and so proceeds to take the medicine.

63. Both cases are variations on Parfit's much-discussed case *The 14-Year-Old Girl* (Parfit 1984: 358–9).

> *Before Pregnancy*. *Q* is planning to get pregnant when they suddenly experience a rare medical condition. The condition is mildly uncomfortable, but not seriously threatening to *Q*'s health and the condition disappears by itself in a month's time. However, for persons who are pregnant, the condition has serious effects on the embryo. In fact, if *Q* conceives while they have the condition, their child will be born blind. *Q* can thus wait to conceive for a month while the medical condition goes away, or conceive now, while still being affected by the condition. *Q* does not want to wait and so proceeds to conceive now.

Most people would reasonably find that what *P* and *Q* do in these cases is harmful. Both cases involve an act that can be avoided at a low cost to the agent but, when performed, results in a blind child. Although the child's life in each case is worth living, it appears that the child would have been better off if it had not been blind. The cases are similar in most respects except for the fact that *P*'s act is performed after the child has been conceived and *Q*'s act is performed before the child has been conceived. But this seemingly makes a very important moral difference. Let us see why.

In the case of *During Pregnancy*, *P* will have the same child regardless of the choice they make. Let us call the child p_1. If *P* undergoes the treatment, p_1 will be born blind, and if *P* waits to undergo the treatment until after the child has been born, p_1 will not end up blind. In either case, the child will be the same person. By contrast, in the case of *Before Pregnancy*, if *Q* decides to conceive before the medical condition disappears, they will conceive a child that is different from the child *Q* would give birth to if they had waited a month. As mentioned above, the identity of a person is determined by the sperm and egg with which they were conceived, and since that set is different if *Q* conceives now rather than in a month, conceiving a child at these different times will thus produce different children. Let us call the child *Q* would give birth to if they conceive now q_1 and the child they would give birth to if they waited a month q_2. So, depending on what *Q* does, they will either give birth to q_1, who is blind, or they will give birth to q_2, who is not blind.

It would thus appear that *P* harms their unborn child by taking the medicine. By becoming blind due to the effects of the medicine, p_1 is made worse off than they would have been if *P* had waited with the treatment until after the pregnancy. *Q*, however, does not make q_1 worse off than if they had waited a month, because doing so would involve *Q* giving birth to q_2, and not q_1. Thus, *Q*'s act of conceiving while having the medical condition cannot be said to harm q_1 or q_2. That is, at least if we assume that q_1 being born blind does still give the child a life worth living, and so is still better off than if q_1 had not been born at all.

In conclusion, then, it seems that we cannot say that Q is doing harm to q_1 in the case of *Before Pregnancy*. This is because the action which seemingly harms q_1—conceiving of a child while having a medical condition that is bad for the embryo—also determines the identity of q_1. An analogous case can be made with regard to climate change. Our present-day emissions will not only harm future persons, but also determine their identities. Our emission activities and their effects, such as floods, storms, and heat waves, will affect how future people work, travel, and spend their leisure time, to the point where this eventually has an impact on the partners they meet and their plans to have children. These events will thus constitute necessary conditions for the identity and number of persons that are born. As a consequence, those who exist in the future will be a completely different set of individuals than those that would have existed if present-day emissions had not occurred. This suggests that future persons who are negatively affected by emissions have no basis for complaint about them. The seemingly harmed future persons cannot say that they were made worse off than they otherwise would have been, since without the emissions, they would never have existed.

This appears to be a serious problem for our analysis of the harms of climate change. As we saw in Section 1, a lot of the negative effects of climate change will befall those who have not yet been born. If it turns out that those whose identities are determined by emissions are not harmed by them, then it would appear that climate change involves a lot less harming of persons than what initially seemed to be the case. Furthermore, in more general terms, this is problematic for HCA due to its inability to account for the seeming harm in cases like *Before Pregnancy*. In the next two subsections, I will try to explain how this, after all, is not something to worry about.

3.2 The Future Harm of Emissions

A large number of proposals have been suggested to come to terms with the non-identity problem.[64] My preferred strategy here, however, is not to solve the problem in the sense of showing how the counterintuitive conclusion drawn above can be avoided, but rather to try to show why we should accept the conclusion, its seemingly implausible implications notwithstanding. There are several philosophers who have argued in one way or another that we ought to accept the fact that no harm is done

64. These include, but are not restricted to, the following: arguing that the act is wrong in virtue of impersonal effects (see Section 2); holding that the act is wrong for someone without making them worse off; arguing that the act is wrong in virtue of the agent's mental state. For an overview of these, and related solutions, see Roberts (2015), Boonin (2012) and Meyer (2015).

in non-identity cases (see, for instance, Boonin 2008, 2014; Heyd 1992: 31–3, 2009; T. Schwartz 1979; Wasserman 2005; Hull 2006: 62; Roberts 2007: 272, 2009: 209–10; Bennett 2009: 269). My defense of this position shall proceed by first arguing that accepting the non-identity problem in the context of climate change is not implausible, by way of showing how the problem does not force us to accept that emissions are harmless to future generations. Second, I shall try to show in Section 3.3, using an argument put forward by David Boonin (2008, 2014), that accepting the non-identity problem in general is not as implausible as it might first seem.

Let us thereby start by looking closer at the implications of accepting the non-identity problem in the context of climate change. As we saw above, it appears that emissions, since they constitute necessary conditions for the existence of those seemingly harmed by them, cannot be said to make someone worse off than they otherwise would have been. My focus in this thesis is on the emission-generating actions of individual agents. So, the more specific question I shall consider here is whether the emissions of individuals can cause harm to future generations. While I shall return in more detail to the issue of the effects of particular emission-generating actions in subsequent sections, I shall here assume—for the sake of argument—that they bring about the types of effects surveyed in Section 1 which, under normal circumstances, would be harmful. So, let us stipulate that, in the absence of the non-identity problem, these types of actions can cause harm. What is far from obvious, however, is that they determine the identities of the subjects to which they seemingly do harm.

The problem here, then, seems to be that emissions, apart from being intuitively harmful, also constitute necessary conditions for the existence of future persons. In order for this to be true of emissions, they have to have effects which change the pairing of a particular egg with a particular sperm. This can either be because the emissions cause a given couple to conceive at a different time than they otherwise would have, or because the emissions cause one of the parents to have a child with someone else, or perhaps because the emissions cause a completely different couple to conceive a child. When philosophers talk about the fact that emissions influence the identity of persons in this way, they usually talk about large-scale effects of environmental policies that determine national or global levels of emissions (see, for instance, Parfit 1984: 361–64; Page 1999). For example, perhaps the implementation of a lenient climate policy has an effect on the imports and exports of a given country, or on the way in which energy is produced, which in turn determines the way that people work, travel, and spend their leisure time, and so on. This, in turn, will have a future impact on who meets whom, and when they

eventually have children. By the time the effects of the emissions arise, they therefore affect people who owe their existence to the emission policies.

Such emission-producing activities, however, are different from the emission-generating actions of individuals participating in global supply chains. Examples of the latter include actions such as to consume goods that are manufactured in emission-heavy ways—like meat—and the emission of GHGs through the use of certain products—such as driving a car. As we stipulated above, the emissions caused by these actions can have certain negative climatic effects. But it is far from clear what their impacts on the identity of future persons are. In fact, I find it reasonable to think that the identity of very few future persons depends on actions performed by a single individual agent on a single occasion. It is arguably quite unlikely, for example, that an individual going for a drive, buying a steak, or flying, would influence future people's reproductive choices to the extent that such activities determine the identity of some future person. These actions are simply not likely to be disruptive enough to cause different people to meet each other, or to conceive, at different times to any considerable extent.

Of course, it is conceivable that there are exceptions to this, where some individual emission-generating actions do determine the identity of a future person. If it had not been for someone taking a trip by car to the beach, for instance, they might not have met the future parent of their soon-to-be children, and so their fifth-generation descendants reasonably owe their identity to their great-great-grandparent's emission-generating action of driving to the beach. But this is not enough for there to be a non-identity effect. In order for that to be the case, the action in question must not only constitute a necessary condition for the existence of some future person, but that action must also give rise to negative climatic events which affect *that* future person. In order for the non-identity problem to arise, a future person must not only owe their existence to a particular activity, but they must also be seemingly harmed by said activity. So, it is not enough that an action determines the identity of a future person and that the action harms another, albeit different, future person; in order for there to be a non-identity effect the action must affect the identity of a person, and also harm that very same individual. Such cases are reasonably very uncommon. Given this, I find it unlikely that the non-identity problem should arise for the harmful effects of individual emission-generating actions (see also Broome 2012: 63). At the very least, the non-identity effect is arguably only present in a minority of cases where individual emission-generating actions cause harm.

It could be objected, however, that it is not the indirect effects of the emission-generating actions themselves, such as the effects of driving a car, that constitute a

necessary condition for future persons, but that it is the effects *of the emissions* that result from these actions which constitute such conditions. The thought here is that the emissions have effects which have an impact on the reproductive choices of future persons, which thus results in individuals' emissions having a non-identity effect. To take an example, let us imagine—for the sake of argument—that an individual's emissions plays a significant causal role in producing a flood in a small rural village.[65] The flood destroys a number of homes and thus forces some of the residents to relocate to other areas. This causes a displaced couple to delay their plans to start a family, thus altering the identity of their child from what it would have been if the flood had not occurred. Furthermore, the relocation negatively affects the couple economically and, as a consequence, the child receives a much less advantageous upbringing than it otherwise would have had. The child thus seems harmed by the climatic effects. But if the flood had not occurred, that particular child would not have been born, and so, the child appears to not have been harmed.

Such a case is to be contrasted with the way that activities—such as the aforementioned environmental policy—give rise to emissions and at the same time indirectly determine the identity of future persons, for example due to the impacts that the policy has on infrastructure, what jobs are available, and so on. It appears possible, then, that emission-generating actions do have a non-identity effect, but through those identity-altering effects that are mediated through climate change itself. But even if there is a possibility of the emissions themselves determining the identity of some future persons, who is also harmed by the very same emissions, this too is arguably rather unlikely. Let us see why.

If the effect on the identity of future persons is only due to the consequences of the emissions, and thus does not happen until the impacts of climate change are realized, then there is less time passed from the emissions' effects on future persons' reproductive choices to the occurrence of harm. With regard to the other way in which emissions have an effect on identity (such as via environmental policy), there is a considerably longer distance in time between the events which determine the identity of future persons and the events which eventually harm them. In turn, this means that there is less time for the non-identity effect of an action to be realized. This is because the more time that passes from an event to the effects of that event negatively affecting a person, the more likely it is for that event to determine that person's identity. The more time the effects of an event has to spread and to potentially impact the reproductive choices of people around the world, the more likely it is for the event to constitute a necessary condition for someone's identity.

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65 . Claims such as these, regarding the relation between particular emission-generating actions and occurrences of harm, shall be properly scrutinized in subsequent sections.

Therefore, there is a higher probability of an event having an effect on someone's identity, the further away into the future that person is born. It is partly the great amount of time lapsed from emission activities having effects on people's reproductive choices and the resultant emissions having negative effects which accounts for the likelihood of the non-identity problem in the climate context.

There is thus a difference between two ways in which future persons' identity depend on emission activities. In the first case, it is the harmful effects of the emissions themselves that determine the identity of the future victims, and in the second case it is the indirect effects of the emission activities that determine the identity of the victims. Individual emission-generating actions, due to their smaller effects on people's choices, are more likely to impact future persons' identities in the former way, through the effects that the emissions themselves have. But there is considerably less time lapsed from the events which have negative climatic effects to the effect on future persons' reproductive choices in this case, which makes it far less likely that the emissions constitute necessary conditions for a negatively affected person's identity. And so, since the number of persons who owe their existence to the effects of the emissions themselves are predicted to be quite few, the non-identity effect is not very likely for individuals' emissions. This shows that it is possible that individuals' emission-generating actions can cause harm to future persons, despite the non-identity problem.

Before we end this subsection, I want to mention two additional ways in which the GHGs by current emitters will cause harm to future persons. The first is through their indirect effects. Some of the emission-generating actions that determine the identity of future persons will be indirectly harmful to others. Several philosophers have pointed out the moral wrongness of seemingly harmful acts in non-identity cases by appealing to the effects of those actions on others than the subject whose existence is dependent on the action in question (Heyd 1992: 193–203; Parfit 1987: 361; Roberts 2009: 209). So, for example, the siblings and parents to the blind child in *Before Pregnancy* reasonably bear heavier burdens caring for that child than they would have if they did not have to care for a blind child. If effects of emissions, such as heat-related health problems, malnourishment and so on, indirectly affect others, to the extent that they are made worse off than they otherwise would have been, then it seems that emissions do cause harm to them. These other subjects of harm can suffer setbacks of interest in the form of seeing their loved ones suffer, having to bear the heavy burden of tending to them, bearing a comparatively heavier greater share of work, etc. It is necessary, however, in order for these indirect forms of setbacks to count as harms, that the existence of the indirect victims of harm does not depend on those emissions which directly harm others.

Finally, let us turn to the second way in which we can account for additional climatic harm to future persons despite the non-identity problem. Some of those whose identities will be determined by the supply chain agents' emission-generating actions will, as a result of these actions, not have lives worth living. The non-identity problem only arises for people whose existence, although flawed, is worth living. If the blind child's life in *Before Pregnancy* had not been worth living, then we would have no problem saying that what the parent did was harmful. As we saw in the previous section when we considered the harm of death, existence is harmful, according to HCA, for those who would be worse off if they continued living than they would be if they did not. So, if the life of q_1 is poor enough as a result of Q's decision to conceive now, then it is possible that it would have been better for q_1 if Q had waited and conceived later, even if q_1 would thus not have existed at all. In such a case, we can say that Q's act of conceiving q_1 rather than q_2 is harmful. Likewise, if our emission activities result in effects which are so negative that the victims do not have lives worth living, then those emissions are harmful, even if the victims owe their existence to the emissions. Had it not been for those emissions, then those persons would not have existed, and they would thereby not be worse off than if they *had* existed.

In conclusion, smaller amounts of emissions—like those caused by individuals of a supply chain—rarely determine the identities of future persons. This means that the non-identity problem rarely arises for individuals' emissions. This, together with the fact that some emissions have indirect harmful effects on others and sometimes make some victims worse off than they would have been if they had not existed at all, shows that the non-identity problem is not an issue for my analysis of harm being done by supply chain agents. While there are still some cases where emissions do not harm future persons due to the non-identity problem, we shall see how to deal with these cases in the next subsection.

3.3 Biting the Bullet

So far, we have seen how accepting the conclusions of the non-identity problem is compatible with saying that individuals' emissions cause harm to future generations. Yet, there are still some cases where emissions, due to the non-identity problem, do no harm to future generations. And there is still a more general worry about cases like *Before Pregnancy*, where seemingly harmful acts are not harmful at all. This is an implication which is widely considered to be counterintuitive. Therefore, let us conclude this section by addressing this more general worry about the non-identity

problem. I shall present an argument formulated by David Boonin (2008, 2014), according to which the non-identity problem in fact is not a problem at all. Boonin's proposal is that instead of resisting the seemingly implausible conclusion of non-identity cases, we should accept it. In doing so, we thus stop treating the inference from a set of acceptable premises to a counterintuitive conclusion a problem, and instead consider it an argument: "The non-identity problem, understood as a puzzle that stands in need of resolution, disappears, and is replaced by the non-identity argument, which is simply a sound argument for an admittedly surprising conclusion" (Boonin 2008: 145). For reasons of space, I cannot pursue Boonin's argumentative strategy in full here, which also includes explaining how other, alternative solutions to the non-identity problem are less satisfactory than his preferred argument of biting the bullet (Boonin 2014).[66]

Boonin proceeds by noting that the primary reason against accepting the conclusion of the non-identity problem is the fact that it is so counterintuitive. So, if we are to solve the problem by accepting its conclusion, we must therefore focus on what it is that makes it so counterintuitive. To answer this, Boonin notes that there is a particular reason why we have the intuitions that we have regarding non-identity cases. If we understand this reason, we can see that the intuitions are misguided, and that we have no reason to resist the conclusion. Boonin's thought is that our intuitions in non-identity cases fail to accurately reflect our moral beliefs about causing harm, and that if we came to understand that our intuitions regarding cases like *Before Pregnancy* are not reliable, then there would be no reason to resist the conclusion that *Q*'s act is harmless.

Boonin's hypothesis about our intuitions in cases like *Before Pregnancy* is the following. Typically, causing someone to become blind is to make them worse off than they otherwise would have been. However, non-identity cases, like the one under discussion, are "atypical". Boonin writes: "Because of facts that are idiosyncratic to that case, the act of causing a person to have a significant handicap in [*Before Pregnancy*] does not, in fact, cause [q_1] (or any person) to be worse off than they would otherwise have been. But the way in which this is so is difficult for us to keep present before our mind's eye as we contemplate the case" (Boonin 2008: 145).[67] As a result, our moral beliefs that condemn acts that cause harm still make themselves felt and we thus still think that *Q* has done something wrong. So, the fact that the case of *Before Pregnancy* is so alike cases involving harm, and because the way in

66. It is worth mentioning, however, that it appears overwhelmingly likely that in order to preserve the person-affecting intuition, we cannot avoid the non-identity problem without accepting some other counter-intuitive conclusion.

67. Boonin discusses a different case, but which is structurally identical to *Before Pregnancy*.

which it does not involve anyone causing harm is hard to keep in mind, we still feel intuitively that *Q*'s act is harmful (Ibid: 146).

According to Boonin's analysis, then, the intuitions that we have regarding non-identity cases in the climate context are misguided. We have such intuitions in these cases because we are used to reacting in a certain way to paradigmatic cases of doing harm. The problem arises when the atypical features of the non-identity cases, which account for the fact that no harm is being caused, are difficult to "keep present before our mind's eye", as Boonin puts it. Thus, there is still an intuition about harm being done in cases where emissions negatively impact persons who at the same time owe their existence to those emissions. We still feel the intuitive pull of our moral beliefs about causing harm even though we know, on an intellectual level, that no harm has been done. Hopefully, this will make it easier to understand how the seemingly implausible conclusion of non-identity cases are not so implausible after all.

To sum up this section, due to the long-term effects of GHGs, our emissions not only harm future generations but also determine the identity of some of them. This makes it problematic, on our Comparative Counterfactual Account of Harm, to say that emissions harm future persons. I have argued, however, that this should not be taken to be a problem for my purposes. First of all, since I am concerned with individual emission-generating actions, which have a limited effect on the reproductive choices of future generations, I concluded that these actions in most cases do harm. Second, there is reason to believe that the seemingly implausible conclusion of accepting that there is no harm done in non-identity cases is not so implausible as one might first think. Using an argument put forward by David Boonin, I tried to show that we have reason to accept that there is no harm done in non-identity cases, our intuitions to the contrary notwithstanding. In conclusion, I will not take the non-identity problem to pose a challenge to HCA and to my understanding of climate harms.

4. Do All Emissions Cause Harm?

Thus far, we have seen how GHG emissions are harmful to present and future generations. Now, I shall turn to connecting this issue with the causation of emissions. We saw, in the previous chapter, that the activities of individual agents participating in supply chains can give rise to the emission of GHGs. The topic of the remainder of this chapter is how these actions relate to harm. In particular, the issue is whether emission-generating actions cause harmful events. I will argue that some

of our emissions indeed cause harm. To repeat, an action is an emission-generating action iff there is stepwise causal dependence between the action and GHGs being emitted. In order for emissions to be harmful, they have to make someone worse off than they otherwise would have been, in the sense of thwarting their interests. Emission-generating actions can thus be said to cause harm iff the emissions they cause make someone worse off than they otherwise would have been. While even the most mundane everyday activities qualify as emission-generating actions—such as driving to work, and going for lunch—it is an open question which, if any, of the emissions caused by these are harmful.

There is a bourgeoning literature on the impact of particular actions on the climate (for an overview, see Fragnière 2016). Some philosophers are doubtful of the prospects of establishing a clear causal link between harmful climatic effects and emission-generating actions. Walter Sinnott-Armstrong, for instance, says that "There is no way to identify any particular victim of my wasteful driving in normal circumstances" (2005: 293–4). Others hold that individual acts of emissions can cause harm in principle, but rarely do so (see e.g. Sandberg 2011; Lawford-Smith 2016a). Finally, some have argued that climatic harm increases incrementally with emissions, so that more harm comes about for each emission of GHGs (Nolt 2013). There seems, then, to be three possibilities regarding the harmfulness of emission-generating actions:[68]

(a) that *every* emission-generating action causes harm,

(b) that *no* emission-generating actions cause harm, and

(c) that *some* emission-generating actions cause harm.

In what follows, I will look at a number of arguments and objections in relation to these alternatives. In the present section, I will consider, but ultimately reject, alternative (a). In the next section, I will consider and reject (b), before I, in Section 6, defend (c).

First, then, we are going to consider the position that every emission of GHGs results in some harmful effect. John Nolt is one of few philosophers who have defended this view (Nolt 2013).[69] We have already seen that the way in which emissions cause harm is by way of increases in average global temperature. Consequently, in order for every emission-generating action to be harmful, any amount of emissions, however small, would have to result in an increase in global

68. For slightly different models of the different ways in which emissions and harm relate, see Hohl and Roser (2011). For further discussion, see Jamieson (2015: 33–4), Gesang (2017: 4–5), Cullity (2019: 23–4), and Broome (2019).

69. See also Broome (2016: 160–1). Another proponent is possibly Banks (2013: 46).

temperature, which, in turn, would have to always cause an increase in harmful effects. In other words, there will have to be, on the one hand, a strict relation between the addition of GHGs and increases in global temperature, and on the other hand, a strict relation between increases in temperature and the occurrence of harm, such that for every addition of GHG to the atmosphere, the temperature will increase and for every increase in temperature, more harm is done. Let us look at each of these claims in turn, starting with the dependence of harm on global temperature.

Nolt starts by noting that most forms of harm (except death) come in degrees. Small changes in weather events and overall temperature will incrementally modify the manner in which people are made worse off (Nolt 2013: 146; Broome 2016: 160–1, 2019: 112). Increased hunger due to climate-related food shortage is one example. Given this fragility of how harm comes about, Nolt argues that the high number of harm-recipients around the world will increase continuously as global temperatures increase. Furthermore, perhaps increases in harm are *more than proportional* to increases in warming (Nolt 2011a, 2013; Broome 2012, 2016: 160; Hohl & Roser 2011: 492). This would mean that the occurrence of harms increases at a growing rate for each increase in temperature. This could, first, be due to so-called feedback effects. For instance, an increase in temperature will diminish the capacities of plants to absorb carbon, which will lead to further warming. Second, the effects of that warming are worsened by the warming itself. For example, not only will global warming result in storms, but the intensity of those storms will increase due to a warmer weather.

So far, we have thus seen that there is some support for the claim that there is a strict relation between increases in global temperature and harm. It seems plausible that as temperatures rise ever so slightly, the many recipients of climate harm are made incrementally worse off. That was the first claim of Nolt's argument. But this does not suffice to support the conclusion that emissions always cause harm. In order for emissions to always be harmful, there needs to be an additional causal link between the emission of GHGs and increases in temperature, such that for every addition of GHG to the atmosphere, the temperature will increase. Let us turn to that claim next. Here, Nolt points out that every individual molecule of GHG released into the atmosphere has the capacity to absorb heat.[70] Since that heat would otherwise have been radiated into space, Nolt concludes that "other things being equal, any increase in the atmospheric greenhouse gas content raises, however slightly, the global average temperature" (2013: 143–4).

70. It might also be worth mentioning again that some gases have lifespans that enable them to affect the temperature for years (Broome 2012: 75–6).

So, does this mean that emissions always cause harm? I do not think so. Despite the fragility of harm, and despite the warming potential of every molecule of GHG, it appears unlikely that the climate system should be sensitive enough to register the effects of each of our emissions in such a way as to, first, affect the temperature on a global scale and, second, to do so in a manner which always harm others. Keep in mind that we are talking about actions such as turning on the engine of a car for a few seconds having harmful effects every time, despite the fact that they emit infinitesimal amounts of GHG. In fact, in order for Nolt's claim to be correct, it would have to be the case that for every single molecule of GHG emitted, this makes someone worse off than if the molecule had not been emitted. This simply does not seem plausible. First, it appears unreasonable to think that every molecule emitted would actually affect the global temperature. It appears quite likely that at least some of individuals' emission-generating actions fail to have an impact on the level of temperatures on a global scale. Second, it appears as unreasonable that every molecule emitted would affect the global temperature in such a way so that each minuscule increase in every single case makes someone worse off than if the emission had not occurred.

So far, then, we have cast serious doubt on John Nolt's argument that all emissions cause harm. While I do not thus consider this position decidedly refuted, we shall consider further arguments against it in the next section, when we consider the position that emissions never cause harm.

5. Do Emissions Ever Cause Harm?

Could it be that *no* emission-generating actions cause harm? One common argument for this view is that particular emission-generating activities fail to have enough of an effect of their own to be harmful.[71] This claim should not be confused with the thesis—rejected in the previous chapter—that particular actions are not causes of emissions. The current issue is about the effects of GHGs on the climatic system and, in turn, on sentient beings. In this section, I will look at three versions of the claim that individual emission-generating actions fail to have enough of an effect and argue that each fails to show that emissions never cause harm. They read as follows. First, particular emission-generating actions fail to have enough of an effect on the global

71. For arguments of this kind, see Sinnott-Armstrong (2005), Cripps (2013), Johnson (2003, 2011), Sandberg (2011), Schwenkenbecher (2014), Barry and Øverland (2015), Vance (2017), Garvey (2011), and Maltais (2013).

temperature to be harmful because harm can only be caused *jointly* with other actions. Second, in principle, the harm can be overdetermined, such that more than one emission-generating action is sufficient to bring about the harm, and no action is therefore causally efficacious. Third, it might be that every harmful event is preempted by backup causes and that no emission-generating action therefore makes a difference.

5.1 Joint Causes of Harm

The first version of the claim pertains to joint causation. We have already seen that GHGs reside in the atmosphere for years, thus warming the atmosphere together. It is only through the joint effect of a massive amount of GHGs that harm comes about. This has led some to argue that without the emissions of others present, no particular emission-generating action can cause a harmful event (Vanderheiden 2008: 163–4; Broome 2019: 121). Furthermore, few emissions singularly cause harm without other factors present. Above, in Section 1, we saw that climate harms come about in three distinct ways, one of which was indirectly through human systems. Harms like undernutrition, displacement of people, and conflict, are thus not singularly caused by particular emissions.[72] Does this mean that no emissions unilaterally cause harm?

Not necessarily. We have already seen that on the model of causation that I endorse—CAC—parts of joint causes can be causally efficacious with regard to the effect if they make a difference to its occurrence. Thus, it does not matter whether the emissions in question fail to cause harm singularly, since, as long as there is stepwise causal dependence between them and a harmful event, they count as a cause thereof. While there are still other necessary parts of that joint cause—including certain weather conditions and specific facts of human systems—the presence of these does not diminish the causal role played by the others. The joint causation of harm therefore fails to corroborate the claim that particular emission-generating actions are harmless.

72. Likewise, the IPCC states that "any single impact event also results from the antecedent conditions of the impacted system" (Cramer et al. 2014: 1018).

5.2 Overdetermination of Harm

Turning to the second argument for the thesis that emissions never cause harm, it could very well be that there is more than one sufficient cause (singular, or part of a joint cause) for any given harmful climatic impact (see e.g. Gesang 2017: 8). Some such cases are thought to be cases of overdetermination, as we discussed in the previous chapter. In that chapter, however, doubt was cast on whether genuine cases of overdetermination can actually obtain. In short, I argued that overdetermination appears to violate the laws of nature, and that alleged cases thereof can be accommodated either as cases of joint causation or (late) preemption.[73] It is worth pointing out that this conclusion was drawn with specific concern for cases of causing emissions. The present issue has to do with overdetermination of the *harm* caused by emissions. The question, then, is whether genuine cases of overdetermination are more likely to obtain in this context. In order to find out, let us consider what overdetermination of harmful emissions would look like.

To give a stylized example, let us say that 50 individuals perform emission-generating actions—each producing 15 kg of CO_2—and that these are jointly sufficient and individually necessary for a harmful event to come about, such that without these 50 actions, the harm would not occur. Let us assume, for instance, that there is a presumptive causal chain leading from each activity to the emission of CO_2, to the CO_2-molecules retaining heat in the atmosphere, to there being an increase in global temperature, to the local weather resulting in a drought, and finally, to crop yields suffering, thus resulting in a food shortage. Due to this, a number of persons are made worse off than they had been without the food shortage. However, if more than 50 emission-generating actions are performed, it appears that the harmfulness of the first 50 actions is overdetermined. Consequently, the victims of the food shortage would not have been made worse off by any of the first particular 50 actions, since the ruined crops would have been ruined by any of the surplus actions anyway. If climatic harm can be overdetermined in this sense—which seems likely, due to the immense amount of emissions—this would mean that none of the 50 emission-generating activities cause harm. In turn, this appears to support the claim that emissions never cause harm.

However, in the previous chapter, I concluded that we should be wary of overdiagnosis of cases of overdetermination. There, I presented the possibility that cases of overdetermination are just mislabeled cases of preemption or joint causation. To see whether this is the case in the present context, let us remind ourselves that an effect is overdetermined if more than one event is sufficient to bring about the effect

73. For a defense of the latter position, see Broome (2019: 120–1).

and, crucially, that each event's claim to be the cause is on a par. In our case of the food shortage, this would mean that every set of actions that is jointly sufficient to bring about the harm is a candidate for being the cause thereof. Furthermore, for the effect to be overdetermined, it would have to be the case that every such set of actions have an *equal* claim to be the cause of the harm. This seems to me implausible. There is arguably a fact of the matter regarding which set of emission-generating actions actually brought the harm about. Once a sufficient amount of GHG is emitted, the gases will reasonably start affecting the climate system, increase the global temperature, affect the weather, and eventually cause the food shortage. It seems odd to say that additional emissions simultaneously would affect the exact same causal processes, and exert the exact same causal influence on the harm, in such a way that genuine overdetermination requires. It is more reasonable to assume that one of the sufficient sets of emissions brought the harm about first and that the additional emissions—which would have brought the harm about if the first set had not—is causally preempted. The surplus emissions reasonably have *other* climatic effects—something which is ruled out on the analysis according to which they are overdetermined (see also Footnote 74). Thus, I do not think that each set of emission-generating actions that is sufficient to bring the harm about is on a perfect par. The case is therefore not an instance of overdetermination. It is more likely an instance of preemption.

Alternatively, the addition of the surplus emissions *does* make a difference to the occurrence of harm—perhaps in the sense of making the harm appear slightly earlier, or at a different location—which means that they are a part of a joint cause of a numerically different event and the case is thus one of joint causation. In the previous section, however, we saw that such joint causes of harm do not support the claim that emissions never cause harm.[74]

In conclusion, then, alleged cases of genuine overdetermination either seem to collapse into cases of (late) preemption or cases of joint causation. Since we established in the previous subsection that joint causation poses no problem for the harmfulness of particular emission-generating actions, I will thus devote the rest of this section to the third option: preemption.

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74. This conclusion is made even more likely by considering the fact that genuine cases of overdetermination implies a problem of additivity, as discussed in the previous chapter. This was the problem of overdetermination cases positing too much causation than what is causally efficacious. If it really is the case that *each* set of emissions in the case of the food shortage is sufficient for bringing the harmful outcome about, then it can reasonably be asked where that extra amount of causal efficacy goes, considering that the additional emissions do not have any further effects.

5.3 Preemption of Harm

The previous chapter considered the phenomenon of causal preemption. While that was an issue of preemption of causal effects, the present issue pertains to the preemption of harmful events. A seemingly harmful event is preempted when it is accompanied by a backup event that is (at least) as harmful to a particular subject of harm as the first event. In such a case, the subject of the harm is not made worse off than they would have been without the first event occurring since, in that case, they would have been harmed by the backup event instead. Applied to the case of climate change, the thought is that the effects of emissions fail to make victims worse off than they otherwise would have been, since each seemingly harmful climatic effect is backed up by countless other—equally (or more) harmful—effects (Kingston & Sinnott-Armstrong 2018: 176–7).

Let us return to the example of the food shortage from the previous subsection, which we concluded was a case of causal preemption rather than overdetermination. In this example, harm is brought about by 50 emission-generating actions. The actions are jointly sufficient and individually necessary for the harmful event to come about, such that without these 50 actions, the harm would not have occurred. However, the case is such that if more than 50 emission-generating actions are performed, the harmfulness of the actions is preempted.[75] Given the amount of emissions, this is very likely. Had it not been for these 50 particular actions, someone else would plausibly have emitted a corresponding amount of GHGs anyway. This means that the victims are not made worse off than they otherwise would have been. The question is whether the preemption of harm through emissions supports the claim that emissions never cause harm.

In order to answer this, let us first note that this is a case of *late* preemption. Recall from the previous chapter that in early preemption, the preempted backup cause is inhibited early in the causal chain, and in late preemption, the preempted cause is inhibited later; sometimes when the causal chain has already gone to completion. The current case of preemption of harmful events is a case of late preemption since the harmfulness of the backup emissions is inhibited toward the end of the causal chain.[76] It is only when the actual cause prevents the backup cause from ruining the crops that the latter is preempted.

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75. This case ignores the possibility of additional emissions changing the climate in a way that gives rise to *less* harmful effects. We shall return to that possibility below.

76. It would have been a case of early preemption, for example, if the only way to produce the harm was burning a limited supply of fossil fuels. Those who actually burn the fuels in that case would thus prevent others from burning them, who would have done so otherwise. In reality, there are more than enough fossil fuels to cause the harm, so those who emit do not prevent others from doing likewise. It bears noting, however, that if the case had been like that, and thus been an example of early rather than late preemption, this would

This is a serious worry for the claim that emissions cause harm, and for HCA in general. While several proposed solutions have been put forward (Klocksiem 2012; Boonin 2014), the problem seems to remain (Hanser 2008: 434–7; Bradley 2012: 397; Johansson & Risberg 2019). I think, however, that although some harmful effects of emissions are preempted, we can avoid the conclusion that emissions never cause harm by factoring in *fragile events* (Lewis 1986). An effect is fragile if it would somehow have occurred differently depending on whether it was produced by the actual cause or the preempted backup cause. The difference that matters for our purposes is whether an event is more harmful if it is produced by the actual cause rather than the backup cause. So, if the harmful events of emissions are fragile in the sense that the actual event makes the victims worse off than compared to if one of the preempted causes had produced the effect, then it seems that events can be harmful even if they are preempted.

It appears quite possible that the harmful effects of emissions are fragile, since, as we noted with reference to Nolt's argument in the previous section, harms are sensitive to minute variations in how they come about. For instance, the harm of the food shortage that is produced by the 50 emitters might be qualitatively different from the harm that would be produced by the surplus emissions. Perhaps performing one of the 50 emission-generating actions slightly earlier would make the drought occur sooner rather than later, or in a slightly different manner. In turn, this could mean that the food shortage makes the victims worse off—maybe because more crops are destroyed—or that it affects a different set of subjects (who would otherwise not have been harmed), than if the preempted backup cause had occurred instead. In such a case, the food shortage is thus harmful even though it is preempted.

This idea appears even more plausible if we assume that a peak concentration of GHGs will eventually be reached (perhaps by a binding global treaty making it too costly to continue processing fossil fuel).[77] Broome (2019) argues that if such a future limit is ultimately reached, then every emission-generating action will add to that particular concentration of GHGs. This also means that the total amount of harm that will be produced due to GHGs is already determined. Therefore, for each additional emission of GHGs, some harms occur sooner than they otherwise would

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arguably not have shown that emission-generating actions never cause harm either. Let us say that there is stepwise causal dependence between an event c_1 and another—harmful—event e, such that without the preceding intermediate step, e would not have come about. Although there is a preempted backup cause c_2 that would cause e in case c_1 does not, nothing prevents at least one of the intermediate causal steps between c_1 and e from being harmful. The harmfulness of the backup cause c_2 is thus inhibited. We can say, then, that an event is harmful even though it is preempted, provided that among the intermediate steps between that event and some other event, (at least) one step makes someone worse off than they otherwise would have been. Cases of early preemption thus pose no problems for HCA and our conception of harm.

77. For reasons of space, I cannot defend this claim at length here.

have, and some harms occur that would otherwise not have obtained at all (Broome 2019: 117; Hiller 2011b: 359). If we assume the plausibility of the fragility of harms, as well as a future peak concentration of GHGs, the preemption of harmful effects of emissions thereby no longer seems to show that no emissions cause harm.

It could be objected, though, that not all differences in the manner of performing emission-generating actions will increase climatic harm. There are two versions of this objection. First, some have raised doubts about the likelihood that postponing particular emission-generating actions will have an effect on the time at which the resultant harm occurs (Kingston & Sinnott-Armstrong 2018: 177n14; Nolt 2013: 145). If I drive home from work at 5pm rather than at 6pm, for instance, does this really affect the manner in which harm comes about such that someone is made worse off than they otherwise would have been? The answer is 'possibly'. By performing an emission-generating action at an earlier time, the effect is more likely to make harms occur earlier, or even to make it occur when it otherwise would not have, than if it was performed at a later time. In order for my argument to work, this does not always have to be the case; it only has to be possible for it to be so.

The second variant of the objection is that by factoring in fragile events, the harm might just as well be reduced as increased. Due to the complexity and instability of the climate system, by postponing an emission-generating action, for instance, or emitting slightly more, we could happen to make a storm less intense, or a drought less severe (Broome 2019: 112). So, even though each emission-generating action stands a good chance of making a difference to how harm comes about, this is not guaranteed to make someone worse off than they otherwise would have been. On the contrary, it could make them *better* off than if we had not emitted. While I grant that this is a real possibility, I also want to emphasize that emitting GHGs rather than not emitting, emitting more rather than less, and emitting sooner rather than later, overall appear to increase the probability that one's actions cause harm. If some of the differences in how we execute our emission-generating actions reduce the overall harm that comes about, this does not change the fact that emitting more GHGs in a shorter time generally produces more harm.

All in all, what these two objections show is that even though not all of the variations in how emissions come about affect the amount of harm that comes about, this still does not show that all effects of emissions are preempted and thus harmless. It seems that by factoring in fragile events, we can show that not all the harmful effects of emissions are preempted. Some of the parameters that are relevant when doing this are, first, the *timing* of the emissions—when an emission-generating action is performed could affect the manner in which someone is made worse off. Second, the *amount* of GHGs that are emitted at a given moment could potentially cause a

different, more harmful, event. Uncontroversially, a larger amount of emissions generally gives rise to a greater increase in global temperature than a smaller one. Third, the *type* of GHG that is emitted can also influence the manner in which harm comes about. We saw above—in Section 1—that the different types of gas have different warming effects, due to the gases' different lifespans and radiative effects. Thus, perhaps the drought would not have started and ended at the same time if the action had not been performed at the time that it was, or if some other GHG, like methane, had been emitted instead.

To conclude this section, I have considered three variations on an argument for the thesis that emissions never cause harm. Each of these were arguments about the causal inefficacy of particular emission-generating actions. I argued that the argument from joint causation and overdetermination failed, but that the argument from preemption shows that there are instances of late preemption of climate harms. Notwithstanding such cases, this fails to show that the effects of *every* emission-generating action are preempted. Particularly, when we factor in the fragility of the harmful events in question, it appears that small variations in how we emit can compound the harmfulness of the events, even though the harm is preempted. Thus, it is not the case that no emissions cause harm. But at the same time, I think it has been decidedly shown that emissions are not always harmful either. To see where this leaves us, let us next consider the final thesis that *some* emissions cause harm.

6. Some Emissions Cause Harm

Now that we have ruled out the thesis that emissions always cause harm as well as the thesis that they never cause harm, the only possibility left is that emissions *sometimes* cause harm. This section is aimed at explicating this claim, as well as considering some objections to it. I will argue that while some emission-generating actions cause no harm at all, others cause great harm.

In the two previous sections, we saw how climatic harms can come in *degrees*, such as when small increases in temperature make food shortages incrementally worse. But not all emission-generating actions cause harm in this way. Climatic harms also come at discrete levels, like when a home suddenly has to be evacuated due to a mudslide (Morgan-Knapp & Goodman 2015; Broome 2019). An explanation for how the latter kind of harm occurs is *climate thresholds*, which are points at which serious climatic events come about (see e.g. Sandler 2010; Hiller 2011b; Almassi 2012;

Lawford-Smith 2016a).[78] All emissions steadily add up toward the crossing of these thresholds, or "tipping points", which will set in motion irreversible climatic processes, resulting in large amounts of harm. The collapse of the Atlantic Thermohaline Circulation, or the melting of the ice sheets of Greenland, are two examples of large-scale tipping points (Lenton et al. 2008). But not all thresholds are of this magnitude. There are also smaller thresholds, such as the occurrence of local storms, bush fires, or droughts.

The existence of such thresholds has been used by some philosophers to argue for the efficacy of particular emission-generating actions to cause considerable amounts of climatic harm. The thought is that with regard to any harmful threshold, there must be a given amount of GHGs, such that it is the smallest amount required to trigger it. That is, without some particular emission of GHGs, there is not enough for a tipping point to be reached and for the resultant harm to occur. As long as there is causal dependence between the emission-generating activity and the harm, the former counts as a cause of the latter. This is true even though the thresholds are crossed through joint causation. If a harmful climate threshold is crossed iff n emission-generating activities are performed, each producing x amounts of GHG, then the crossing causally depends on *each* of those activities. That is to say, there is stepwise causal dependence between each intermediate event in the causal chain, from the total GHGs emitted to the crossing of the threshold, such that had the preceding event not occurred, the subsequent event would not have occurred.

We can thus say that the harmful events which result from a changing climate come in a broad spectrum, from the big climate thresholds, such as thawing permafrost releasing natural gas trapped in the ground, to smaller local events, like storms becoming more intense in higher temperatures. There is thus, in the words of Holly Lawford-Smith, "thresholds 'all the way down'" (Lawford-Smith 2016a: 71). Some actions will be part of the joint causes of bigger thresholds, others part of the causes of smaller thresholds, and still others might be too small in order to affect any threshold, or be preempted. Some actions therefore cause a lot of harm, others a little harm, and some no harm at all. We do not know, however, which actions form part of which causes, and thus do not know which actions have which effects. At least with today's measuring technologies, it is simply not possible to track all of the effects

78. For further references, see Johnson (2003: 277), Sinnott-Armstrong (2005: 301), Morgan-Knapp and Goodman (2015), and Gesang (2017). For criticism, see Jamieson (2014: 180), and Fragnière (2016: 801).

of particular emission-generating actions that are relevant for the crossing of climate thresholds.[79]

This inability to link particular harmful events with emissions has been taken as a problem for saying that they cause harm (Jamieson 1992: 148; Hartzell-Nichols 2012: 99; Banks 2013: 44–5). Some ask whether it is even possible to attribute particular harmful events to anthropogenic climate change. For instance, Trenberth, Fasullo and Shepherd write that "it is not possible to attribute a single climate extreme event, which by definition is unique and which has a large element of chance in its occurrence, to a specific cause" (Trenberth et al. 2015: 725; Otto et al. 2012: 815). It could thus be concluded that since we cannot attribute specific harms to climate change, then we cannot say that particular emission-generating actions cause harm.

I do not think, however, that too much focus should be put on this epistemic point. Even though we currently cannot say with certainty that a particular event was brought about due to the emissions of a given action, it is *a priori* plausible to say that there must be a given amount of GHG such that it is the smallest amount required to be causally efficacious with regard to a specific harmful event. It might be just the right of amount of GHG which is required (together with the other emissions) in order for the event to come about. It is irrelevant whether or not we know (or cannot know) what that amount is. As Broome puts it: "Having an effect is not the same as having an effect that can be traced" (Broome 2019: 116).

To conclude this section, we have seen that some emissions cause a lot of harm. Yet, a lot of emissions also fail to have an effect, and it is far from clear which emissions cause harm and which ones do not. We shall return, in the next chapter, to the moral implications of this epistemic opacity.

79. Some philosophers also invoke notions of the climate system being *chaotic* (Morgan-Knapp & Goldman 2015; Gesang 2017; Broome 2019: 112). I fail to see, however, how the notion of chaos gives us reason to question the metaphysics of emissions and harm proposed here, beyond giving us further reason to doubt the predictability of the system.

7. Concluding Remarks

In the previous chapter, I introduced a model according to which agents along a global supply chain act so as to jointly cause emissions. The focus of the present chapter has been the effects that such emissions have on human and non-human subjects. For that purpose, I summarized the adverse effects of climate change in terms of the harm that is done to current and future generations. I then presented a Comparative Counterfactual Account of Harm (HCA) and considered how it could be applied to the climate case. According to this, individual emission-generating actions can be said to cause harm iff the emissions they cause make someone worse off than they otherwise would have been. In turn, being made worse off was understood in terms of a setback of interests.

Next, I considered the so-called non-identity problem, due to which it has been argued that it is problematic to say, according to HCA, that emissions harm future generations. I have argued, however, that this does not pose a problem for my purposes, first, since individual emission-generating actions have a limited effect on the reproductive choices of future persons and so rarely affect the identity of them. Second, I have tried to show, using an argument put forward by David Boonin, why we should accept the seemingly counterintuitive implications of the non-identity problem, and that the problem is not so implausible as it might first seem.

With the above understanding of harm of emissions in place, I then proceeded to look closer at the harm caused by emission-generating activities. I considered the arguments for whether such actions always, never, or sometimes, do harm. In conclusion, I found that some, but not all, emissions cause harm, but that it is virtually impossible to find out which ones do, and which ones do not.

The topic of the next chapter is to find out when agents of supply chains are morally obligated to avoid acting in ways that cause such harm.

Chapter 3

Moral Duties Not to Emit

The previous two chapters concluded that climate change gives rise to effects which harm current and future generations and that agents of a supply chain contribute significantly to this through their GHG emissions. This chapter will look at the moral import of causing climatic harm and argue that agents have an obligation to reduce or to offset their emissions because the harmful effects thereof are unjust. Specifically, the chapter is dedicated to the duties of individual agents of supply chains, such as consumers of emission-intensive goods, truck drivers who transport products from manufacturer to retailer, and CEOs of energy companies, just to name a few examples. My thesis is that there is a morally non-negligible probability that these individuals cause unjust harm through their emissions, and that they consequently bear a duty not to do so. As we shall see, though, there is more than one way to discharge such duties. I will argue that there are, on the one hand, *direct* duties to reduce or offset one's own GHG emissions. But there are also, on the other hand, what I will call *indirect* duties to induce the reduction or prevention of *other* agents' emissions.[80]

The chapter is structured as follows. In Section 1, I introduce duties not to do harm, and how these apply to the harm caused through emissions. With the findings of the previous two chapters, I then argue, in Section 2, that individual agents along supply chains cause harm through their emissions. Due to the difficulty for individuals of reducing all of their emissions, however, I present the possibility, in Section 3, of using GHG offsetting as a means of refraining from doing harm through emissions. This means that individuals of a supply chain can discharge their duties not to do harm at a relatively low cost to themselves. Section 4 then extends this argument to indirect duties to influence others not to emit. Section 5 concludes the chapter.

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80. This distinction should not be confused with that between direct and indirect emission-generating actions that I presented in Chapter 1.

1. DUTIES NOT TO DO HARM

Much attention in the climate ethics literature has been given to duties not to do harm through emissions (see, e.g., Sandberg 2011; Broome 2012; Brooks 2012; Cullity 2019). This is not surprising, given the results of the previous chapter. There, we saw that emissions are harmful and that harm is the most morally significant effect of climate change. In fact, the significance of harm extends into all areas of moral and political philosophy. Following authors like John Stuart Mill, W.D. Ross and Joel Feinberg, most philosophers accept some version of what I will refer to as the No Harm Principle (NHP).[81] In this section, we shall take a closer look at this principle. We shall first consider what the principle means, before we look at how it should be interpreted in the context of climate change and, finally, say something about compensation for harm.

1.1 The No Harm Principle

The principle with which I am concerned reads as follows.

NHP An agent *A* has a moral obligation to refrain from acting so as to cause unjust harm

On the understanding of harm that I have adopted, causing harm means making someone worse off than they otherwise would have been, in the sense that the harmful event causally depends on the actions performed by the agent in question. I am therefore concerned with whether there is a moral duty on the hands of agents of supply chains to refrain from performing emission-generating actions which make others unjustly worse off. It is the topic of this chapter to apply these duties to the case of supply chain agents.[82] I will consider the topic of when agents are *blameworthy* for causing harm separately in the next chapter.

Let us proceed by unpacking what the principle says. First, the duties that are generated by NHP are *negative duties*, meaning that they concern omissions, or inactions.[83] Corresponding to these negative duties are *rights* not to be harmed. More specifically, these are so-called *claim-rights*, which means that the agent who is

81. For early formulations of the principle, see Mill (2008 [1859]), Ross (1930), and Feinberg (1986).

82. For explicit discussion of the No Harm Principle in relation to climate change, see Sinnott-Armstrong (2005: 297), Rentmeester (2014: 13), Cripps (2016b), Fragnière (2018), Vance (2017), Shue (2015), Brooks (2012), Grasso and Vladimirova (forthcoming), and Gunnemyr (2019).

83. As we saw in the Introduction, this is in contrast to *positive duties*, which are duties to act in a particular way.

obligated not to do harm owe that duty to the particular right-holder. In the context of the supply chain, this means that a moral subject *S* has a right that an agent *A* of a supply chain not cause harm to *S* iff *A* has a duty not to cause harm to *S*.

Second, I take NHP to be a principle about *justice*, meaning that it is concerned with how individual moral subjects ought to be treated.[84] In more substantial terms, harming someone is paradigmatically to do them an injustice; if we harm someone, and we thus violate someone's right not to be harmed, that is often unjust. This, however, is not always so. Examples of just harms include punishment, harm that is inflicted in self-defense, and harm that is consensual, such as in sports. It is not impermissible, according to NHP, to cause harm in such ways. For our purposes, however, it should be mentioned that climate harms are not of this kind; harmful emission-generating actions are neither performed as a form of punishment, in self-defense, nor with consent.[85]

In addition, there are further examples of just harms. As we shall see, however, climatic harms are rarely among them. Instead, the harm due to emissions are most often unjust. One relevant characteristic here is that emitters are *beneficiaries* of their harmful emissions. Harms from which we benefit are more clearly unjust than those we do not benefit from. A further consideration is that the harm caused by emissions is not reciprocal (Broome 2012: 58). Some harm that is reciprocated fails to be unjust. For instance, the harm resulting from smoking in a pub does not seem unjust if every pub-goer contributes to it; everyone in the pub is thus harming each other. However, harm due to emissions are in many cases not reciprocated. We saw in the previous chapter that those most affected by climatic harms include marginalized individuals. Cases include the harm done to future generations, and the harm done by wealthy emitters to the poor who emit significantly less.

I shall not try to say what it is generally about causing harm that qualifies as an injustice, but I think that these considerations give us a reasonable case for thinking that harmful emissions are unjust.[86] The usual features which render harms

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84. Another way to put this is that NHP is a principle about justice since it is a principle about what every moral subject is entitled to, or what each subject is due.

85. The claim that climate harms are consensual is problematic due to at least two reasons. First, some of the harm recipients, such as future generations and non-human animals, are unable to consent to the harm caused by emissions (Cripps 2011: 186). Second, since we do not know *whom* we harm when we emit GHGs, it is practically impossible to separate those who consent to climatic harm from those that do not (Moss 2015: 81, 2016: 11).

86. For additional discussion of what might count as necessary conditions for climatic harm being unjust, see Broome (2012: 54-9). In addition to those mentioned above, Broome also takes the facts that climatic harm is non-accidental, cannot be compensated, and is easily avoided, as reasons for viewing them as instances of unjust harm. While I consider these characteristics to be important, I do not see them as prerequisites for climatic harm being unjust and have thus chosen to discuss them elsewhere. First, I have chosen to treat the discussion of whether our emission activities and the resultant consequences are foreseen (and thus non-

just, such as self-defense, consent, or the harm being reciprocated, are not present here. The harm that is caused by emitting GHGs is rather done without consent, without reciprocity and with substantial benefit to those who emit. I thus conclude that harms due to emissions are injustices. Unless otherwise noted, I shall therefore assume that climatic harm is unjust. (We shall return, however, to one case where climatic harm is not unjust in the next chapter.)

A third thing to note about NHP is that its duties, and their corresponding rights not to be harmed, have a special moral status. In the terminology of Ronald Dworkin, I shall understand rights not to be harmed as *trumps*, meaning that a right not to be harmed generally overrides other claims that conflict with that right (Dworkin 1984). This implies, among other things, that an agent cannot normally harm someone in order to bring about benefit, even if the benefit outweighs the harm.[87] We shall return in greater detail to how the status of NHP relates to other duties in the next chapter.

So far, we have seen that NHP is a principle of justice, according to which agents bear duties not to cause unjust harm to others and that there are claim-rights not to be harmed corresponding to these duties. I take these rights to be so-called *trumps*, meaning that rights not to be harmed often override other concerns, such as duties to bring about good. We have also seen that the harms caused by emissions, since they are not meted out as a form of punishment, are not consensual, not an effect of self-defense, not reciprocal, and since they are beneficial to the emitter, arguably are unjust. Next, we will look at the content of NHP and, in particular, how to apply the principle in circumstances involving uncertain outcomes.

1.2 Expected Harm

In the previous chapter, we saw how particular emission-generating actions can cause harm. It was concluded that *some*—but not *all*—of our emissions have harmful effects. Since we do not know *which* of our actions are harmful and which are harmless, it is therefore difficult to say whether the performance of a given action is

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accidental) separately in the next chapter, when we talk about ignorance as a possible excuse for being blameworthy for causing harm. (Relatedly, I discuss the condition of intentionality as a morally relevant consideration for our climatic duties in Section 3 of Chapter 5.) Second, the fact that climatic harm cannot be compensated will be discussed in Section 1.3 below. Lastly, the issue of whether we could easily refrain from emitting will be treated partly in Section 2.3 below, and partly in Section 4 of the next chapter, as an additional condition for being blameworthy for emissions.

87. One might, however, sometimes be justified in doing harm in order to prevent greater harm from coming about. For discussion on the issue of the overall harmfulness of events, see Section 2.2 below and Footnotes 61 and 89.

impermissible or not according to the NHP. As we shall see, there are more than one way of interpreting duties not to do harm in circumstances like these.

Under one interpretation of NHP, duties not to do harm are only concerned with *actual* harm. That is to say, agents only have a duty (according to NHP) to refrain from performing an action if that action will actually make someone worse off than they otherwise would have been. This makes the application of NHP in the climate context practically impossible. As we saw in the previous chapter, since the climate system is so vastly complex, there is simply no way to settle the issue of whether a particular action causes harm or not. The action might result in a death due to heat-related stress, or in better crop yields for a farmer, or both, or neither. There is simply no way for us to find out. Whether an agent who emits GHGs are thereby violating a duty not to do harm is therefore a moot point.[88]

Under a different interpretation of NHP, agents do not hold duties to refrain from acting in ways which actually result in harm, but rather hold duties to avoid acting in ways which are *expected* to cause harm. We arrive at the expected effect of an action by multiplying the value of an outcome with the probability that the action causes it (see e.g. Briggs 2014). In this context, we are not interested in value *per se*—such as goodness—but rather another type of morally relevant effect, namely the notion of harm, which is normally associated with justice. But it is not only the negative effects of our actions that must figure in the calculation of an action's expected effects. Since it is possible that some emissions cause benefits as well (such as the aforementioned crop yields), we must also take into account the expected *positive* effects of emission-generating actions. So, the expected harm of an emission-generating action is the harmfulness of the outcome, minus any potential benefits, multiplied with the probability that the action caused it.[89]

Using this notion, we do not need to be certain that an emission-generating action causes harm or not in order to say that there is moral reason not to perform it (Hiller 2011b; Almassi 2012; Broome 2012; Morgan-Knapp & Goodman 2015).[90] More specifically, I believe that we can understand NHP as saying that there is a duty

88. We shall return to the issue of ignorance and causing harm through emissions in the next chapter, when we discuss how this affects ascriptions of blame for causing harmful emissions.

89. Note that this gives us two distinct ways of weighing the positive and negative impacts of the expected effects of an action. In addition to working out the net expected value of an action by subtracting any positive value from the negative, there is the comparative element of HCA, which states that harms are events which make their subjects *on balance* worse off than they otherwise would have been. So, each of the harmful outcomes of an action that is subject to a calculation of its expected value have already gone through a weighing of their comparative harmful qualities. It bears noting that while we saw—in Footnote 61—that in assessing the overall harmfulness of an event, HCA does not weigh interests intersubjectively, the expected harm of an event does take into account the net effect on different subjects.

90. For further similar approaches, see Broome (2016, 2019), Lawford-Smith (2016a), Pellegrino (2018), and Cullity (2015, 2019).

not to cause an event which is expected to do harm, and correspondingly, that there is a right not to be subjected to expectations of harm. So, whether our emissions will really result in death, in better crop yields, or something else, is not of importance. Rather, what is important is whether there is an *expectation* of harmful climatic effects, given that we emit. If the outcome is significant enough, the probability of an action having a certain effect can be sufficient to ground an obligation against performing that action. Just as an agent ought not to play Russian roulette, even though the probability of a harmful outcome is low, an agent ought not to emit GHGs, even though they might actually be harmless (Hiller 2014: 26). In what follows, when I speak of duties not to do harm, I will thus be referring to duties to avoid doing expected harm.

It might seem odd to say that an agent bears a duty to avoid causing *any* expectation of harm. Some of the things we do include an expectation of harm that is too small to seem to matter morally. This can either be because the probability of the effect occurring is very low, or because the effect in question is close to being morally negligible. It might be argued, for instance, that the very small possibility of getting into a traffic accident does not make it morally impermissible for you to go on a bicycle trip with your family to the countryside, even if the consequences of an accident would result in serious suffering. That we have a moral obligation to refrain from acting in such ways might seem counterintuitive. However, there are several things to be said here that shows how accepting this conclusion is less objectionable than it might first seem.

First of all, that there is a duty not to perform actions which are expected to do harm does not necessarily mean that agents are *blameworthy* for acting in that way. As we will see in the next chapter, there are several good excuses for causing unjust harm. So, even though there might be a duty against performing actions which are expected to cause even smaller amounts of harm, this is not the end of the moral story. An agent can still be non-blameworthy for doing something they had a moral duty to avoid doing. So, even if there is a duty against cycling with your family to the countryside, because there is an expectation of harm in doing so, it is not necessarily the case that violating this duty is morally blameworthy. We will consider this issue further in the next chapter. One good way of testing this intuition is to consider whether we would think that it is wrong to perform the action with the small expectancy of harm if there were no countervailing benefits from performing it. Intuitively, it would be wrong to risk getting into a traffic accident, even though there was a very small expectancy of harm, if there were no benefits involved in doing so.

Second, there are several factors that determine the final expected effects of an action. As we mentioned above, we do not only take into account the negative effects

of an action when determining its overall expected effects; we must also take into account its positive effects. So, if an action has positive effects which outweigh its negative effects, then it appears that the performance of that action is not violating NHP. Taking one's family for a trip to the countryside has several beneficial effects, such as physical exercise, spending social time with loved ones, enjoying nature, and so forth, which are likely to outweigh the small probability of your family suffering harm through a traffic accident. There is therefore arguably in most cases not a duty to refrain from performing those actions whose harmful effects are too small to seem to matter morally. We shall look closer at how this applies to the context of emitting GHGs along supply chains in Section 2 below.

Now, let us look at some estimates that have been made about the expected harm of particular emission-generating actions. John Nolt has produced an approximation of the harm that is caused by the average American's GHG emissions. He argues that an average American, through their lifetime emissions, causes the death and/or serious suffering of two future people (Nolt 2011a: 9).[91] Avram Hiller has elaborated on this calculation and, using the more conservative of Nolt's two estimates of harm, judges that the expected effects of emitting 1 kg of CO_2-e is equivalent to 0.43 person-hours of serious suffering (Hiller 2011a: 20). Given that such suffering counts as a harm, emitting 1 kg of CO_2-e would thus result in approximately the equivalent of a little more than 25 minutes of expected harm.[92] Below we will consider some examples of activities that are expected to produce these amounts of harm.

I do not mean to suggest here that these estimates are without their flaws. The calculations might leave a lot to be desired. For instance, the data does not involve harm done to non-humans. And it is not certain how the complex causal story defended in Chapter 1 relates to the methods of accounting for emissions that Nolt's calculations are based on. Nonetheless, these measurements still give us a sense of the magnitude of the harm each of us cause through emissions; there is value in being able to attach a figure of expected harm to particular actions and, as Hiller argues, in our current epistemic situation, there are no apparent better alternatives (Hiller 2011b: 358).[93] At the moment, then, the figures of Nolt and Hiller is the best estimate we have got.

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91. This figure is the result of a calculation whereby Nolt takes the total American GHG emissions and divides it by the US population. The result is then related to the American share in the total amount of harm caused by climate change, which is then again divided by the US population (Nolt 2011a).

92. 0.43 hours x 60 minutes = 25.8 minutes, to be more exact.

93. It should be mentioned, though, that similar estimates exist. For instance, Broome cites other numbers—from the World Health Organization (WHO)—according to which individuals during their lifetime, on average, cause others to be deprived of six months of healthy life (Broome 2012: 74). Cullity gives a different measure of the expected harm of lifetime emissions, in terms of deaths and "serious effects", equaling a quarter

In using these figures, we can arrive at very informative approximations of the expected harm of different types of emission-generating actions. For example, on this estimate, the expected harm of going for a 40 km drive is equivalent to 15 hours and 36 minutes of serious suffering,[94] while the expected harm of a round trip flight from London to New York is equivalent to almost 12 days of suffering.[95] These figures will become important points of reference when we discuss the moral import of climatic harm in this and subsequent chapters.

To summarize this subsection, I have introduced the notion of expected harm, which is the harmfulness of an outcome, minus any potential benefits, multiplied with the probability that the action caused the outcome. I believe we can interpret NHP as a principle about expected—and not actual—harm, which means that agents should act in such a way as to avoid performing actions which are expected to cause harm. Unless otherwise noted, this is what I will henceforth refer to when I talk about duties not to do harm through emissions. Using estimates produced by Nolt and Hiller, we can approximate that the expected harm of causing 1 kg of CO_2-e is equivalent to 25 minutes of serious suffering. In the next section, we shall say more about the duties of supply chain agents to avoid such expectations of harm. Before we do that, however, we shall take a brief look at the notion of compensation for harm.

1.3 Compensation

Some philosophers hold that agents who fail to fulfill their duties not to do harm incur duties of *compensation* toward those that have been harmed. For instance, several authors entertain the possibility that agents who cause harm through emissions should compensate the victims of climate change (see e.g. Vanderheiden 2008; Cripps 2011; Baatz 2014; Moss 2015; Moellendorf 2015; Shue 2017; Grasso & Vladimirova forthcoming). I shall argue, however, that there are no such

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of a death and 290 serious effects (Cullity 2019: 24–5). I mainly chose to focus on Nolt's estimations due to a detailed account of the methodology used, something which the others lack.

94. As we saw in Footnote 20, the average American automobile emits 908 g of CO_2-e for every 1 km. Thus, for every 40 km traveled, the average automobile emits 36.30680064 kg CO_2-e. This amounts to the equivalent of 936.715456512 minutes—or 15.6119242752 hours—of suffering (36.30680064 kg x 25.8 min = 936.715456512 min).

95. The estimated emissions attributed to one passenger on a return flight from London (LHR) to New York (JFK) is 666.8 kg of CO_2 (ICAO Carbon Emissions Calculator 2016). The expected harm of flying thus amounts to the equivalent of 17203.44 minutes of suffering (666.8 kg x 25.8 min = 17203.44 min). This can also be expressed as 286.724 hours, or 11 days and 22.723999999999992 hours. It should be noted, though, that the estimate of personal emissions used here might not correspond to the attribution of causal responsibility for emissions that I defended in Chapter 1.

compensatory duties for climatic harm. In order to see why, let us first say something more about the notion of compensation.

I take compensation to mean countering the setbacks suffered through harm. To be more precise, I shall rely on a counterfactual notion of compensation (see e.g. Nozick 1974: 57; Nickel 1976: 380; E. Paul 1991: 103; Kershnar 1999: 95). This account holds that a victim is compensated for harm that they have suffered iff they are thereby no worse off than they would have been, had they not been harmed. To give an example, an agent *A* steals another person *S*'s money, thus leaving *S* worse off than if *A* had not done so. Presumably, *S* has an interest in not having their money stolen. *A* therefore appears to have harmed *S* and consequently owes them compensation. In order to compensate *S*, *A* needs to return the money, and possibly also make up for the act of theft itself.

In order to properly compensate one's victims, then, it is generally required that one knows whom one has harmed, and by how much. Otherwise, it is impossible to know whether the victim is no worse off than they were before they were harmed. But due to this requirement, it appears that there are no compensatory duties for harm in the climate case. First of all, the epistemic opacity of the context means that we cannot identify particular victims of particular emission-generating actions (Broome 2012: 79–80; Moss 2015: 86, 2016: 7). Say that an agent causes harm through their emissions and that the agent thereby seems to owe their victims compensation. In that case, it is impossible to say who the particular harm recipients of the action are. It is simply not possible to track the effects of specific emission-generating actions to subjects situated all over the world, some of which have not even been born yet. Since agents who wrongly cause harm through emissions thus cannot identify the victims of the harm, or how much compensation they are owed, it is not possible for them to discharge their compensatory duties.[96]

A second peculiar feature of compensation in the climate case pertains to compensating non-humans. Given that we have focused on harm to every moral subject with the capacity to bear interests, compensatory duties reasonably apply to non-human animals as well as humans. Animals, however, do not generally have the same type of interests as humans. Elizabeth Cripps writes that: "Among humans,

96. It could be objected that we do not need to know whom, or by how much, we harm in order to compensate victims of climate change. Some have suggested that rather than compensating particular victims, culpable emitters could instead help the general victims of climate change (Broome 2012: 80–1; Moss 2015: 86). Examples of such compensation is helping poor countries reduce their emissions, giving to green climate funds, and giving to charities directed at climate refugees. Such *surrogate compensation*, however, still does not guarantee that it is the correct victims that receive their compensation, or how much they are owed. Furthermore, as a second-best option, to be preferred to no compensation, it appears that offsetting the effects of one's emissions and—as we shall see—thus refraining from doing harm in the first place, is preferable to surrogate compensation (Broome 2012: 80). We shall return to the topic of offsetting in Section 3.

there is an element of shared recognition of a wrong—at least arguably, a significance to being offered compensation over and above its practical impact—which does not apply here" (Cripps 2013: 107). Consequently, it seems problematic to try to compensate a polar bear for melting habitable ice sheets if it does not perceive the wrong, or the compensation as such. In conclusion, then, since compensation is too difficult to implement for particular harms in the climate context, there are no duties on the hands of supply chain agents to compensate for the harm that they have wrongly caused.

In summary, due to the difficulty of identifying the victims of climate change, and of assessing the magnitude of the harm done, there are no compensatory duties incurred for the harm of emissions. In the following sections, we shall look closer at individuals' duties not to do harm. If it can be shown that individual agents of a supply chain cause harmful emissions, and have the necessary control to refrain from doing so, then they bear duties to reduce their emissions. We shall start, in the next section, by looking at the harm done by supply chain agents' actions, and those agents' ability to refrain from performing them.

2. Doing Harm Along the Supply Chain

Recently, much literature in climate ethics has focused on the question of individual moral duties (see e.g. Johnson 2003; Sinnott-Armstrong 2005; Jamieson 2007).[97] A significant portion of this debate deals with obligations not to do harm through emissions (see e.g. Sandberg 2011; Hiller 2011b; Broome 2012). There has been a clear lack of focus in this discussion, however, of how the climatic duties of individual agents relate to their specific capacities as agents participating in global supply chains. This section will deal explicitly with this topic. In order to argue that there are duties not to cause harm on the hands of agents of supply chains, we will have to establish, first, how agents of a supply chain cause emissions, second, whether they thereby cause harm and, third, how they can reduce their emissions. In what follows, I shall look at these points in turn. If agents do cause harm through their emissions, then they are eligible to bear duties to reduce their emissions. As we shall see, though, making emissions reductions call for radical action, thus casting doubt on whether individuals can really eliminate all of their emissions.

97. Other examples include Almassi (2012), Attfield (2009), Aufrecht (2011), Raterman (2012), Baatz (2014), Banks (2013), Barry and Øverland (2015), Cripps (2013), Kyllönen (2016), Lawford-Smith (2016a), Maltais (2013), Nolt (2013ab), Sandler (2010), and Schwenkenbecher (2014). For an overview of this literature, see Fragnière (2016).

2.1 Agents of the Supply Chain Causing Emissions

The set of agents with which we are concerned are those who participate in the supply chain of a product or service, as understood in Chapter 1. These, then, include anyone contributing toward the supply or consumption of a product or service, and where the agent under normal circumstances either pays for it, or receives payment (or remuneration in kind) for their services. Typically, such an agent is either employed by a business, owns part of it, or purchases its products or services. The class of *Suppliers*, for example, contains individuals who are employed by firms who drill for oil, *Distributors* include the CEO who manages the company that uses the oil to manufacture plastic containers, and the *Consumer* can either be the customer who purchases the finished product, or the shareholder who owns stock in the plastic manufacturing company. Lastly, *Service Providers* include the individual truck driver who transports the containers from manufacturer to retailer, as well as the person managing the storage of these goods.

The emissions of these agents are all cases of joint causation. To repeat from Chapter 1, this means that the emissions are brought about by the agents insofar as there is stepwise causal dependence between each of their actions and of emissions occurring. That individuals' actions cause emissions by being parts of joint causes, however, does not diminish their causal efficacy; as long as the emission of GHGs causally depends on an action, it is a cause of the emissions, even though the emissions also depend on the presence of further actions. Additionally, this means that we do not have to make reference to collective agency in order to account for the fact that agents cause emissions together; everything is explained in terms of individual agents and their actions.

We can further recall that an emission-generating action can retain its causal efficacy even though it appears to be causally preempted. For examples of preemption, there are other consumers ready to purchase a piece of meat if another individual does not buy it, and there are additional providers of gasoline standing by if a particular retailer decides to stop selling it. Since these are all cases of *early* preemption, however, the stepwise dependence leading from the actions of the respective individuals to their emissions are not inhibited until the causal chain has run to completion. Such cases thus pose no problem to the claim of causal efficacy of individual emission-generating actions.

As we can see from the examples above, the emissions of individual agents are not limited to cases of personal consumption. Even though such examples have been the primary focus of discussion in the ethics of individual emissions, I think that it is a mistake to neglect the issue of how we give rise to emissions in our *professional* lives. This aspect is naturally brought to the fore when we consider *each* stage of the

supply chain of a product or service. Take, for instance, the businessperson who flies on their business trip instead of going by train, or the stockbroker who chooses to invest in fossil fuel-based energy companies. These individuals' emissions are no less relevant than those of individual consumers, for instance, even though the latter has received considerably more attention than the traveling businessperson and the stockbroker. A possible explanation for philosophers' failure to address such cases is that what we bring about in a professional context commonly is thought to be accounted for by the institution one operates within, such as a firm. It could thus be objected that assigning causal responsibility for emissions that result from individuals' actions in a corporate context misattributes GHGs that properly belong at the collective level.[98] As I mentioned above, however, I think that we can explain how agents of supply chains cause harm through emissions—and are obligated to refrain from doing so—without making reference to collective agents. Accordingly, I shall assume that the causal responsibility for GHG emissions resides with the individual, even though the emissions are brought about when the agent is employed by a company, or otherwise acts through an institution of some form.

To see why, consider that we have already seen that the emissions of individual consumers rely on a multitude of other agents' actions. In other words, these emissions are jointly caused. The question, then, is how this is any different from a salesperson of a company emitting GHGs by flying to a client. In both cases, an individual jointly causes emissions together with others. The same applies to individual truck drivers, store clerks, the stock broker mentioned above, and even to CEOs of multinational corporations. Their actions form parts of highly complex, joint causes of GHGs because the emissions causally depend on the whole set of actions. I will thus assume that individuals—regardless of whether they emit GHGs by themselves, or as part of the role they assume in a collective context (such as a company)—bear full causal responsibility for the results of their emission-generating actions. We do not need the notion of a collective agent to make that claim.

Before we turn to the issue of the harm caused by supply chain agents' emissions, let us first say something more about what focusing on the notion of supply chains brings to the way we consider the causation of emissions. A first thing to note is that by considering the supply chain as central to understanding the causation of emissions, we can see that a myriad of different types of actions together form parts of joint causes of emissions, from the doings of individual storage managers, to the actions of gas station clerks, to the decisions taken by high-ranking seniors of state-owned enterprises. By focusing on the emissions caused along the

98. An alternative way of phrasing this point is by saying that the CEO, the truckdriver and the stockbroker are not individual agents in the usual sense, but rather roles within a collective.

supply chain of a product or service, we are thereby looking for potential emission-generating actions where we might not otherwise have looked.

Furthermore, on a related note, most emissions are ultimately *jointly*—as opposed to singularly—caused in the supply chain of a product or service. If we were to turn our focus away from the notion of the supply chain, and just focus squarely on individual agents' actions as causes of emissions, it is arguably easier to miss this fact. In turn, this has important moral implications insofar as the fact that a great deal of emissions has joint causes informs us of the epistemic opacity of the situation. It is harder to find out whether a particular action is a cause of emissions if it occurs in a causally complex setting such as the supply chain of a product or service, rather than if it was a singular cause of emissions. We saw in Chapter 1 how the joint causation of emissions easily obscures whether a particular action actually contributes to emissions or not. Furthermore, an agent's place in the supply chain will affect their ability to find out whether their actions really are causes of emissions or not. It is arguably easier, for instance, to overlook the amount of emissions embedded in a product toward the downstream stages of the supply chain—such as the final stages of assembling the product, when most of the emissions related to the product already has occurred—than in the upstream stages—such as when the raw material for the product is being supplied. An individual who is participating in the later stages of a supply chain of a product or service can thereby be in an epistemically better position to ascertain whether their actions are emission-increasing actions or not. We shall further consider the relevance of an agent's place in the supply chain in the next subsection.

2.2 The Harm of Individuals' Emissions

So far, we have seen how individual agents along the supply chain of a product or service perform emission-generating actions, both in private and in their professional roles. However, in order for the emissions to be prohibited by NHP, they must also be harmful. Next, we shall consider some of the points to take into consideration when determining the harm caused by individuals' emissions. In Section 1, we noted that many actions are such that they are expected to cause harm. But not all of these actions are expected to be overall harmful. In fact, their positive effects might render the overall expected effects beneficial. So, in the context of climate change, let us see how we can differentiate the on balance harmless emission-generating actions of individuals—such as using a fire extinguisher, which emits CO_2—from the potentially harmful ones—such as taking a flight half-way around the globe.

We have several tools at our disposal to do this. Recall that I introduced an account of harm in the previous chapter—HCA—that includes a comparative element which means that an event that causes minor setbacks of interests but also brings about benefits of equal or greater weight (or prevents greater setbacks than those caused), is not overall harmful. So, although there is theoretically a potential harm attached to the emissions caused by using a fire extinguisher, this is reasonably outweighed by the harm prevented by putting out a dangerous fire. By contrast, unless some great harm is thereby prevented, flying from Perth to London will, on balance, cause a considerable amount of harm.

Furthermore, even though an action is harmful according to HCA, there is a second qualifier to the disvalue of harm of any emission-generating action. Above, I settled on a reading of NHP according to which there are duties not to do expected harm. To repeat from Section 1.2, the expected harm of an action is the negative effect of harm, minus any potential benefits, multiplied with the probability that the action in question will cause it. A calculation of the expected effect of an action thereby subtracts any positive effects from the harm caused by the action. This is why the expected harm of the emissions that result from driving an ambulance can be outweighed by the expected positive effects of doing so or, to take the example from Section 1 above, why the expected harm of a bicycle trip to the country side can be outweighed by the positive effects of doing so.

According to the Nolt–Hiller estimate that we looked at above, the expected harm of emitting 1 kg CO_2-e is equivalent to roughly 25 minutes of serious suffering. By using this figure, we can acquire an understanding of the magnitude of harm caused by different types of individual emission-generating actions. As already mentioned, going for a 40 km drive causes an expected harm equivalent to 15 hours and 36 minutes of suffering. The expected harm of actions that give rise to lower quantities of GHGs—such as buying a ham sandwich—is substantially lower than this, while the actions of powerful individuals, like CEOs of energy companies, are considerably more harmful. Actions like going for a drive, or the decisions made by a corporate executive, then, are arguably expected to have significant harmful effects, which make them candidates for being impermissible according to my preferred interpretation of NHP as a principle about expected harm.

The expected harm that we assign to particular emission-generating actions can also explain the stronger reason against making seemingly larger causal contributions to joint harm. I argued, in Chapter 1, that causation is an egalitarian notion and that we cannot account for degrees of causation. This means that an action which is part of a joint cause of emissions cannot be *more* of a cause of

emissions than another part of that joint cause. One might now ask whether this means that all agents of a supply chain who are parts of joint causes of emissions are equally obligated to refrain from doing harm through emissions, since they are equally causally responsible for those emissions.

I do not think so. With the help of the notion of expected harm, there is a way of explaining how there might be more reason for an agent to refrain from acting so as to make seemingly larger contributions to emissions. An agent of a supply chain who performs a certain action rather than another action will thereby affect the probability of their action becoming part of a joint cause of emissions. If an agent consumes a ten times larger quantity of meat than they otherwise would, for example, then it appears that the likelihood of that purchase forming part of a joint cause of emissions is greater than if they would not have. Acting in such a way that is more likely to be causally efficacious with regard to emissions thus increases the probability of harm coming about, and the expected harm of that action is therefore greater. Thus, we do not have to establish that the action in question will cause greater harm than another in order for the expected harm of the action to be comparatively greater and for an agent to have comparatively stronger reason to refrain from performing that action. So, while a particular agent's causal share in the joint harm brought about by emissions does not count as more of a cause of that harm than other parts, there might still be more reason for the agent to refrain from making that contribution.

Furthermore, depending on their position in the supply chain, the extent to which agents' actions are expected to do harm will differ. For example, due to different industries emitting different amounts of emissions, agents who are part of an emission-heavy stage of the supply chain will have stronger duties to refrain from doing harm through emissions than those who are part of less emission-heavy stages of that supply chain. As we mentioned earlier in the thesis, producing electricity results in more emissions than those burned for transportation, which, in turn, produces more GHGs than due to agriculture. Thus, the stages of a supply chain which are engaged in the production of electricity, perhaps by supplying it for consumption by downstream stages, might be expected to cause more harm than other stages, which also determines the participating agents' moral reasons for omitting to emit.

Furthermore, it bears repeating from the first chapter that some of the actions of agents which are the closest downstream to emissions have a so-called trumping status. This is because joint causes of harm sometimes are extended over time. An action that is temporally subsequent to all the other necessary parts of a joint cause of emissions can thus be the one that determines whether the harm comes about or not. The closer downstream to the source of emissions that an agent performs their

actions, the more probable is it that those actions cause harm. The expected harm of performing these actions is thus higher. The stringency of agents' duties not to do harm through emissions are thereby influenced by their place within the supply chain.

We can now establish that since individuals along supply chains act so as to emit in a way which is on balance harmful, they will have to reduce emissions in order to avoid doing harm. It should also be noted that considering emitters as agents participating in supply chains illuminates facts about the ethics of emissions which have so far been neglected. To take one example, the agents' position within the supply chain of a product or service has an effect on their duties not to do harm, since the expected harm of their actions differ with the type of activity they engage in as part of their respective stage of the supply chain.

2.3 Refraining from Emitting

Thus far, this section has showed that individuals of supply chains perform emission-generating actions and that some of these have a significant expectation of harm. Before we can say that individuals who cause harmful emissions bear obligations to reduce them, however, it must also be shown that they have the necessary control to do so. This is the third and final issue of this section. So, what does it mean for agents participating in the supply chain of a product or service to refrain from doing harm through emissions? Individual *Suppliers*, like those in charge of operations at manufacturing companies, can reduce emissions either by trying to use their influence to steer the firm in a more sustainable way, or by ceasing to provide their services to them. *Distributors*, including individual retailers, can curb emissions by refraining from selling emission-intensive products or services, and *Consumers* by not purchasing them. *Service Providers*, such as truck drivers, can either reduce emissions by offering their services to sustainable employers, like a firm that uses renewable fuels for their trucks, or if this is not possible, by not providing them at all.

We can note here that the location of the agents within the supply chain once again becomes relevant in that it affects the agents' ability to refrain from doing harm. We saw above how an agent's place in the supply chain of a product or service impacts their conditions for finding out whether their actions constitute parts of joint causes of emissions or not. In turn, this has implications for supply chain agents' ability to reliably refrain from doing harm through emissions; if they do not know when they are causing harmful emissions, then they cannot be sure which actions to cease performing in order to avoid emitting. It might be easier, for instance, for an

end-consumer to ascertain whether their purchase of a meat product is expected to do harm, when the manufacturing process for that product is completed, than it is for an agent involved in the complex supply stages of the product to do the same thing. One of the farmers of the animals slaughtered for the product reasonably has less of an overview of the emissions that will result from downstream stages than the individual who buys the finished meat product in the store. Therefore, the latter agent might have less trouble identifying which of their actions to refrain from performing when trying to reduce emissions.

It is important here to highlight just how hard it can be for these agents to make cuts in emissions.[99] Even purchasing allegedly sustainable products or services could indirectly facilitate the emission of GHGs. For instance, a restaurant might serve vegan—and thus comparatively low-emission—dishes but use the profits thereof to purchase meat for other dishes. Thus, one's ostensibly low-emission action might form a part of a joint cause of a considerable amount of emissions after all.[100] Omitting to perform emission-generating actions can thus amount to radically changing one's lifestyle, and possibly even one's career.[101] These are sometimes impossible tasks. If reducing emissions thus lies outside of an individual's control, then the agent cannot bear an obligation to do so. Due to the difficulty of reducing emissions, we shall therefore look at an additional means of refraining from doing harm in the next section.

In summary, this section has looked at the emission-generating actions of agents of supply chains and the harm they result in. These emissions come about both as a result of individuals' actions in their private lives, and through the roles individuals assume professionally in institutions of various sorts. Some of these actions carry with them expectations of significant amounts of harm, which make them candidates for being impermissible according to NHP. If agents of the supply chain of a product or service can refrain from acting in such ways, they thus bear duties not to perform those actions. Finally, however, it has been noted that reducing all of an individual's emissions might call for a radical change in the agent's lifestyle. It remains to be seen, then, whether such changes are feasible.

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99. We shall return to this in Chapter 4, when we consider whether discharging duties not to do harm through emissions is overdemanding.

100. In fact, businesses offering sustainable options might in some cases be the reason why they can continue making a profit out of non-sustainable goods.

101. Moral duties that concern one's choice of career have also been considered by the effective altruism movement. See, for instance, Singer (2015) and MacAskill (2015).

3. Offsetting Harm

In the previous section, we saw that while individuals can cause harm through emissions, they are not thereby guaranteed to be able to reduce their emissions. If this is the case, individuals might not be able to fulfill their duties to avoid doing harm through emissions. This has led some climate ethicists to advocate GHG offsetting as a means of neutralizing the climatic impact of one's actions and, in extension, of refraining from doing harm (Broome 2012, 2016; Cullity 2015; Moss 2017). In this section, I will defend this idea. I will begin by saying something about how offsetting works more generally and then show how this can be used as a means of refraining from doing harm. After that, I will consider a number of objections to this claim.

3.1 The Practice of Offsetting

To offset GHGs is roughly to pay the cost for someone else to make a reduction in emissions. One can either do this by removing GHGs from the atmosphere—for example by planting trees—or through so-called *preventative* offsetting, which involves investing money in a project—such as renewable energy—that yields fewer net emissions than without the project.[102] For either type of offsetting, the thought is that it subtracts the same amount of GHG from the atmosphere as one adds to it. Say that an agent emits 10 kg of CO_2 but that the agent then pays a carbon offsetting provider to make a 10 kg reduction in CO_2. The emissions are thereby offset. Admittedly, it can be difficult to calculate how much emissions an agent has caused over a given time period, and how much the agent thereby needs to offset. There are, however, reliable sources to consult—such as the World Bank's data on national per capita emissions (World Bank Open Data 2019)—which will give individuals an approximation of their annual GHG emissions.[103]

What is most important for our purposes is that the equivalent amount of harm that is caused by an agent's emissions is prevented by the act of offsetting. The agent thus first causes harm to come about, but then prevents an additional amount of harm from coming about. In effect, the expected harm of the agent's actions therefore equals zero. The reason why this is possible in the case of climatic harm—

102. I shall limit myself to so-called *voluntary* offsets, that are purchased freely, typically by individuals or organizations, without external coercion. This is to be contrasted with *compliance* offsets, which are bought and sold as part of schemes, such as the Clean Development Mechanism (CDM) of the Kyoto Protocol. CDM was designed to help the negotiating parties of the Kyoto Protocol to meet their reductions targets with increased flexibility. For discussion, see Hyams and Fawcett (2013: 92–3).

103. We shall return to the issue of whether an agent's ignorance of their emissions might give them an excuse not to reduce or offset in Chapter 4.

but not in other cases of causing harm—is the dispersion of cause and effect that underlies the climate system. Recall from the previous chapter that emissions from all over the world mix in the atmosphere and have an effect on the global temperature together. The expected harm of an agent's emissions is thus a function of the effects those emissions have on increases in average temperature. In turn, this means that the expected effect of an agent's aggregative climate-related actions is the net sum of that agent's emissions. Due to my reading of NHP as a principle about expected, and not actual harm, as well as the dispersion of cause and effect, offsetting can thus be considered as a means of omitting to do harm through emissions.[104]

If this reasoning is correct, and offsetting is a viable means for agents along supply chains to avoid causing harm, this would greatly increase their chances of being able to discharge their duties not to do harm through emissions. This is because of the (current) low costs of most offsets. In a 2017 survey of the voluntary offset market, Hamrick and Gallant found that "Prices ranged from less than $\$0.50/tCO_2e$ to more than $\$50/tCO_2e$", with an average price from all transactions at $3 (Hamrick & Gallant 2017: 3).[105] Given that the annual per capita CO_2 emissions in the UK amounts to 6.5 tons, and 16.5 in the US, this would mean that the total annual cost of offsetting an individual's emissions would be around $20 for someone in the UK, and $50 for someone in the US (World Bank Open Data 2019).[106] This would therefore make offsetting a comparatively easy path to refrain from causing harm.

Before we turn to objections to offsetting as a means of refraining from doing harm through emissions, I shall briefly say something about the practice of offsetting for individuals, given their place in the supply chain. We have seen that if an agent participating in the supply chain of a product or service emits GHGs, then they can be obligated to offset those emissions. It is not obvious, however, how obligations to offset are to be apportioned among individual agents who are jointly causally responsible for harmful emissions, as well as located at different stages along the supply chain. First, I argue that agents ought to offset the amount of emissions which corresponds to the amount of harm that they are expected to cause through

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104. One seeming problem here is that the harm caused by emissions might not affect the same set of victims that would have been affected by the harm prevented by the offset. Say that you emit 1 ton of CO_2 which causes a slight setback of interests for someone, and that you then buy offsets, thereby eventually preventing an additional ton of CO_2 to be emitted. It is quite possible that the victim of the harm caused by the first ton is different from the subject who would have been harmed if the emission of the second ton of CO_2 had not been prevented (Cripps 2016b: 118–9). This, however, does not change the fact that the expected harm of emitting and then offsetting equals zero. The expected harm of an emission-generating action is insensitive to the identity of the potential victims for whom harm is prevented.

105. All amounts are expressed in United States dollars, unless otherwise noted.

106. Note, however, that per capita emissions are most likely an underestimate of the total amount of GHGs for which individuals are causally responsible on my analysis.

emissions. So, if an individual is expected to bring about a fifth of the total harm jointly caused by five agents, then that agent ought to offset a fifth of the total amount of emissions caused by those same agents. While this might be hard to translate into practical recommendations in some instances, where there is a complex causal process leading from a large set of individual actions to the emission of GHGs, I mentioned above that there are approximates to consult. Individuals can estimate their emissions as well as the expected harm thereof and purchase offsets accordingly. When in doubt, agents should err on the side of caution and offset more than their estimates of the expected harm done through emissions. Since offsets are cheap, this does not result in any additional noteworthy burden for the individuals in question.

Second, it should be stressed that the unique location of individuals along the supply chain can influence the agents' obligations to offset. For instance, different agents will have different options open to them of offsetting, depending on the type of activity with which they are engaged. Individuals who purchase emission-heavy goods or services—who are paradigmatically *Consumers*—have the rather straightforward option of calculating their individual emissions and purchasing GHG offsets from the voluntary offsetting market. This is not as easy when it comes to individuals who cause emissions in the context of an institution, or in a collective setting, which is more common for *Suppliers*, *Distributors* and *Service Providers*. In this latter case, it can be become difficult to establish a reliable estimate of the emissions or the expected harm brought about by a given individual. Consequently, some agents face serious difficulties in purchasing the correct type of offsets for their emissions, and it can thus be problematic for them to reliably discharge their duties. In turn, this often makes it easier for agents who are active at certain stages, such as the consumption stage, to discharge their duties to offset emissions than at other stages, where the causal process of emitting GHGs is less opaque.

3.2 Objections to Offsetting

The practice of offsetting has been charged with a number of objections.[107] For the remainder of this section, I shall consider those objections that I take to be relevant to the notion of using offsets as a means of discharging duties not to do harm.[108]

107. For an overview of the ethics of GHG offsetting, see Hyams and Fawcett (2013). See also Page (2013).

108. A family of objections, which I will not consider, deals with the thought that certain things should not be for sale (Satz 2010; Sandel 2012). This argument says that there is something about the commodification of these goods—in the climate case, the atmosphere's ability to absorb GHGs—that is inherently wrong (Goodin 1994: 578–81; Sandel 2005: 93–5; Caney 2010b: 203; Page 2011a: 270; Aldred 2012: 345–50). The reasons for why this is purportedly wrong differ, but include the thought that the atmosphere's absorptive capacity is no one's to sell (Caney 2010b: 203–5), that the commodification of the atmosphere fails to appreciate the correct

First, one objection says that offsetting cannot be a legitimate means of discharging duties not to do harm because if everyone were to offset, then prices would increase to the point where very few could afford them. The reason why offsets currently are so inexpensive is because so few are buying them. As demand increases, however, the prices will also increase (Broome 2012: 92–3; Spiekermann 2014: 917). Consequently, prices of offsets are eventually going to rise to a level where it is too expensive for some to afford them. But this cannot be a reason for rejecting offsets as a means of avoiding doing harm in itself. At present prices, individuals of a supply chain can refrain from doing harm through emissions by purchasing offsets at a low cost.[109]

A second argument says that GHG offsetting cannot be a means to refrain from doing harm, since it is too unreliable (Broome 2012: 87–9; Cripps 2016b: 117).[110] Preventative offsetting, for instance, relies on complex predictions about what would happen relative to a counterfactual baseline without the offsets. It could thus be argued that it is too difficult for the emitter to calculate whether a given project really yields the reductions promised by the offsetting provider. Offsetting (so the argument goes) is therefore a flawed practice. This, however, is not an objection to refraining from doing harm by means of offsetting *per se*. While there are no guarantees in relying on others to make reductions in emissions, there are no doubt still reliable providers of offsets on the market.[111] It might, however, be worth noting that offsetting schemes always include some element of uncertainty, and that the expected harm of reducing emissions consequently is lower than of emitting and then offsetting.

A third objection is that offsetting, by making it easier for agents to continue emitting, delays serious reduction efforts (Goodin 1994: 581–3; Broome 2012: 90; Aldred 2012: 354). In order for this to be a relevant objection to offsetting as a means of not doing harm, however, there must somehow be an opposition between offsetting and refraining from doing harm. It might be true that some agents, by purchasing offsets, defer from using other means of reducing emissions which, in the long-run, would have proven to be more effective, thus potentially bringing about

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value of the natural world (Caney & Hepburn 2011: 220; Page 2011b: 59), and that commodification is conducive to an increase in GHG emissions (Page 2011a: 273, 2011b: 49).

109. We shall return to whether the increase in prices of offsets might result in the duties of agents of the supply chain being overdemanding in Section 4 of Chapter 4.

110. Note that it is possible to offset emissions in ways that cause harm. Examples include reducing or preventing emissions by funding projects such as hydraulic fracturing, nuclear energy, and geoengineering (Caney 2016a: 29–30). If the offsetting is to count as a way of refraining from doing harm, then the expected harm of such projects cannot outweigh the harm that is being offset from emissions.

111. The hesitant consumer might want to consult organizations, such as the Gold Standard Foundation, that take it upon themselves to provide certificates of quality assurance to offsetting providers.

more emissions than if they would not have bought offsets.[112] This, however, does not strike me as inevitable. Even though offsets might tend to make individuals less prone to cut down on flying, rather than to fly and then offset, it is still a useful tool to reduce net emissions. That some agents will use offsets as an excuse for business as usual is not an argument against its usefulness as a means of avoiding doing harm.

A fourth objection is that offsetting cannot count as a way of refraining from causing harm that has already been brought about (Broome 2012: 89). The thought is that once we emit a certain amount of GHG, the effects thereof cannot be undone by further preventions of, or reductions in, emissions. However, while it is true that the same molecules of GHG that are being added to the atmosphere will not be removed by offsetting, the expected harm of one's actions is still, on balance, zero. Emissions and offsets each have an effect through their impacts on the global concentration of GHGs. The effect on the atmospheric concentration of GHGs by first emitting and then preventing a corresponding amount of emissions thus equals zero (Broome 2012, 2016). If the expected harm of an agent's emission-generating action and the same agent's act of offsetting taken together equals zero, then it seems that the agent has effectively refrained from doing harm.[113]

A fifth objection is that an agent cannot refrain from doing harm by offsetting because it naturally involves having *someone else* do it.[114] The line of reasoning here is that since another agent makes the appropriate reductions in emissions, one thereby fails to discharge one's own duty not to do harm. I think this inference is mistaken, though. We always rely on certain necessary causal conditions for our actions to have any impact.[115] The fact that someone else makes the actual reduction while you merely pay them does not matter. This is no different from you increasing the demand on the products you purchase, thereby causing emissions, even though the emissions come about in the manufacturing process. An agent thus jointly causes emissions as part of a supply chain, then jointly prevent emissions as part of an offsetting scheme.

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112. There is an additional claim about social pathway dependence here. According to this thought, offsetting could be a way of locking ourselves in unsustainable modes of energy supply, for example, when we should really be reforming this industry for the long-term. If supply chain agents offset rather than reduce their emissions, it is thus possible that they contribute to the dependence on emission-heavy means of energy production. But this topic is unfortunately too big to properly address here. I simply cannot assess the long-term effects of particular supply chain agents offsetting rather than reducing emissions on long-term reductions in emissions.

113. For a related response, see Hyams (2009: 243).

114. For related arguments, see Sandel (2005), Caney (2010b: 208), and Caney and Hepburn (2011: 214–6).

115. See also the discussion in Chapter 1, Section 3.2.

A related and final objection has been put forward by Keith Hyams and Tina Fawcett (2013). They hold that the position under scrutiny has counterintuitive implications regarding authorship of offsets and emissions:

> It seems unacceptable, for example, to claim that you fulfilled your duty not to harm someone by driving into her on the ground that, although you did in fact drive into her, you also caused a different car not to drive into her and so caused no net increase in the number of cars driving into her. (Ibid: 95)

This and the climate case are not analogous, though. In the climate case, offsetting is paradigmatically such that an agent performs an action which has a certain probability of causing harm, as well as a second action which prevents additional harm from coming about. Since the effects of these actions are filtered through their respective influence on the global concentration of GHGs, it makes sense to treat the moral worth of the two actions as the sum of the net expected climatic effects of each. The driving case, by contrast, is such that an agent performs an action—hitting a person with a car—which causes harm, and there is an additional, albeit preempted, action of another driver. Here, there is no causal structure that corresponds to the one in the climate case, which warrants us to aggregate the expected harm of the two separate actions. The seeming benefit of the second driver's action being prevented cannot thus outweigh the harm caused by the first.

In summary, I have shown that if we use my preferred interpretation of NHP as a principle about expected harm, offsets can function as a way of neutralizing one's net emissions and that offsetting thereby counts as a means of avoiding expected causing harm. This massively reduces the effort of individual agents to discharge their duties not to do harm through emissions. Provided that the agent can afford the (currently) low costs of buying offsets (at an average rate of \$3/tCO_2-e being offset), offsetting can thereby provide a means to refrain from doing harm through emissions, even when the individual is unable to reduce their own emissions. At least for some, namely those who move first, this does away with the worry—raised in the previous section—of individuals lacking the necessary control to discharge their duties not to do harm through emissions. Each individual agent who can offset their emissions thus incurs a duty to do so. In the next section, we shall extend the thought of preventative offsetting and introduce an additional type of duty.

4. INDIRECT DUTIES

So far, we have seen that while individuals might not be able to reduce all of their emissions, they are at present generally able to offset them. There is, in fact, a further implication to be drawn from this. Elizabeth Cripps (2016b) has noted that other types of action than those considered in the previous section can have the same effect as purchasing offsets. Influencing others to reduce their emissions and funding green technology are two examples. This section argues for individual agents' ability to utilize our influence over others as an indirect way of refraining from doing harm.[116] I believe that the conclusions to be drawn from this has significant implications for how we view omissions, refraining from doing harm, and negative duties in general.

In the previous section, we saw that after one has emitted a certain amount of GHGs, the expected effects thereof can be offset by preventing further emissions from occurring. If we accept preventative offsetting as a means of refraining from causing harm, this implies that a whole range of actions that we normally would not perceive as ways of avoiding doing harm would also have to count as such. Examples of actions of this type include promoting action on climate change mitigation, influencing other agents directly, as well as influencing policy-makers (Ibid). Each of these measures can lead to reduced emissions through the actions of other agents, thus decreasing the overall expected harm of one's climate-related actions.

Let us call these ways of offsetting the effects of emissions *offsetting by promotion* (Ibid: 117). Like with other types of offsetting, an action qualifies as offsetting by promotion if the effects of that action count toward the expected harm of one's emissions being prevented. What sets offsetting by promotion apart is that it involves ways of undoing harm by other means than conventional offsetting schemes. My proposal is that individual agents of the supply chain can use offsetting by promotion as a way of discharging their duties not to do harm through emissions, just like they can do so by using preventative offsetting. Let us call duties that can be discharged in such ways *indirect duties* to do no harm. In the climate ethics literature, there are several advocates for indirect duties (see e.g. Johnson 2003: 283–4; Sinnott-Armstrong 2005: 304; Nihlén Fahlquist 2009: 121; Cripps 2013: 142–4).[117] In contrast to my proposal, however, these philosophers have not proposed indirect

116. It might be worth noting here that while we put the issue of influencing others aside when we considered emission-generating actions performed along a supply chain in Chapter 1, the present discussion is not about influencing others to emit, but of avoiding doing harm. So, it is important to hold separate the idea of influencing others as a means of refraining from doing harm through emissions on the one hand, and of influencing others to emit, on the other.

117. For general discussion of the moral relevance of indirect effects of an agent's actions, see Norcross (2004: 233) and Lawford-Smith (2015b).

duties as a way of discharging negative duties of avoiding doing harm. In what follows, I shall limit myself to one way of discharging these. In particular, I will consider a way of discharging indirect duties not to do harm by influencing other moral agents of the supply chain to reduce their emissions.

Influencing other agents to reduce their emissions is a theme that has been touched on by several philosophers (see e.g. Lichtenberg 2010: 567; Sandler 2010: 169; Broome 2012: 83; Fragnière 2016: 807–8; Shockley 2017). The thought is that by refraining from performing emission-generating actions, such as flying or driving, we might inspire others to do the same, thus offsetting the harm of our own emissions. If an agent, for instance, flies 10 times a year from London to Bristol, but is influential enough to persuade 10 others from not flying the same route, then the emissions of the flights are thereby offset by promotion. It should be mentioned here that the reduction or prevention of emissions carried out by an agent, through the promotion of other agents, is still attributable to the former agent. An agent therefore retains full control for their reductions in emissions, but since it was promoted by another agent, it also counts as an offset of the other.

In order to better understand the influence of supply chain agents' actions on other, we may first ask who the concerned agents to be influenced are. This set of agents includes both other individual agents of the supply chain that might be informally influenced like family, friends, acquaintances, and colleagues, but also a subset of more institutional actors, like politicians, technology funds, and environmental organizations. Any agent that is capable of preventing or reducing emissions as a consequence of an individual agent's actions is relevant.

A second question concerns what sort of actions fulfill indirect duties not to do harm through emissions. The short answer is: anything that brings about a prevention of, or reduction in others' emissions.[118] We have already mentioned informal ways of influencing others, such as to lead by example. Further examples of influence include engaging in political protest against fossil fuels, creating public opinion through discussion, and other political means. It should be noted that it arguably is easier to affect others when the actions of the agent are perceived as forming part of a general behavior, such as a lifelong decision not to eat meat, and not just an order of a meat-free meal at a restaurant at a single occasion. But there are also ways of influencing others to prevent or reduce emissions in more structured ways. We have already given examples of this in the cases of funding green technology, influencing policy-makers, and engaging with environmental

118. Some firms—such as the Swedish fast food corporation MAX Burgers—promote themselves as being *carbon positive*, meaning that they offset more than the equivalent of the emissions that they produce, so that purchasing their goods or services in fact contributes to a reduction or prevention of emissions (Max Burgers 2019). Buying the products or services of such firms could, in theory, count as a way of offsetting by promotion.

organizations. Each of these has the potential to prevent or reduce emissions of others.

Next, let us say something about the efficacy of discharging indirect duties by influencing others. In the previous section, we noted that there is an element of uncertainty connected to the practice of offsetting. This is true of offsetting by promotion as well (Cripps 2016b: 116–8). In fact, some of the ways of offsetting in this manner might be less certain to produce reductions than preventative offsetting. Funding green technology, for instance, relies on long-term investments which cannot be said to actually yield the intended reductions until many years later. So, while other actions than offsets might yield the intended reductions in emissions, they are typically less certain and so the prospects of discharging one's duty not to do harm by these alternative courses of action are lower.

More generally, the effects that individuals' actions have on the emissions of others are incredibly hard to foresee. We can make decent assumptions about the effects that our actions have with regard to flying and driving, but it is a lot harder to make reliable estimates of their influence on others.[119] While it might be that celebrities, like climate activist Greta Thunberg, have a communicative effect through their actions, it is less certain that you and I do (Sandler 2010; Johnson 2011).[120] There are several variables at play here. First, there is the issue of how many people are influenced. For those in our direct surroundings, such as friends, colleagues and family members, it appears quite likely that they will notice our reluctance to drive or fly—at least insofar as these actions are described as general behaviors. But for particular actions, like the single meat-free meal mentioned above, they might not have the same effects. It is noteworthy that agents placed in certain locations along the supply chain have greater ability to influence others' emissions than agents at other places along the supply chain. It might be easier, for example, for agents active within institutional settings to influence the manner in which others carry out their business, in such a way that it has an effect on emissions. To take an example, a greater share of *Suppliers* of products and services are probably emitting in a professional setting than individual *Consumers* of goods and services. The actions of a *Supplier* might thereby be picked up upon by a larger set of other potential emitters, such as that agent's colleagues, in a way which has the potential to influence their emissions. The ability of individuals to influence others is thus partly determined by their place in the supply chain.

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119. Some of our influence on others might in fact have the opposite effect of the one intended (Budolfson 2015: 89).

120. For an argument about the influence that celebrities and other public figures have to promote the compliance of other agents' duties, see Caney (2014: 140). I develop Caney's proposal in a different version in Chapter 7.

A second important variable is that even though others will take notice of our actions, there is a further question as to whether they will actually change their behavior as a result of this. The answer to this depends partly on how many people actually take notice of our doings, partly on whether they are responsive enough to let this guide their own behavior. Due to her fame, Thunberg has the opportunity to influence a great deal of people. Individuals who have a more public profile might thus have stronger reason to influence others (Nefsky 2018: 271).[121] However, whether a person is actually influenced by you appears to be determined in part on whether they identify with you. As an example, we can usually only expect influence within our political or social groups. For an influencee who does not identify with Thunberg, then, it is not obvious that her actions will have any positive effect.

So, influencing others appears to be a less reliable approach to discharging one's duties to avoid doing harm than standard ways of offsetting emissions. This is due to several factors, such as the uncertainty surrounding long-term effects, the uncertainty of reaching a sufficient number of potential people, as well as the uncertainty of actually getting through to our influencees and of our actions thus having a potent communicative effect.

To summarize this section, I have considered additional ways for individuals of refraining from doing harm, in the form of offsetting by promotion and thus discharging indirect duties. In particular, I considered this in the form of influencing others. While we considered this as a way of discharging negative duties—which are concerned with omissions—the means of offsetting in this manner points the way to a type of activity usually associated with positive duties. I believe this is a potentially important finding, which sheds new light on the scope of negative duties. In particular, actively acting to influence others have not previously been thought of as a hallmark of the pursuit of avoiding doing harm. The task of influencing others is uncertain in several respects. Compared with the other ways of discharging duties not to do harm, this means that ranked from having the most certain outcomes, to having the least certain outcomes, not emitting is the most reliable option, followed by offsetting by standard means, and lastly, influencing others not to emit.

121. Arguably, such a duty is less likely to arise for Thunberg herself as she seemingly lives a very low-emissions lifestyle. Consequently, she would not need to offset her emissions by promotion to any greater extent. The purpose of the example was mainly to show how someone can lead by example.

5. Concluding Remarks

In previous chapters, we saw how GHG emissions come about through joint causation across the supply chain and that they cause harmful impacts. The current chapter looked at how these emissions relate to the actions of agents of the supply chain, and what this implies in terms of their duties. I started out by introducing the No Harm Principle (NHP), which is a principle of justice according to which agents have moral obligations not to cause unjust harm to others. After considering two different interpretations of the principle, I settled on a version according to which moral agents have duties not to cause events which are expected to do harm. I also established that the harm caused by emissions is unjust. Then, I considered the harm caused by individuals along the supply chain and concluded that they cause harmful emissions both in private and in their professional lives. The expected harm of typical individual emission-generating actions—such as driving and buying flight tickets—could very well amount to the equivalent of significant amounts of serious suffering. Since there is a duty not to act so as to cause harm (via NHP), I thus established that these individuals hold duties not to do harm through their emissions.

We have also seen that there are different ways of discharging these duties. First, there is the possibility of reducing one's own emissions. However, due to the costs of doing so, it was concluded that few agents would thus be able to fulfill their duties not to do harm. Second, there is also the option of offsetting one's emissions by paying for a reduction or prevention of further GHG emissions. Generally, these are very inexpensive at present and should be affordable to most who cause harm through emissions in the first place. Third, in addition to bearing these *direct* duties not to do harm, there is also the possibility of discharging duties not to do harm *indirectly* by acting so as to facilitate someone else's reductions in emissions by influencing them.

All in all, this means that for those individual agents of the supply chains that have the ability to either reduce or to offset their emissions, or to influence others to make reductions, they have a duty to do so. Ranked from having the most certain outcomes to having the least certain outcomes, among the different means of discharging duties to avoid doing harm through emissions, not emitting is the most reliable option, followed by offsetting by standard means, and lastly, influencing others not to emit.

A common theme throughout the chapter has also been the unique focus of agents causing harm through emissions as participants of the supply chain of a product or service. We have seen how, among other things, their place in the supply chain affects the manner in which they cause harmful emissions and, in turn, how this affects their duties to reduce or offset emissions. One instance of this is that it

might be easier for agents toward the downstream end of the supply chain of a product or service to know that they cause emissions and, in turn, for them to be able to reduce them. Another example is that an agent's location along the supply chain can impact their ability to influence others, such as when *Suppliers*, who are often engaged in emissions in more institutional settings than *Consumers*, is given a more advantageous position to influence others than their consumer counterparts.

In the next chapter, we shall consider two additional topics of the ethics of emissions, that have to do, first, with how duties not to do harm through emissions relate to other types of duty and, second, blameworthiness for emissions.

Chapter 4
The Moral Status of Emissions

The previous chapter introduced duties not to do harm through emissions. There, I defended the claim that those moral agents of the supply chain who can reduce or offset their emissions have a duty to do so, because there is a morally non-negligible expectation of harm of emitting GHGs. There might, however, be cases where there are stronger and conflicting duties, as well as cases where agents seem morally excused from violating their duties to reduce or offset emissions. These further moral issues of emissions are the topics of this chapter. The chapter is thereby split between two separate themes. The first has to do with doing harm through emissions in relation to other obligations, while the other has to do with whether agents of the supply chain are blameworthy for the expected harm they do through emissions.

In the chapter, I shall first consider supply chain agents' other duties and see whether these conflict with their duties not to do harm through emissions. As we shall find out, due to the relative strength of duties not to do harm in comparison with other duties, duties not to do harm are rarely overridden due to conflicting duties. In the second topic of the chapter, I shall consider two grounds for agents of the supply chain to be excused from being morally blameworthy for causing expected climatic harm. The first ground for excuse is that agents may suffer from a deficit of knowledge, the second is that the duty in question can be overdemanding. I shall argue that while there are instances of agents being excused from blameworthiness in each way, these are notably rare. Of the two grounds for excuse, the non-culpable ignorance of certain propositions regarding climate change has the greatest potential to excuse supply chain agents. Due to the (currently) low costs of offsetting emissions, agents are generally not excused from blame due to demandingness complaints.

The chapter is structured as follows. Sections 1 and 2 consider the topic of conflicting duties. Specifically, Section 1 looks at two types of duty that might conflict with duties not to do harm through emissions, while Section 2 considers duties to refrain from doing harm by other means than by reducing or offsetting emissions.

Then, Section 3 looks at the first ground for excuse for blameworthiness, in the form of ignorance about climate change. Next, Section 4 considers the second ground for excuse and the topic of overdemandingness. Section 5 concludes the chapter.

1. Conflicting Duties

Agents who bear duties to reduce or offset emissions due to their expected harm are naturally also eligible to bear duties that can conflict with, and potentially override, these. The topic of this and the next section is such conflicting duties, including duties not to do harm in other ways than by emissions.[122] I will look at agents' duties not to do harm through other means than by reducing emissions separately in Section 2. In the current section, I will consider other obligations than those of avoiding doing harm and see whether they can override supply chain agents' duties not to do harm through emissions. We shall look at two types of such duties: *duties of beneficence* and *contractual obligations*. I will argue that neither of these types of duty can override supply chain agents' duties of avoiding doing harm through emissions.

Let us first look at duties of beneficence. These are duties to do good (see e.g. Beauchamp 2019).[123] In contrast, duties not to do harm are duties of justice. Duties of beneficence prescribe actions such as helping people in need, giving to charity, and other courses of actions which add positive value to the world. Sometimes, duties of beneficence and duties to do no harm will conflict. To take a simple example, we arguably do more good by killing one person in order to save two others, than by refusing to kill the one and letting the others die.[124] The former course of action is *ceteris paribus* obligatory according to a duty to do good, but impermissible according to a duty not to do harm. In this case, there is therefore a conflict between duties of goodness and duties of justice, and so there cannot in the end be a duty to discharge both of them.

Conflicts of this kind can arise in the climate case as well, most notably because actions to reduce or offset emissions are suboptimal means of doing good

122. Comparing the strength of duties to refrain from doing harm through emissions to that of other duties is part of what Simon Caney calls an *integrationist* method of climate ethics (Caney 2012). According to this method, we should treat moral issues raised in the context of climate change as existing alongside moral issues in other areas, such as global poverty. By contrast, an *isolationist* method treats the issues of climate ethics in isolation from other evaluative questions. See also Lawford-Smith (2016b:133–4).

123. For discussion of the relation between duties of beneficence and other duties in the climate context, see Broome (2012: 50–3).

124. This naturally depends on what we mean by 'good'. For the sake of argument, I shall assume, in this case, that goodness consists of physical well-being.

(Lichtenberg 2010: 564–5; Broome 2012: 53; Hiller 2014: 30). Individuals, for instance, could use the money spent on offsetting and use it for effective charities instead, such as the Against Malaria Foundation.[125] Therefore, there is a conflict between duties of beneficence and duties not to do harm. This line of reasoning applies to direct as well as indirect duties—as long as there is a course of action open to do good which does not involve discharging a duty to avoid doing harm through emissions, there is the potential of conflicting duties. The question is which type of duty overrides the other.

There are two primary things to note here about duties of beneficence. First, it should be highlighted that duties to do good need not stand in direct opposition to duties not to do harm. There is only tension between the two kinds of duty if discharging the latter is a suboptimal means of fulfilling the former. As a matter of fact, by refraining from doing harm, we often indirectly do good by preventing further harm from coming about. In the climate context, this might very well be the case. Since our emissions threaten to cause harm for many generations, it could be that we in fact do more good by preventing future climate catastrophe than by giving to charity, at least in some cases.[126] For example, given that the expected harm of 1 kg of CO_2-e is equivalent to 25 minutes of suffering, and the estimated (current) price of offsets is around $3 per ton, then an agent can prevent the equivalent of roughly two and a half weeks of suffering for that same amount of money. It seems conceivable that agents who participate in the supply chain of a product or service sometimes face situations in which they cannot donate $3 to charity and thereby do more good than what is comparable to preventing 2.5 weeks of suffering. In such situations, then, it appears that there is no conflict between duties not to do harm through emissions and duties to do good.

The second thing to note is that in those cases where there is a real conflict between the two types of duties, justice generally takes precedence over goodness. I mentioned in Chapter 3 that duties not to do harm and the corresponding rights not to be harmed have a special moral status. Specifically, I understood rights not to be harmed in terms of what Dworkin calls *trumps*. What this means is that concerns about doing unjust harm to others morally override—or trump—other concerns. Duties not to cause harm are therefore taken to be more stringent than other duties,

125. The Against Malaria Foundation is a charity organization set up to prevent the spreading of malaria by cost-effective means. It regularly tops lists of the most effective and transparent charity organizations (see GiveWell 2018).

126. For an argument to the contrary, see Broome (2012: 91), who argues that offsetting is a poor means to discharge duties of beneficence.

including positive duties to do good.[127] What this means for the present context is that it is not morally permissible to harm others for the sake of doing good, unless perhaps in rare cases where an exceptionally large amount of good is at stake. In short, then, agents of the supply chain should not use their money that they otherwise would have spent on offsetting and donate it to the Against Malaria Foundation. That would be an injustice to those who are harmed by the agents' emissions. While the money would do more good if it was used in that way, it is not morally permissible to do something unjust for the sake of good.

Broome, however, has argued that it can be morally permissible for an altruistic emitter to devote *all* of their resources to doing good, including the money that would otherwise be spent on offsets (Broome 2012: 91–2). The reason for him thinking so is that the harm caused by the altruist less clearly would be a case of injustice, since the altruist thus no longer would be the main beneficiary of the act of emitting GHGs. I mentioned in the previous chapter that harms from which we benefit are clearer cases of injustice than those from which we do not benefit. The thought is thus that the benefit emitters receive from emitting GHGs is cancelled out to some extent if that benefit is used to do good. Their act of causing harm through emissions is thus less of an injustice. But an agent who only donates the money that would otherwise be spent on buying offset to charities does not cancel out the injustice done by their emissions. They are still beneficiaries of their harmful emissions.

So, it appears that most emitters are not morally permitted to do good instead of refraining from doing harm through emissions, because they still cause unjust harm through their emissions. If they were to use all their resources to doing good, and thus receive less of a benefit from emitting, they might be permitted to do harm in order to do good, because the harm they cause is thereby less unjust. But as we saw in the previous chapter, there are several other characteristics of climatic harms that appear to show that they are unjust, such as a lack of reciprocity, and that no one has consented to the harm, just to name two examples. I thus think that harm can be unjust when the agent in question does not benefit from it, even if this is less clearly so than in cases where they do benefit. Since agents of supply chains routinely do harm through their emissions, their duties to reduce or offset them therefore generally outweigh their duties to do good. In conclusion, then, the possible conflict between duties not to do harm through emissions and duties to do good is most often decided in favor of the former.

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127. See, for instance, Bernard Williams (1973: 93–9), Frankena (1973: 47), Scheffler (1995: 227), and Lichtenberg (2010). For similar sentiments, but applied to the climate ethics context, see Broome (2012) and Shue (2015: 11).

Let us now turn to the second type of obligation. This type of duty is contractual in nature. Agents along the supply chain enter into formal contracts, like employment and business agreements, regularly. It is usually held that there are thereby certain duties on the hands of agents to respect these contracts. An employee of a firm, for instance, is expected to do their job in accordance with their employment contract and not refrain from doing so before the agreed-on period of notice. Likewise, if individual representatives of a business entity have agreed formally to exchange goods or services for payment, then the parties to that agreement appear to have obligations to honor it. Let us call these *contractual obligations*.

It is quite possible that a conflict arises between an agent's duties not to do harm and their contractual obligations. To refrain from doing harm through emissions, for instance, can be inconsistent with making the emission-intensive purchases a retailer has made a binding agreement to make. Furthermore, as we saw in Chapter 3, individuals fulfilling their climatic duties could be incompatible with some of their job assignments, and thus morally call for the termination of their employment. This applies to indirect as well as to direct duties: Provided that an agent has to disregard their contracts or agreements in order to influence others there is a conflict between the two sources of duty.

Just as with duties to do good, however, contractual obligations are less stringent than duties not to do harm. If an agent has to choose between respecting one of their contracts and avoiding doing harm, and provided that disregarding the contract does not cause more harm than can be avoided with the alternative, then the agent ought to refrain from doing harm over respecting the contract. Contractual obligations cannot thus trump an individual's duties of justice to avoid doing harm through emissions. In other words, the conflict between contractual obligations and obligations to do no harm cannot provide agents of the supply chain with an excuse from duties to reduce or offset emissions.

In summary so far, we have considered conflicts between duties not to do harm and two other types of duty. While a conflict between the different types of duty does indeed appear likely, duties to refrain from doing harm outweigh an agent's duties to do good as well as duties to respect the agent's contracts. The latter two types of obligation therefore do not seem to pose a threat to supply chain agents bearing duties to reduce or offset emissions. We now turn to duties to refrain from doing harm, but through other means than through reducing or offsetting emissions.

2. Other Harms

Agents of the supply chain can omit to do harm in more ways than by curbing or offsetting emissions. In fact, it is highly plausible that these agents contribute causally to problems, such as unjust labor conditions, animal suffering, and global poverty, in a similar fashion to how they do harm through climate change. Therefore, it is possible that a conflict arises between individuals' duties to refrain from doing harm through these other means and their duties to refrain from doing harm by reducing and offsetting emissions (Lawford-Smith 2016b: 136–8). For instance, the managers of some firms subject their employees to dangerous working conditions, cause serious animal suffering, or produce hazardous products for their customers. Given this, it might be that the agents of supply chains have duties not to do harm that outweigh those to reduce or offset emissions and that they thus are excused from the latter.

It should be mentioned first, though, that there need not always be an opposition between the different means of refraining from doing harm. For instance, omitting to do harm with regard to the climate and with regard to animal welfare could be achieved through the same means. Factory farming is a common denominator for both issues, and so abstaining from making purchases of industrially produced meat could be a way of refraining from causing harm with respect to each. Furthermore, since one of the ways in which climate harms obtain is through exacerbating the situation of the global poor, reducing emissions could not only avoid climate harms but poverty-related harms as well.

When a conflict does appear, however, it does so in either of two ways. The first kind of opposition concerns those cases where an agent can refrain from doing harm through some other means than by emissions, and in which doing so is no more effective in avoiding harm than by reducing or offsetting emissions, but where it is less costly for the agent to do so. The alternative course of action thus avoids doing the same amount of expected harm as by reducing (or offsetting) emissions but through performing a less demanding action. To take an example, it might be less costly for the CEO of a manufacturing firm to make sure that the firm's production process does not involve unjust labor conditions than it is for making sure that the same process is low in emissions. In that situation, it would seem that the CEO has a duty to do both, but that the labor issue trumps the issue of doing harm through emissions. Consequently, it seems that the agent does not have an obligation to reduce or offset emissions.

This is not very likely to be the case, however. While I cannot properly address these issues in full here due to reasons of space, it appears that the type of benefits agents has to renounce in order to refrain from doing harm through labor conditions,

animal keeping, and poverty, strongly resemble those that agents have to give up in order not to do harm through emissions. In fulfilling either duty in this case, then, the agent incurs costs of the same type. To give an example, regardless of whether the CEO uses the firm's resources to improve the situation of its workers, or for offsetting its emissions, the price is economic.[128] Add to this the fact that offsetting (currently) is an inexpensive means of avoiding doing harm, and it appears that this is the more cost-effective way for the agent of not doing harm.[129] Consequently, few cases are such that it is comparatively less costly for an agent to refrain from doing harm through other means than through emissions. The first kind of opposition between different means of avoiding harm therefore does not appear to imply that agents bear duties which trump their obligations to reduce or offset emissions (see also Broome 2016: 166).

It might be worth mentioning here that there is no option of offsetting the harm one has done through harms such as animal suffering, or unjust labor conditions. Recall from Chapter 3 that the reason why expected climate harms can be offset is the dispersion of cause and effect that underlies the climate system. All the harms of climate change are filtered through the effects that particular actions have on the atmospheric concentration of GHGs. We can thus treat the expected effects of an agent's climate-related actions as the sum of that agent's overall effect on the global concentration of GHGs, namely, their emissions and offsets. No causal structure corresponding to the one in climate change accompany the harms produced by unjust labor conditions, animal keeping, or global poverty.[130]

Let us move on to the second kind of conflict. The second way for a conflict to appear is if the other means of avoiding doing harm is as costly—or even costlier, without being overdemanding—as by reducing or offsetting emissions, but avoids greater expected harm.[131] Such a case could be one in which an agent has a duty not to do harm, and will do harm either way they act, but ought to act in the way that

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128. The same point can be made with reference to individual consumers: Regardless of whether a person is avoiding doing harm through emissions or through contributions to sweatshop labor, they will most likely incur costs of the same type, such as time and money spent on searching for either sustainable, or fair-trade products.

129. As with all of my discussion of the costs of offsets, this is with regard to our present situation. It is quite plausible that the price of offsets will eventually increase to the point where it is more cost-effective to refrain from doing harm in some other way.

130. It could, however, be argued that the lack of an option to offset these other types of harm means that they are irreversible and, consequently, that they are more important to avoid in the first place. All that I am saying here, though, is that it is generally—at present—less costly for an agent to offset their emissions and thereby to avoid doing harm this way, than it is to avoid doing harm in other ways. The irreversibility of the other types of harm does not change this fact.

131. This includes the possibility of the other means of avoiding doing harm resulting in an equal amount of being avoided, but at a higher degree of certainty.

causes the least harm,. The number of cases like this is quite few, though. They would have to include a situation where an agent of the supply chain, in order to avoid doing the most harm, cannot reduce or offset their emissions. Since the price of offsets, again, are quite inexpensive, it does not strike me as very likely that such a case should arise. While I do not rule out this possibility altogether, I cannot find a good example thereof, and therefore conclude that such cases rarely obtain.

In this section, we have considered the conflict between duties to reduce or offset emissions and other means of refraining from doing harm. Due to the current low cost of buying offsets, it was concluded that duties to refrain from harming in other ways rarely take priority over supply chain agents' duties to do so through emissions. Agents therefore generally have stronger reasons to discharge their duties not to do harm through emissions than to avoid doing harm in other ways. This means that duties to refrain from doing harm in other ways than through emissions rarely pose a threat to agents of the supply chain bearing duties to reduce or offset emissions.

3. Ignorance About Climate Change

We now turn to the second topic of this chapter, which is blameworthiness for causing expected harm through emissions. As we have seen, agents who participate in the supply chain of a product or service bear duties not to cause harm through their emissions provided that they can reduce or offset them. That does not necessarily mean, however, that performing an emission-generating action which has an expectation of harm is morally *blameworthy*. If that is to be the case, additional conditions need to be met. I do not mean to provide an exhaustive list of the factors required for moral blameworthiness here, but I shall consider two factors which most moral philosophers seem to accept as prerequisites thereof. I shall assume that if an agent violates a duty not to do harm through emissions, and these conditions are fulfilled, then they are blameworthy for the expected harm of their emissions. (It should be noted that my interpretation of NHP as a principle about expected, and not actual, harm means that an agent in principle can be blameworthy for the performance of an emission-increasing action which actually does not cause any harm.)

The first condition for blameworthiness pertains to epistemic issues. (The other condition—about overdemandingness—is the focus of the next section.) Unless an agent knows that their actions cause harm through emissions, or knows how to

reduce them, they can fail to be blameworthy for their failure to reduce or offset emissions. Ignorance is thus a ground for excuse for moral blame for agents of the supply chain. In this section, I will argue that agents can indeed be exculpated from being blameworthy for the expected harm of their emissions due to their ignorance, but that such cases are quite rare.

3.1 Excusable Ignorance

The issue of excusable ignorance about GHG emissions has received a fair deal of attention (see, for instance, Caney 2005: 761, 2010c: 208–10; Fouke 2012; Robichaud 2017).[132] Climate change is a highly causally complex phenomenon and the relation between an agent's actions and the effects of global warming are far from straightforward. Furthermore, due to misinformation campaigns by political lobby groups and multinational corporations, climate skepticism is spread widely among some spheres of the public. This makes it an open question whether particular agents of the supply chain of a product or service know that their emission-generating actions can cause harm, or how they should go about reducing and offsetting their emissions.

This is crucial since some types of ignorance can provide agents with moral excuses (see, for instance, Rosen 2008; Peels 2014; Baron 2017). For example, if an agent has a duty not to act in a certain way because this course of action—unbeknownst to the agent—has a morally bad outcome, it could be that the agent, due to their ignorance, is excused from being blameworthy for the violation of that duty. That is not to say, though, that every kind of ignorance is excusable. Some ignorance is *culpable*, in that the agent ought to have known better (see e.g. H. Smith 1983; Zimmerman 1997).[133] This implies that some agents can be ignorant about facts regarding climate change, and that some such instances of ignorance are excusable, i.e. not culpable, which means that the agent in question can be morally excused from bearing blame for not reducing or offsetting emissions.

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132. For further discussion, see Grubb (1995: 491), Neumayer (2000: 188), Vanderheiden (2004, 2008: 184–92), Gosseries (2004: 39), Gardiner (2004: 581), Meyer and Roser (2010: 241), Hiller (2011b: 353), Page (2011a: 416–7), Bell (2011), Zellentin (2014), and Vance (2017: 579–80). Note, however, that not all of these authors deal with the problem of excusable ignorance of climate change in relation to blameworthiness for causing harm through emissions.

133. For further discussion, see Rudy-Hiller (2018).

Whether an agent is excusably or culpably ignorant is determined by whether the agent has reason to think otherwise and to rectify the misbelief.[134] This, in turn, depends on several factors. The first is control: If an agent cannot, or effectively does not, reduce or offset their emissions due to a lack of information, and could not have known otherwise, then they are excusably ignorant. For example, if a single parent with small children who is working several jobs does not know how to offset their emissions, and simply cannot find the time to research that information, they are excusably ignorant. If agents such as this thus either lacks the ability to reduce or offset emissions, or the ability to rectify their beliefs (or both), then they are exculpated from bearing blame for causing expected harm through emissions.[135] This is because an agent who cannot act in a certain way (or could not have known what they needed to know in order to act in that way), is not blameworthy for the outcome of failing to act in the required way.

A second reason that determines whether ignorance is culpable or not is the costs incurred by the agent in adjusting their beliefs.[136] Say that an agent emits GHGs due to ignorance, but that the agent is able to change their erroneous beliefs. Instead, the reason for the agent's excuse is that the costs of rectifying the belief is too high. Imagine that the single parent from above is actually not physically incapable of rectifying their mistaken climatic beliefs, but that doing so would mean giving up a considerable portion of the parent's income—maybe they are so hard-pressed on time that they need to take time off from one of their jobs in order to research climate change.

A third factor that determines when an agent is excusably ignorant is the type of proposition that the ignorance concerns. Since there are stronger epistemic reasons for believing certain propositions rather than others, failing to hold something true can be excusable or not depending on the particular justifications for believing the proposition in question. In the present context, I shall limit myself to ignorance about what I take to be the three most relevant propositions regarding climate change. These are: first, *ignorance about the means of refraining from doing harm through emissions*; second, *ignorance about the phenomenon of climate change itself*; third, *ignorance about the causal links between emissions and harmful impacts*. As we shall see,

134. I will not subscribe to any particular account about what makes ignorance culpable here. For further discussion, see Rudy-Hiller (2018). For an application of some of the main accounts to the issue of climate change, see Robichaud (2017).

135. It could be argued that the issue of control is a condition for there being a duty on the hand of the agent in the first place, rather than a factor deciding whether there is blame attached to the non-performance of that duty. I have, as a matter of fact already considered some of these issue in Chapter 3, but I will also treat some of the issues of control and ignorance separately here, since this will better illuminate some of the details regarding control and how it relates to blameworthiness.

136. I shall look further into the issue of moral costs being too demanding in Section 4 below.

the agents of the supply chain are warranted in accepting each of these three propositions to different degrees.[137]

We have now seen that whether ignorance is excusable depends, first, on whether the ignorance undermines the agent's control, second, on whether the agent incurs costs that are too high when adjusting their erroneous beliefs and, third, on the epistemic justification for believing the particular proposition in question. Next, I shall consider more closely how excuses due to ignorance apply to the direct and indirect duties of avoiding doing harm through emissions. In what follows, I shall therefore consider the three propositions of which agents are ignorant, followed by a consideration of whether agents of the supply chain believe them, and, if not, whether they are thereby excused.

3.2 Are Supply Chain Agents Culpably Ignorant?

Let us first consider ignorance about the first proposition: the means of refraining from doing harm through emissions. We have already seen examples above of agents being ignorant about how to avoid doing harm through emissions, such as when agents are unaware of how offsetting schemes work. If an agent of the supply chain is ignorant in such a way, it might thus be true that they are not blameworthy for causing harmful emissions. In order to find out whether this is so, let us start by looking at the issue of control. Since it is highly uncommon for individuals of the supply chain of being unable to rectify any possible misbeliefs about the means of reducing or offsetting their emissions, control is rarely an issue here. In fact, the truth is often not more than a Google search away. Of course, there are always counterexamples, such as the single parent from above. These cases, however, are probably in the minority. Most agents of the supply chain are plausibly not socially, economically, or otherwise marginalized to the extent that they cannot find out how emissions are reduced or offset.

The issue is similar when it comes to the second factor of excusable ignorance, that is, the costs of rectifying ignorance about the means of avoiding doing harm. The cases where it is too demanding for individuals to change their beliefs about reductions in emissions (or the means of offsetting), such as the single parent, are arguably quite rare. Most agents do not incur any significant costs to themselves by

137. Ignorance about these propositions can concern several different types of epistemic agent, including scientists, businesspersons, consumers, and climate ethicists, in addition to the participants in a supply chain. Since my primary concern here is the ignorance of the latter type of agent as a form of excuse for those agents' blameworthiness in causing expected harm through emissions, I shall not have much to say about the ignorance of the other agents. See, however, Footnote 140.

spending a few hours doing research on how to reduce or offset emissions. However, should agents of the supply chain thus be culpably ignorant of the means of refraining from doing harm to the extent that they lack the necessary control, there are also additional ways of avoiding doing harm through emissions. These are the indirect means of refraining from doing harm mentioned in the previous chapter.

It appears that in order to be able to offset emissions by influencing others, it is necessary that the agents know something about how their actions relate to the effects of other agents' actions. We saw in Chapter 3 that it is highly difficult to reliably know how one's actions indirectly affect other agents, especially in trying to influence them. It is therefore quite possible that ignorance about the means of discharging indirect duties, and in particular in influencing others, is excusable because it is outside of an agent's control to rectify their beliefs, and that this exculpates supply chain agents from blame due to failing to discharge indirect duties. The same can be said about the costs incurred by agents in trying to revise any misbeliefs; it is quite possible that a considerable amount of time and energy has to be spent ascertaining whether indirectly offsetting emissions is efficacious.

The final factor to be considered regarding the current type of proposition is epistemic justification. There appears to be reasonably strong warrant for believing the propositions that pertain to reducing or offsetting emissions. For example, most moral agents have reason to believe that exhaust from cars, meat production, burning coal, to name a few examples, release GHGs and that these activities, in order to curb emissions, ought to be halted. It might, however, be hard to know if some offsetting schemes are effective in the long term, or if our efforts to influence others will succeed. This should not be a basis for excuse in a majority of cases, however. The most obvious ones probably concern the means of refraining from doing harm in indirect ways, such as by influencing others. In conclusion, then, it seems that culpable ignorance about the means of avoiding doing harm through emissions arise quite rarely. The cases where agents are culpably ignorant in this way typically involve indirect means of avoiding doing harm, and cases of seriously socially or economically marginalized individuals.

There are now two remaining types of proposition which I will consider that agents can be ignorant about: first, that the phenomenon of climate change itself is real, and second, that there is a causal link between emissions and harmful impacts. We shall begin by considering the former proposition, which is about knowledge regarding the general phenomenon of climate change before we look at the latter proposition, which is about the more particular causal links between emissions and harm. An agent who is ignorant about the phenomenon of climate change does not believe that climate change is occurring, or is at least ignorant about some integral

part of its causes and effects. Another case is climate deniers who is participating in a supply chain, perhaps by transporting goods, and insist on the implausibility of a connection between heightened concentrations of GHGs and global warming.

Just as with the previous proposition, however, it appears that seeking out information about the phenomenon of climate change is seldom too demanding, and seldom outside of the agent's control.[138] Since this is one of the most debated topics of our time, enquiring about it cannot reasonably place too high demands on, or be outside of the control of, either the individuals in the fossil fuel industries or the individual climate denier. An exception to this could be agents employed by smaller business firms that do not have the necessary ability, or funds, to investigate the nature of climate change. But given how easy it is to rectify misbeliefs about the phenomenon of climate change, this is not very likely; again, the truth is often not more than a Google search away.

Furthermore, the justification itself for subscribing to the existence of climate change seems overwhelming. Due to the large scientific consensus on global warming, agents do not generally have reason to doubt that it is occurring (see e.g. Fouke 2012; Code 2014). Since 1990—the year of the publication of the first IPCC report—there has virtually been no uncertainty regarding the reality of anthropogenic climate change and its harmful effects (Vanderheiden 2008; Singer 2002: 34; Caney 2005; Baatz 2013; Bell 2011: 395).[139] Nonetheless, there is still the possibility that some agents are under the influence of powerful public figures who are spreading skepticism about climate change. Examples include cases of extreme religious indoctrination, and the exclusive exposure to climate-denying news sources due to one's upbringing. So, while ignorance about the phenomenon of climate change can excuse in some cases, most notably those involving the inculcation of climate skepticism, these are not common; the justification for believing the evidence for climatic processes is under normal circumstances too strong to merit the dismissal of the occurrence of climate change.

The final of the three propositions which agents can be ignorant about is the proposition that there is a particular causal link between emissions and harmful impacts (Robichaud 2017: 1424). This type of ignorance thus concerns disbelief about

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138. Answering whether ignorance about this proposition (as well as the next one) is culpable does not have to take into account the difference between direct and indirect duties. Individuals' actions relate to the overall phenomenon of climate change in the same basic way, regardless of how the agents choose to discharge their duties.

139. Some place the year somewhat earlier (see e.g. Frumhoff, Heede & Oreskes 2016; Ekwurzel et al. 2017; Neumayer 2000: 188), while others concede that it should be placed somewhat later, perhaps 1995—the year in which the second IPCC assessment report was published (Meyer & Sanklecha 2011: 460; Gosseries 2004: 39). The latter figure would mark the first time that the IPCC unanimously confirmed that anthropogenic GHGs affect the climate. For criticism of these views, see Jamieson (2014).

the fact that emissions cause harm. Intuitively, agents can reasonably doubt that they are doing harm through their emissions. We saw, in Chapter 2, for example, that there is genuine disagreement among moral philosophers about whether particular emission-generating actions cause harm. Thus, we cannot take it for granted that agents of the supply chain have reason to know that there is a probability that their actions cause harm. For example, if an agent falsely believes that reducing or offsetting emissions cannot have any morally significant effects, they might be excused of emitting harmful amounts of GHGs.

So, is ignorance about the causal link between emissions and harm excusable?[140] Starting with the factors pertaining to control and costs, we can establish that agents of the supply chain quite often are capable of rectifying their mistaken beliefs about the relation between emissions and harm, and that doing so is not too demanding. Even when an agent does not believe that emissions have the impacts that they do, the agent most commonly possesses the ability required in order to gather the correct information and revise its beliefs, without incurring too great costs, and thus form the correct belief that emissions increases the probability that harm is caused. The relatively unusual cases where this is not so are like those mentioned above, when an agent is either not physically or mentally capable of enquiring into the causes of emissions, or is short on time or resources to do so, thus placing unreasonable demands on the agent in question.

Finally, let us consider the epistemic justifications for holding that some emissions cause harm. Due to the notion of expected harm, agents are not required to know about particular emission-generating actions' actual outcomes in order to rectify their misbeliefs. It suffices for them to be warranted to think that there is enough of a probability to emit GHGs, given the possible effects.[141] So, when it comes to activities that are typically paired with a high climatic impact, such as flying, it seems that most agents are epistemically warranted in believing that they expect to do harm when they engage in them.

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140. If so, this would imply that many of the philosophers who write on the ethics of climate change and who think that individuals do not cause harm through emissions are culpably ignorant. It might seem odd at first to say that those philosophers who deny that individuals cause harm through emissions are not only in disagreement with the theses advanced by me, but that they are culpably ignorant in doing so. But what this implies is simply that I hold these philosophers to have reason to think otherwise, and that their ignorance in not doing so fails to constitute an excuse for their blameworthiness, if they were to cause harmful emissions.

141. Some seem to hold that the ability to identify particular victims of climate harms is necessary in order to hold duties not to harm them through emissions (Sinnott-Armstrong 2005: 336–7; Jamieson 1992: 148–9; cf. Hohl & Roser 2011: 489n17). According to this argument, an agent *A* could not have been morally required to refrain from harming *S* since *A* did not know that their actions harmed *S*; a phenomenon typical for climate harms. But this argument presupposes that it is important that we know *whom* we are about to harm when called on to refrain from doing it. I fail to see how this matters as long as we have reason to believe (or can come to believe) *that* we increase the probability of doing harm.

Before we conclude this section, it should be mentioned that the blameworthiness of causing expected harm through emissions can be further affected by the place of the agents within the supply chain. We have already touched on this issue and ignorance in Chapter 3. There, we saw that it can be easier to ascertain whether one's actions cause emissions, and thereby easier to refrain from doing harm through emissions, if an agent is located toward the end of the supply chain. In effect, this means that ignorance as an excuse for being blameworthy for emissions also is less common for agents toward the downstream stages of a supply chains, such as *Consumers*.

To summarize this section, I have considered when agents are excused from being blameworthy for the expected harm caused through emissions due to their ignorance. Specifically, I have looked at three propositions of which agents of the supply chain can be ignorant and whether the ignorance is excusable. In conclusion, I believe that while agents might be ignorant in each of the three ways considered, most instances of ignorance are culpable and therefore not exculpating. This is because it is generally not outside of supply chain agents' control, or too demanding for them to rectify either ignorance about the means of refraining from doing harm, ignorance about climate change itself, or ignorance about the relation between emissions and harm. The cases where it is impossible, or too demanding for them to do so typically involve economically or socially marginalized agents. Furthermore, agents are generally epistemically warranted in believing each of the three propositions considered. In conclusion, then, ignorance does not appear to pose a common threat to the notion of supply chain agents being blameworthy for the expected harm of their emissions.

4. Emissions and Demandingness

So far, we have considered one potential excuse to agents being blameworthy for the expected harm they do through emissions, in the form of non-culpable ignorance. In addition to the requisite knowledge, however, it is generally thought that agents, in order to be blameworthy for an outcome, must have been able to avoid the outcome at a reasonable cost to themselves, or without making too big sacrifices. In this section, I will consider overdemandingness as a possible excuse for bearing blame for harmful emissions.

I will not go into detail about what it is exactly about overdemandingness that makes it a possible moral excuse. Generally speaking, however, moral agents are only

blameworthy for outcomes if avoiding that outcome did not force them to disregard things such as their own basic needs, their most deeply held interests, or their mental or physical well-being. Examples of actions that are too demanding include those which imply that agents need to suffer serious physical harm, to sacrifice food or shelter, or prevents them from pursuing a highly significant personal end. Emissions, as we have seen, are deeply embedded in our professional and personal lives, and thus cannot be reduced or offset without having at least some effect on how we live our lives (even though offsets are cheap, they still involve a cost).[142] This means that it is possible that refraining from doing harm through emissions places high demands on the individuals of the supply chain (Meyer & Sanklecha 2011, 2014; Schinkel 2011: 37; Fruh & Hedahl 2013; Cripps 2013: 155; Berkey 2014; Baatz 2014: 9; Lawford-Smith 2016b: 138–9; Fragnière 2018). The question is whether these demands are *too* high for agents to be blameworthy for the expected harm of their emissions.

Let us begin by looking at the costs incurred by individuals in refraining from doing harm through emissions. The most straightforward way to not do harm through emissions is to refrain from performing emission-generating actions. This is most often contrary to the interests of individual agents of the supply chain. As we saw in Chapter 3, individuals emit GHGs through all kinds of actions, including decisions in our professional lives, how we heat our homes, how we transport ourselves, and how we feed ourselves. The things that individuals thus might have to renounce in order to reduce their emissions include such diverse goods as meat, flight travel, employment, and any material products manufactured with the burning of fossil fuels. All of these are things that most persons would not want to do without. Similarly, a recent overview of the impact that a sustainable lifestyle has on well-being concludes that, in the short run "most people would probably be *less* happy than today if their lives were more sustainable" (Brülde 2015a: 174).[143] Some of these costs, such as abstaining from a certain career, and being less happy, are reasonably held by many to be the sort of sacrifice of a significant personal end that is too morally demanding. Furthermore, not everyone has the luxury to renounce a particular career just because it gives rise to comparatively more emissions than a less well-paid alternative. For some—with scarce job opportunities and families to provide for—this is the choice between living in relative poverty or not.

It should also be mentioned that the demandingness of reducing emissions can be affected by one's location in the supply chain of a product or service. This is due to the fact that certain stages of the supply chain are more intimately associated with emissions coming about than others. In particular, it appears reasonable to assume

142. An additional cost comes in the form of the epistemic demands mentioned in the previous section.

143. For further discussion of the link between sustainability and well-being, see Brülde (2015a, 2015b), and Lamb and Steinberger (2017).

that there is a higher proportion of individual agents professionally associated with emitting GHGs in particular stages of the supply chain than others. Given that changing things about the way we act in our professional lives, such as the manner in which we conduct our jobs or what jobs we choose to have, is more demanding than what we do in our spare time, then refraining from doing harm can be more demanding in certain positions along the supply than others. For instance, refraining from doing harm through emissions might be less demanding for *Consumers*, who are arguably less often (though not never) emitting GHGs as part of their jobs, than *Suppliers* or *Service Providers*. So, it might very well be that overdemandingness is more commonly an excuse for being blameworthy for harmful emissions for *Suppliers*, *Distributors* and *Service Providers* than for *Consumers*.

It appears, then, that reducing emissions can be too demanding for agents of the supply chain. That is, at least, before we consider the option of offsetting emissions. As we have seen, offsets are—at present—particularly inexpensive and are therefore affordable to most agents, except for the worst off. To repeat what we said in Chapter 3, the total annual cost of offsetting an individual's emissions is presently around $20 for someone in the UK and $50 for someone in the US. To put this in context, in 2018 the average annual wage in the UK was $44,770 and $63,093 in the US (OECD 2019). Therefore, in our present situation, it does not appear to be too demanding for the average emitter in countries such as the UK and the US to refrain from doing harm by means of offsetting. It should be noted, though, that this is with regard to the current prices of offsets. As we saw in the previous chapter, the price of offsets is expected to rise when the demand on offsets increases. This means that the prices are going to reach a level where some cannot afford them at a reasonable cost to themselves. So, while the price of offsets will eventually result in individuals' efforts to refrain from doing harm being too demanding, it is impossible to say exactly when this will happen.

Returning to the relevance of agents' location along the supply chain, we saw in the previous chapter that it might be easier for *Consumers* to offset than for others. In line with what we said about these agents' comparatively better abilities to reduce emissions, this means that there is even more reason to think that *Consumers* have less demanding duties than other agents of the supply chain.

Let us next turn to indirect means of refraining from doing harm through emissions, and in particular the influence supply chain agents have on others. The demands placed on individuals seeking to influence others to reduce their emissions vary widely with the different ways that an agent can exercise their influence. For instance, the demands incurred by influencing someone through leading by example are exactly as high as reducing one's own emissions. The demands of more formal

means of exercising influence, such as by donating to green technology funds, are easier to quantify, because these can be measured in monetary terms. It gets harder, though, to quantify the demands and sacrifices involved in trying to influence others in further ways. Some of these ways could be rather effortless (though not necessarily successful), such as to engage in discussion on climate matters with friends, family and acquaintances, while others can be considerably more demanding, such as engaging oneself in political protest. So, while we cannot say anything in general about the demands of trying to influence others to make GHG reductions, at least *some* of them are not overly demanding.

To summarize this section, if an agent cannot refrain from doing harm through emissions at a reasonable cost to themselves, then they are not morally blameworthy for the expected harm of their emissions. Generally, the demands placed on individuals trying to reduce or offset their emissions vary to some extent. Except for those who can afford to offset their emissions, efforts not to do harm might sometimes be excused due to the costs involved in reducing emissions, and while the demands of influencing others vary from case to case, there are examples where the failure to avoid doing harm in these ways are morally excused due to overdemandingness. In conclusion, then, demandingness can sometimes excuse agents of the supply chain from being morally blameworthy for the expected harm of the emission of GHGs. This, however, is not true for those who can afford to offset emissions through conventional offsetting schemes. So, for the average individual in developed countries, such as the UK and the US, the amount of emissions that presently are morally excused is therefore a rather small portion.

5. Concluding Remarks

In this chapter, I have considered two general topics. The first was how supply chain agents' duties not to do harm relate to other obligations, and the other was whether these agents are blameworthy for causing expected harm through emissions. Let us look at the conclusions for each of these issues separately.

Among the duties that individuals of the supply chain bear, there might be obligations that conflict with their duties not to do harm through emissions. We started out by looking at conflicts between the latter duties and two other types: duties of beneficence and contractual obligations. While there seemed to be a possible conflict with regard to each type of duty, I concluded that neither was strong enough to trump the duties of individuals to avoid doing harm through emissions.

There was also a possible conflict between duties to refrain from doing harm through emissions and refraining from doing harm through other means. Due to the cost-effectiveness of not doing harm through emissions, however, duties to reduce or offset emissions generally take priority over other concerns.

The second topic of the chapter was blameworthiness for the expected harm of emissions. I assumed at the start of the chapter that in order for an agent to be blameworthy, they need, first, to have the necessary knowledge. In other words, unless an agent knows that their actions are expected to do harm through emissions, or knows how to reduce them, they can fail to be blameworthy for their failure to reduce or to offset emissions. I investigated this issue through the notion of culpable ignorance. In short, an agent is culpably ignorant if the agent should have known otherwise which, in turn, depends, first, on the ability of the agent to rectify their false beliefs, second, the costs of doing so and, third, on the epistemic justification for believing the true proposition in question. I concluded that while agents might be ignorant in some cases, most instances of ignorance are culpable and therefore not exculpating. The cases where agents are excused of being blameworthy for doing expected harm through emissions due to ignorance typically involve economically or socially marginalized agents. In conclusion, then, ignorance does not appear to pose a common threat to the notion of supply chain agents being blameworthy for the expected harm of their emissions.

The second condition for blameworthiness that I considered was overdemandingness. I assumed that if an agent cannot refrain from doing harm through emissions at a reasonable cost to themselves, then they cannot be morally blameworthy for their emissions. Due to the option of offsetting, however, refraining from doing harm through emissions is rarely too demanding, at least not for individuals of the supply chain who are moderately well off, such as those earning average wages in countries like the UK and the US. Consequently, for the average individual in developed countries, the amount of emissions that presently is morally excused is therefore a rather small portion.

All in all, this gives us a compelling case for concluding, first, that due to the stringency of duties not to do harm, duties to reduce or offset emissions are rarely overridden by other moral duties. Second, significant portions of agents participating in the supply chain of a productive or service can be morally blameworthy for the expected harm of emissions. The cases where agents are excused from blame seem mainly to be those involving marginalized individuals. In the chapter, we have also seen examples of how the blameworthiness of an agent can be affected by that agent's location along the supply chain. In particular, since it seems that refraining from doing harm through emissions is generally less demanding for *Consumers* than for

other agents active along a supply chain, these agents are less likely to be blameworthy for their emissions than *Suppliers*. A similar conclusion regarding *Consumers*' blameworthiness for the expected harm of their emissions was given when we noted that these agents generally are less likely to be excused due to ignorance.

In the next chapter, we shall set duties not to do harm aside for the moment, and consider a possible additional basis for obligation for agents of the supply chain.

Chapter 5

Complicity in Climate Harm

So far in this thesis, we have seen that moral agents of the supply chain bear duties to reduce or offset their emissions because these cause harm. It might be, though, that there are further reasons for agents of the supply to refrain from emitting. In this chapter, we shall explore an additional basis of moral duty for supply chain agents—that of being *complicit* in wrongdoing. Complicity is the culpable involvement of an accomplice in the moral wrongdoing of others. When an agent causes unjust harm through emissions, for instance, that agent engages directly in wrongdoing. It seems, however, that other agents can be complicit in that wrong, for example by enabling, facilitating, or otherwise supporting the actions of the principal wrongdoer.

The purpose of this chapter is to consider whether agents of the supply chain are complicit in wrongdoing in virtue of the harm that is caused through emissions by others. For example, if the employees of an oil company of a global supply chain wrongfully causes harm through GHG emissions, it might be morally wrong for other agents to involve themselves in that wrongdoing and thus bear duties to avoid doing so, even if they did not cause the wrong themselves. For agents that *do* cause harm through emissions, they can also be complicit in the harm brought about by others, thus incurring additional duties that compound their overall climatic obligations. The idea, then, is that an agent can bear duties both by being obligated to avoid doing harm through emissions, but also by being obligated not to be complicit in the climatic harm brought about by others

I will, however, argue that while there appears to be something morally wrong with cases of complicity, it is not in virtue of an agent being complicit in someone else's wrongdoing. Rather, I shall argue that every purported example of obligation to avoid complicity—in the climate context as well as elsewhere—is either a case of an agent doing no wrong, or a case where an agent is expected to cause harm. So, seeming cases of complicity are in fact either faultless, or cases of a causal contribution to harm.

I will start, in Section 1, by introducing the notion of complicity. Section 2 looks at what complicity amounts to in the climate context. Section 3 then explicates an account of complicity proposed by Christopher Kutz which is subsequently rejected. Instead, Section 4 considers what I take to be the most promising account of complicity in Chiara Lepora and Robert Goodin's formulation. Section 5 argues that cases of complicity are either non-culpable, or cases where there is an obligation not to do harm, and that there thus are no duties on the part of supply chain agents to avoid ostensible complicity in wrongdoing. Section 6 concludes the chapter.

1. The Notion of Complicity

The notion of complicity has been subject to a growing interest lately. As a result, there are several different conceptions of what it consists in. Most accounts, however, share some basic features. Generally speaking, complicity refers to involvement with the wrongful acts of others (Devolder 2017; Mellema 2017).[144] Such involvement obtains between an agent and a primary wrongdoer. Let us call the latter *the principal* (also called "the perpetrator") and the former *the accomplice* (alternatively, "the accessory"). Insofar as the accomplice engages with the wrongdoing of some principal, the accomplice is thus complicit in that wrongdoing. Complicity is not tied to any specific type of wrongdoing, but can comprise harm, injustice, rights-violations, or any other type of wrong. An act of complicity, though, is not paradigmatically taken to be morally wrong in itself, but in virtue of what the principal wrongdoer does. The moral status of an act of complicity is thus derivative of whatever wrongdoing the accomplice is involved in. This naturally raises the question of how an agent's mere involvement in wrongdoing can be considered morally faulty, notwithstanding that the agent is not perpetrating wrong themselves. To give an example of the involvement relation in complicity, let us consider the following case.

> *Complicity in Murder. P* plans to murder *Q* and confides this information to *R*. As a result, *R* decides to give *P* a ride to *Q*'s house. *P* consequently plants a bomb outside of the house, thus killing *Q*.

144. It should be noted that several of the authors referenced limit their discussion of complicity to the domain of law (see e.g. Kadish 1985; Kutz 2007; May 2010; Bazargan-Forward 2018). I have no interest in the law as such, and consequently only consult these references insofar as their arguments have implications for moral philosophy. For a discussion of the relation between moral and legal complicity, see May (2010: 148–51).

In this case, *P* commits the wrongdoing, by murdering *Q*. But *R* assists *P* by giving them a ride. It is commonly held that agents can be complicit in wrongdoing through *enabling*, *facilitating*, and *encouraging* the wrong (see e.g. Mellema 2017). *R*'s action fits the description of both enabling and facilitating, perhaps also encouraging, *P*'s wrongdoing. But there are further cases of complicity, and of involvement with wrongdoing, that are less direct. Let us look at some of these.

A special case of complicity is being complicit *after the fact*. This is where the accomplice does not assist the principal in carrying out the wrongdoing, but rather contributes to the wrong after it has occurred, for example by *condoning* or *praising* the act (Devolder 2018: 7). If *R* had not driven *P* to *Q*'s house, and *R* had instead picked up *P* afterwards and given them a lift home—still knowing what *P* had done—that would look less like facilitating the wrongdoing and more like tacitly condoning it. Another notion that has been discussed by some philosophers as a form of complicity is *benefiting* from wrongdoing (Gardner 2007: 128; Devolder 2017: 7).[145] This is when an agent benefits from the wrongdoing caused by someone else (see e.g. Anwander 2005; Butt 2007). Paradigmatic examples of benefiting from wrongdoing include capitalizing on global injustices and taking advantage of racist or sexist hiring practices (Thomson 1973). The thought is thus that the beneficiary is complicit in the wrongdoing—such as an unjust global order, and racism or sexism at the workplace—by benefiting from it.

The weakest form of involvement with wrongdoing that has been proposed as a form of complicity is *moral taint* (Mellema 2017). This notion has its origin in the writings of Karl Jaspers (1947). More recently, is has been developed by Anthony Appiah (1987) and Larry May (1991). The thought is that agents can be morally tainted and thus culpable even by minimal involvement in wrongdoing. Examples include those who are implicated in the wrongdoing of others simply by belonging to a certain nationality or gender. All Germans, to take a famous example, would thus be tainted by—and possibly be complicit in—the wrongdoings of the Nazi regime.[146]

So far, I have given an overview of the notion of complicity and we have seen that the involvement relation of complicity can take several different forms. In what follows, however, I shall not pursue all of the different possible ways of being involved in wrongdoing. Instead, in Sections 3 and 4, I shall present those two accounts of complicity that I take to be elaborate enough to be applied to the case of climate change and can produce a comprehensive verdict on whether agents of the

145. For further examples, consider Wettstein (2010: 36), who talks of beneficial complicity as a kind of moral complicity whereby corporations are complicit in the wrongdoing of governments in knowingly benefiting from the latters' human rights violations. Furthermore, Shue (1981: 604) looks at benefiting as a form of complicity in unjust production practices.

146. For further discussion of the relation between complicity and moral taint, see French (2016: 576n4).

supply chain are morally complicit in climate harm. For now, let us formulate the wrongfulness of complicity in terms of a general moral obligation to avoid being complicit in wrongdoing, without further specifying what form the involvement in wrongdoing might take.[147] Let us call this the Avoiding Complicity Principle (ACP).

ACP An agent *A* has a moral obligation to refrain from acting so as to be complicit in wrongdoing

In *Complicity in Murder*, for example, it intuitively seems that *R* has a duty to avoid helping *P* in murdering *Q*.

In summary, then, complicity is the involvement of an accomplice in the moral wrongdoing of others. This involvement may take several different forms, from enabling and encouraging wrongs, to benefiting from, or being tainted by, moral wrongdoing. According to ACP, there is an obligation to avoid complicity in wrongdoing. Before we fill in the details of this principle and look at an account of complicity more closely, we shall see what complicity in climatic wrongdoing amounts to.

2. Complicity and Climate Change

In this section, I will look at how complicity can be applied to the case of climate change. Being culpable for involvement with the wrongs of climate change is a common theme from the climate ethics literature (see e.g. Attfield 2009; Lichtenberg 2010: 569–71; Hale 2011: 386; Nolt 2011, 2013b; Fragnière 2016: 803; Moss 2017; MacLean 2019).[148] So far, however, a thorough application of the notion of complicity to climate change has been lacking. In previous chapters, I argued for obligations not to do harm through emissions. Now, I want to consider whether supply chain agents can be complicit in climatic harm caused by others and, if so, whether they can bear duties to avoid being complicit. If it can be shown that there is such a duty, there is thus an additional moral reason for agents of the supply chain not to engage in emission activities.

Complicity is the culpable involvement of an accomplice in the wrongdoing of another agent, that is, the principal. In the case of climate change, I shall take the

147. For a general discussion of the relation between moral obligation and complicity, see Mellema (2017: 79).
148. Additionally, some authors have used it as a running example in their analysis of complicity (Lawson 2013; G. Williams 2019).

principal wrongdoers to be any agents of the supply chain who is blameworthy for the expected harm they do through emissions, meaning that they have violated a duty to avoid doing harm through emissions, and are not excused from doing so.[149] So, an agent can only be complicit in the production of harm which another agent is to blame for. Note that this does not mean that an agent is required to actually cause harm in order to qualify as a principal wrongdoer, since an agent can bear an obligation not to do harm and thus be blameworthy for failing to discharge that duty based on mere *expected* harm. This is due to the fact that I interpret NHP as a principle about expected, and not actual, harm. The wrongdoing in question is therefore the non-excusable transgression of a moral duty not to perform actions that can be expected to do harm. This means that an agent can be potentially complicit in wrongdoing, even though no actual harm comes about.

So far, we are assuming, for the sake of argument, that there is a duty to avoid being complicit (we shall return to properly scrutinize that claim in the next two sections). Given this, can agents of the supply chain be complicit in wrongdoing as described in the previous paragraph? It seems so. Consumers, producers and other agents routinely involve themselves in the wrongdoing of others along the supply chain. By making purchases, for instance, *Consumers* appear to be complicit in the wrongful production practices of manufacturers (D. Schwartz 2010; Driver 2015b; Zoller 2015; Brock 2016; Lawford-Smith 2018). This is regardless of whether we specify complicity as enabling, facilitating, encouraging or benefiting from the wrong; a purchase of a good can do each of these things. Producers, too, involve themselves in the wrongful actions of others (Wettstein 2010). The first-tier *Suppliers* of raw material for environmentally harmful products, for instance, can facilitate the wrongful emission of GHGs. But agents of the supply chain cannot only be complicit through actions (such as those above) that typically qualify as emission-generating ones. An agent may also be complicit in wrongdoing through actions that for example encourage others to emit.

Generally speaking, we can note that agents of the supply chain can be complicit in wrongdoing in two ways. First, an agent can be complicit, even though they are also causing harm themselves. Say that the manager of firm *A* emits harmful GHGs by manufacturing a machine component to be used by other industries. *A* sells this product to firm *B* which, by using the component, wrongfully causes harmful emissions of its own. If *A* does not cause any harm by selling the product to *B*, it can still be complicit in *B*'s wrongdoing, through *A*'s involvement with *B*'s wrongdoing. *A* is thus causing harm through its own emissions, and is also complicit in the

149. As I said in Section 1, there might be other ways of being a principal wrongdoer, but I shall set that aside here and focus exclusively on being blameworthy for doing (expected) harm.

wrongful emissions of *B*. The second way for an agent of the supply chain to be complicit is by being involved in the wrongful actions of others, even though they do not cause harm themselves. Let us say that a consumer makes such a small purchase as not to be prohibited by a duty not to do harm, but that the purchase still makes them complicit in wrongdoing. For instance, due to the action's small climatic impact, the purchase of one ham sandwich is presumably not expected to cause enough harm in order for it to be prohibited by a duty not to do harm. At the same time, although it is not enough to ground a duty to do no harm, the action can still encourage the future raising of pigs for meat by signaling the consumer's demand, thus still making the consumer complicit in the harmful emissions of factory farming.

This means that complicity, insofar as there is a duty to avoid it, makes it possible for agents to be culpable in the involvement of bringing about harm beyond being obligated not to cause it.[150] Agents who are not expected to cause harm themselves can thus still bear a duty not to perform actions that somehow involve them with climatic wrongdoing, and those who are already engaged in harmful emitting activities might incur an additional duty that compounds their overall climatic duty. There is thus an attractive appeal in grounding a moral obligation to reduce emissions on the notion of complicity.

In order to see that agents of the supply chain have duties to avoid complicity, however, we must look closer at what it means to be complicit in wrongdoing. We have seen that there are several potential ways of being involved in the wrongdoing of others and not all of these might be suitable to ground obligation. In the following sections, we shall take a closer look at the two accounts of complicity that I consider comprehensive enough, to see whether they can provide the basis for an obligation of supply chain agents to avoid complicity. This will give us a principled way of deciding which ways of being involved in wrongdoing might be culpable.

150. Philosophers of complicity can roughly be divided between those who advocate causal and non-causal conceptions of complicity (Devolder 2017). Some thus hold that causal contribution is a necessary condition for an agent to be complicit (see e.g. Gardner 2007; Lepora & Goodin 2013), while others deny this (see e.g. Kadish 1985; Kutz 2000, 2007; Lawson 2011; Driver 2015a, 2015b). There are only two of these accounts, however, that are comprehensive enough for my purposes. In subsequent sections, I shall consider Kutz's as well as Lepora and Goodin's accounts, which are proponents of each side of this division.

3. KUTZ'S ACCOUNT OF COMPLICITY

Christopher Kutz's (2000, 2007) account is arguably the most prominent in the literature on complicity. In a nutshell, it is based on the thought that an agent is complicit in the wrongdoing of others if the agent intentionally participates in that wrongdoing. This thought, however, comes in two versions: first, one primarily focused on wrongdoing within structured groups and, second, one that also tries to incorporate complicity in less organized circumstances. As we shall see, neither of the two formulations is suited to account for obligations of agents along the supply chain. Let us look at each in turn.

3.1 Participatory Intentions

According to the first version of Kutz's account, being complicit in wrongdoing involves having a *participatory intention* in relation to that wrongdoing, which means having an intention to do one's part toward a particular collective endeavor (Kutz 2000: 67). In order to be complicit in wrongdoing, then, an agent needs to intend that their actions contribute to the goal shared by those engaged in the wrongdoing (Ibid: 81). That is not to say, though, that agents are complicit in wrongdoing merely because they intentionally perform actions which happen to contribute to that wrongdoing. Rather, they have to intend for their actions to further the end of those that do wrong. Another possible misunderstanding is that an agent, in order to be complicit, has to intend for the end to be morally wrong. Instead, Kutz says that it is possible to be complicit in a wrong, such as the production of chemical warfare, without the accomplice intending for their actions to contribute to war crimes, but perhaps rather to the making of a profit.

What forms the basis of complicity on Kutz's account is therefore not one's causal contribution to the end, but how the mental states of the accomplice relate to the furtherance of that end (Ibid: 122). In fact, Kutz concedes that one can be morally culpable for an outcome without making a difference to its occurrence. So, how does this relate to bearing obligations to avoid complicity? Using Kutz's account to refine ACP, there is a moral obligation not to intentionally participate in wrongdoing.[151] In *Complicity in Murder*, we can explain the accomplice *R*'s complicity as a participatory intention to assist *P* in the murder of *Q*. This is because *R* intends to do

151. It should be mentioned that Kutz does not himself explicitly refer to obligations to avoid being complicit. Instead, he mainly talks about 'accountability', which I take to be synonymous with moral responsibility (Kutz 2000: 17–8). I take the implications of responsibility for complicity to be transferable to moral obligation regarding complicity. See also Footnote 1.

their part toward *P*'s end of murdering *Q*, by driving *P* to *Q*'s home. It is not *R*'s causing of a certain state of affairs that makes them an accomplice, but their intentional contribution to the end of murdering *R*. *R* consequently acts wrongly because they violate their obligation to avoid complicity.

Applied to our climate case, this means that agents of the supply chain bear duties not to intentionally contribute to endeavors that cause harmful emissions. In order to be complicit, they do not need to cause the emissions themselves. To take an example, the CEO and other high-ranking officials of a car manufacturing company intend to manufacture an environmentally harmful product. They each therefore intend for their actions to contribute to the production of a product that emits harmful GHGs. By having these intentions, the agents thus engage in complicity and they are thereby eligible to bear a duty to avoid doing so. This holds true of every agent that has an intention to promote the goals of those who do wrong.

Kutz's notion of participatory intentions thereby accounts for how agents of the supply chain who share common ends and engage in business within goal-oriented organizations—such as the car manufacturing firm—can be morally complicit in climate harm and bear duties to avoid being complicit. But this is not true of all agents. Other agents of the supply chain may lack a sense of participation toward any particular end. Specifically, many agents appear to fail to bear participatory intentions toward the climatic wrongdoing that they contribute to. If that is the case, though, it would mean that these agents fail to be accomplices on Kutz's account. I think that this conclusion—that unintentional contributions to wrongdoing are not cases of complicity—points to a weakness in the account.

To see why, consider employees further down the company ladder, such as the car manufacturing company's assembly line workers or shipping clerks (to take Kutz's example). These agents might do their jobs for reasons that are completely different from those of the CEO and the ends of the company. It is thus possible that they do not intend for their actions to further the end of manufacturing an environmentally harmful product. For instance, the assembly line worker could have nothing but a passion for their particular job assignment, irrespective of the part this plays in furthering the company's goals, and maybe the shipping clerk's sole intention is to make a living from whatever employment they happen to have acquired. It is even possible that these agents earnestly do not want to contribute to environmental wrongdoing, yet both feel compelled to do so for their families' sake. In that case, it is not because of, but rather *in spite of*, the company's goals that the employees do their job. It would thus seem rather odd to say that the assembly line worker and the shipping clerk intend for their actions to further the goal of the firm. Nonetheless, granting their participation in wrongful pursuits and their knowledge of doing so

(coupled with an ability to do otherwise), they would appear no less culpable than their intentional counterparts.[152] They still appear to be standing in a morally problematic relation to the wrong, in a sense that arguably preserves the intuitive appeal of complicity cases.

In response to cases such as this, Kutz emphasizes that the conditions for participation in wrongdoing are not subverted so easily as the above example suggests. He argues that regular association with a collective endeavor often tends to make the contributors into self-identifying participants, regardless of whether they initially pursued the end in question or not. Kutz thus appears to be saying that long-term association with an organization generates acceptance of the role one plays within it: "a continuous and dynamic relation with the group tends to bring with it a conception of oneself as a participant in some form" (Ibid: 162). I still find it unlikely, though, that agents will eventually intend for their actions to contribute to a certain goal if they do not subscribe to it, and especially if they oppose it. What we do in our professional lives in particular can oftentimes be done quite reluctantly and only because social commitments and external pressure forces us to.

Agents of the supply chain, as exemplified by the lower-level employees of the car manufacturing firm, are therefore arguably not intentionally contributing to ends towards which they are averse or indifferent. At the same time, they nevertheless appear to be involved in wrongdoing in a morally problematic way. They seem to stand in a relation to the environmental wrongdoing of the firm just as much as any of their coworkers would if these did so with the purpose of contributing to the company's goals. Cases such as these therefore appear to pose a problem for Kutz's account. Additionally, there are cases which are even more problematic for Kutz.

Kutz himself mainly discusses participatory intentions *within* organizations. But, what about those agents that are not part of our car manufacturing company, yet still engage in the environmental wrongdoing that is connected to it? Customers, shareholders, and retailers each do their part in causally furthering the ends of some organization, yet since they are not part of it, it is far from obvious that they intentionally promote those ends. One way in which such situations occur is when there is a mismatch of goals across stages of the supply chain. Since the climatic harm that is brought about in production and consumption of emission-intensive goods and services is made up of contributions from across the whole supply chain, it would have to be true that there are goals shared along its many different stages in order to show that each part is complicit in that harm. This, however, is not likely. *Suppliers* and *Distributors* typically promote their own profits, and not some other shared collective end. *Consumers* generally act in their own self-interest, or for no apparent

152. A similar argument has been made by Lawford-Smith (2018: 328).

reason at all.[153] Therefore, it appears that there is seldom a single end that guides the actions of all the agents participating in the supply chain of a product or service.

It could be objected that different parts of the supply chain of a product could share the common goal of making a profit and do their part toward this end by assembling, marketing and selling the product. If this counts as a participatory intention, the agents of the supply chain would thus be complicit in the wrongdoing attached to that product. However, this does not seem to be enough to ground complicity via participatory intentions. Although many business entities emit GHGs in the name of profit, they usually do it for their *own* profit, and not for the goal of each business partner receiving their share of some common benefit. A variation on the same objection is that the necessary and sufficient condition (presented in Chapter 1) that make agents participants of a supply chain—namely that they must contribute toward the supply or consumption of a product or service in a certain way—makes them complicit because they intend to participate in that end. In order to be acting as part of a supply chain, however, I do not require that agents intend for their actions to contribute to the supply or consumption of products or services in that way. Agents might just as well be part of the supply chain in virtue of acting unintentionally, or in pursuit of some other end. The conditions for performing actions along a supply chain therefore does not suffice to connect possible accomplices to the relevant wrongdoing in a way that grounds complicity.

So far, we have seen that some, but not all, agents of the supply chain count as accomplices according to Kutz's notion of participatory intentions. However, there is still a significant portion of supply chain agents that appears to stand in a morally problematic relation to wrongdoing, but without intending for their actions to contribute to the end shared by the wrongdoers. In fact, countless agents across the supply chain contribute to harmful emission-generating activities knowingly and with full control, without having an intention for their actions to form part of some goal shared by other agents. It seems odd to say, then, that these latter agents are at no fault in what they do just because they do not intend to contribute to a particular end, while it is culpable to do the same thing provided that they possess the right sort of intention. I propose that this shortcoming is due to Kutz's account being primarily focused on structured groups, whose organization make their members likely to intend the realization of shared goals. Evidently, however, these do not seem to be the only cases where agents are complicit in harm. Let us see whether the second part of Kutz's account can cope with this shortcoming.

153. Schwartz has also cast doubt on the adequacy of applying Kutz's notion of participatory notions on consumers (D. Schwartz 2010: 63–4).

3.2 Quasi-Participation and Symbolic Accountability

Kutz's other version of his account of complicity is meant to complement the notion of participatory intentions. More specifically, the purpose of this addition is for it to be able to handle a wider set of cases, such as those we discussed above, where the seemingly complicit agents do not intentionally participate in organizational wrongdoing (Ibid: 166–7). There are two parts to this amendment: first, the notion of quasi-participation in collective wrongdoing and, second, the notion of symbolic accountability. The first stresses the relevance of informal networks of collaboration, while the other focuses on the symbolism attached to our moral characters. Let us take a look at each in turn, before I point out some of the problems of them.

Quasi-participation is a further development of the notion of participatory intentions. This concept is meant to explain how complicit agents can participate intentionally in less systemic forms of wrongdoing. While outcomes like climate harms are not generally produced through projects that each part of the supply chain participate in wittingly, they can still come about as part of what Kutz labels a *culture,* or *way of life* (Ibid: 167). In order to account for how accomplices partake in these cultures, Kutz takes the viewpoint of the victims of wrongdoing as his starting point. For example, while the assembly line worker and the individual consumer do not see themselves as acting together to facilitate a wrong, the victims of that wrong might do so. To them, a clear pattern emerges: "a set of individuals who jointly cause harm, against a background of interdependent activity and shared values" (Ibid: 186–7).

The victims of climate change thus perceive the wrongdoing differently than the accomplices. The formers' perception of the latters' quasi-participation in wrongdoing forms a picture of a culture tied together by a set of shared norms and activities. One example might be a *market culture*, where agents engage in seemingly harmless business transactions with each other in pursuit of goods and services, that nonetheless forms an integral part of emissions due to international trade. Within such a larger culture, there might be smaller components, such as a *company culture* and a *consumption culture*, where employees and customers share their respective values and engage in activities particular to their area. An agent who engages in such a culture is thus, on Kutz's account, in some sense participating in wrongdoing and is therefore complicit in that wrong.

Kutz, however, sees the need to complement the quasi-participatory viewpoint with a second basis of responsibility—*symbolic accountability.* His reason for doing this has to do with providing potential accomplices with sufficient motivation to avoid complicity. The issue here is that what victims reasonably perceive as systemic wrongdoing might not be picked up upon by those who engage in that wrongdoing, to the point where they see themselves unable to make a difference and thus become

unmotivated to act. The complementary second basis of Kutz's account grants that agents also can be complicit in wrongdoing in virtue of the symbolism that their characters display (Ibid: 186–90).[154] Here, Kutz appears to be suggesting that actions, regardless of their consequences, function as symbolic indicators of good moral character, and thus have a sort of expressive function. This means that there is an additional moral basis for supply chain agents to avoid complicity, since acting in certain ways expresses engagement, indeed complicity, in wrongdoing.

Agents along the supply chain are thus, on Kutz's second formulation of his account, complicit in the harm produced by the rest of the supply chain partly because these activities constitute a quasi-participation in the contribution to climate change, and partly because their actions symbolize a sort of morally deficient character. However, this version of the account is lacking in detail on two crucial points.[155] A first problem relates to the notion of quasi-participation.[156] The issue is that this part of Kutz's account seems to make obligations to avoid participating in wrongful conduct contingent on the possibly fallible accounts of victims of that wrong. How do we, for example, differentiate the testimony of victims of climatic harms, who—perhaps correctly—ascribe that to consumerism and a lavish western way of living, from the testimony of those who blame this on the preposterous notion of a global Jewish conspiracy? Kutz's account fails to provide us with a principled way of settling disputes such as this.

A second problem is that it is unclear how we are to understand the notion of symbolic accountability. In particular, it appears that some actions can symbolize more than one thing at the same time. When actions appear faulty for one reason, but morally defensible for another, how do we decide which one grounds moral obligation? For instance, if I buy cheap but climatically harmful food for my starving family, does this symbolize that I display a lack of concern for the climate, or that I care for my children? Again, Kutz fails to provide us with a principled way for us to separate between important cases. More generally, it can also be argued that it is unclear why the complicit act symbolizes bad character if it does not causally contribute to the wrongdoing in question. A natural response is that the action typically, or under normal circumstances, would cause the wrong, or perhaps that it is probable that it would do so. But Kutz also wants his account of complicity to explain why agents are complicit in cases where these conditions do not obtain.

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154. This approach has some affinity with virtue theory. For general discussion of virtue theoretical approaches to climate ethics, see Jamieson (2007), Sandler (2010), and Hourdequin (2010). For criticism, see Wündisch (2014), and Kingston and Sinnott-Armstrong (2018).

155. For a similar criticism of Kutz's account, see D. Schwartz (2010: 80).

156. For another objection to Kutz's quasi-participatory basis of complicity, see Zoller (2015: 999–1000).

In summary, Kutz's account of complicity comprises one version for complicity in structured settings, and one for more unstructured wrongdoing. In the first of these, the notion of participatory intentions implicates any agent in wrongdoing who intends that their actions contribute to end of the principal wrongdoer. For less structured settings, Kutz presents a two-fold basis for complicity: quasi-participation and symbolic accountability. However, neither of these two versions of an account of complicity seem well-suited for explaining the obligations of supply chain agents to avoid being complicit in climate harms. The first variant can handle complicity in more organized cases of wrongdoing—such as that of high-ranking company officials—but fails to account for complicity in less structured settings—such as the unorganized amalgamation of climatic harm—notwithstanding that both types of case seem to involve standing in a relation to wrongdoing in a morally problematic way. The second variant of the account lacks in detail on a number of important issues, which thereby fails to let us separate ostensible cases of complicity from real ones.

I thus conclude that Kutz's account of complicity fails, at least as applied to our case of wrongdoing along the supply chain. My conjecture is that if a successful account of complicity is to be put forward, it cannot be based solely on the notion of intention. It seems perfectly possible to be complicit in wrongdoing without intending for one's actions to contribute to that wrong. In the next section, therefore, we shall look at a different conception of complicity.

4. Lepora and Goodin's Account of Complicity

After having rejected Kutz's account, let us take a look at an account of complicity presented by Chiara Lepora and Robert Goodin (2013). Lepora and Goodin's account differs from Kutz's in several respects, with the main difference being that, on their account, there has to be a causal link between the accomplice and the wrongdoing in order for complicity to obtain (Ibid: 33–4). This section looks at the different ways, on Lepora and Goodin's account, that agents can be complicit in wrongdoing and what conditions need to obtain in order for agents to bear an obligation to avoid complicity. We shall begin, in the first subsection, by looking at a number of different ways of being complicit, before we turn to the issue bearing obligations to avoid complicity.

4.1 Types of Complicity

Complicity, on Lepora and Goodin's account, requires there to be a causal connection between the accomplice's act and the act of wrongdoing.[157] Returning to *Complicity in Murder*, we can see that *R*'s act of driving *P* to *Q*'s home only counts as an act of complicity according to Lepora and Goodin if it causally contributes to the wrongdoing. Exactly what form this causal connection takes depends on the type of complicity involved. Lepora and Goodin distinguish between six related notions: *complicity by collaboration*, *complicity by connivance*, *complicity by condoning*, *complicity by consorting*, *complicity by contiguity*, and *complicity simpliciter*. Let us go through each of these in turn to see whether the agents of the supply chain qualify as complicit on any of them.

Complicity by collaboration requires that the agent acts so as to contribute to the wrongdoer's plan coming into fruition (Ibid: 43). While it involves accepting and acting on the plan of the wrongdoer, it does not have to involve any endorsement thereof; a collaborator might, for instance, have pragmatic reasons for acting on a plan.[158] In order for an agent in our climate case to be complicit by collaboration, they need to act so as to further the ends of the wrongdoers. While we saw in the previous section that there is no unitary plan for all the supposed accomplices of the supply chain, *complicity by collaboration* does not require that an agent intend or endorse the wrong in question. All that is needed is that the wrongdoer's plan is accepted and acted upon. One example of *complicity by collaboration* is the assembly line worker from the previous section; while the worker might not endorse the ends of the firm, they distinctly accept and contribute to it. There thus seem to be many agents complicit by collaboration across the supply chain. Anyone situated to make a causal contribution, without requiring that they intend for the wrongdoer's end to be pursued, can be complicit by collaboration. This solves the problem raised in the previous section about accounting for the complicity of agents who engage in wrongdoing but lack the intention to do so.

Complicity by connivance involves deliberately overlooking the wrongdoing of others (Ibid: 44–6). The causal contribution to wrongdoing by conniving typically involves omission, as when the agent could have prevented a wrong from occurring, but refrained from doing so. Another case would be when the conniver, by doing

157. However, an agent is only a candidate for complicity if the agent does not qualify as a wrongdoer themselves (Lepora & Goodin 2013: 36–40). In Section 2, I assumed that what distinguishes complicity in wrongdoing from wrongdoing itself is that the latter includes an agent being blameworthy for causing an expectation of unjust harm, while the former does not. A moral agent cannot thus, on Lepora and Goodin's account, be complicit in a harmful event if they are already blameworthy for it.

158. This is the type of complicity on Lepora and Goodin's account which is closest to Kutz's notion of participatory intentions.

nothing, encourages future acts of wrongdoing, through making the wrongdoer confident that no one is going to object to their actions. In this thesis, I have chosen not to focus on the possible wrongfulness of omissions in the climate case, but instead on wrongdoing that involves actions (see Footnote 19). Therefore, I shall not consider this type of complicity further.

Complicity by condoning means to pardon or forgive the wrongful actions of others (Ibid: 47–8). While connivance was about passively overlooking a wrong, condoning is about actively pardoning it. Condoning cannot count as a causal contribution to wrongdoing that has not already occurred, since the act of pardoning is performed retroactively. However, this could still function as an encouragement for future wrongdoing. It thus appears that certain actions along the supply chain are cases of *complicity by condoning*. In selling and purchasing emission-intensive goods, for instance, it could be argued that agents are signaling their implicit forgiveness of any wrongs that have previously occurred in the process of manufacturing them. By purchasing or retailing products, they are condoning the production of GHGs, and thus encouraging further wrongdoing by increasing the likelihood that the product will continue to get manufactured.[159]

Complicity by consorting is described by Lepora and Goodin as associating with wrongdoers in a minimally promoting fashion. Consorting qualifies as a causal contribution to wrongdoing insofar as one's company with principal wrongdoers might encourage them to do wrong. Acting in consort thus "signals one's agreement with and approval of their actions; and that encourages them in their wrongdoings" (Ibid: 49). In the climate case, an agent might, for example, engage in *complicity by consorting* by accompanying a friend who purchases emission-intensive products or services. Another example is firms that discuss business strategies with fossil-fuel intense producers. While neither of these actions give direct support to the wrongdoers, one can see that the association with particular actors makes it more likely for them to continue doing wrong.

Complicity by contiguity, like consorting, pertains to the activity of associating with wrongdoers, but with the difference that the current notion only requires mere physical proximity (Ibid: 50–1). In the sense that contiguity makes a causal contribution, this is only because the presence of the agent signals implicit encouragement to do wrong. One example might be a business owner who agrees to

159. It could be argued that selling or purchasing products often fails to count as *complicity by condoning*, since the accomplices do it in order to feed their families, or to further their own interests, and not to condone the wrongdoing of the principal. However, I do not take Lepora and Goodin's thought to be that the complicit agents have to condone the wrongdoing in the sense that they intentionally tolerate them, but that the complicit act may signal that sentiment, to the point where others interpret the complicit act as condoning, thereby encouraging further wrongdoing.

be a co-sponsor of a particular event so that the business name will appear together with the names of emission-producing firms in advertising. The mere presence of their brand names together would thus lend legitimacy to the actions of a harmful firm. Perhaps another example is the employees of companies that frequent the same business events, like trade fairs, as those that engage in wrongdoing.

Finally, *complicity simpliciter* is the type of action that does not specifically fit into any of the other categories of complicity. What is necessary for this type of action is that the complicit agent "'knows, or should have known, that by [acting] he or she will advance whatever intentions the principal has'" (Ibid: 41–2). Being *complicit simpliciter* can take a number of different forms, typically involving incentivizing or facilitating the wrongdoing. It can also be performed before, during, or after the principal act of wrongdoing (in which case the complicit act must somehow contribute to the occurrence of further harm). It should be noted that there is a fine line between complicity of this type and *complicity by collaboration.* The major difference is that while *complicity by collaboration* requires that an agent accepts and acts upon the principal's ends, *complicity simpliciter* only requires that the accomplice knows, or should have known, that their actions advance the principal's end. A case that might fit better as *complicity simpliciter* is shareholders who purchase stock from firms that they suspect are engaged in harmful emissions. The shareholders thus take an active role in advancing the firm's goal by making an investment and thereby stand in a position where they should know that the firm does wrong, without accepting its goals, as is required by *complicity by collaboration.*

Thus far, we have seen that Lepora and Goodin's account of complicity comprises six different types of complicity in wrongdoing. Among these, it has been shown that agents of the supply chain can be *complicit by collaboration*, *condoning*, *consorting*, *contiguity*, as well as *complicity simpliciter*. I chose not to discuss *complicity by connivance* due to its exclusive focus on omissions. Establishing that a particular agent is complicit in wrongdoing is not enough, on Lepora and Goodin's account, to conclude that they are morally culpable, however. On their account, there are additional conditions for being obligated to avoid complicity. This is the focus of the next section.

4.2 Obligation and Complicity

Lepora and Goodin explain that the degree to which one bears an obligation to avoid complicity in wrongdoing is the function of four different factors:[160] first, the control and knowledge of the complicit agent; second, the severity of the wrongdoing; third, how the attitudes of the accomplice relate to the wrongdoing; fourth, the way in which the act of complicity contributes to the wrongdoing (Ibid: 97). It is only the first of these conditions that is necessary for bearing obligations to avoid complicity. If a moral agent has the necessary control to avoid complicity and the knowledge required about how their actions relate to the wrongdoing, then they are obligated to avoid being involved in that wrong.[161] Let us continue by looking closer at each of the four conditions.

The first factor determining a potential accomplice's moral duty is whether they fulfill necessary conditions of control and knowledge for their causal contributions (Ibid: 82–3). In terms of control, the contribution cannot be either involuntary or merely accidental. In terms of knowledge, the accomplice must be informed of the role that their action plays in relation to the principal wrongdoing, as well as of the wrongness of the actions of the principal wrongdoer. For agents of the supply chain to bear duties to avoid complicity, then, they need to be in control of doing so and have knowledge about how their actions will relate to harmful emissions. If an agent does not fulfill these conditions, they also fail to be complicit in the first place (Ibid: 110).

Second, the extent to which an agent is obligated to avoid complicity naturally depends on the severity of the wrongdoing they contribute to (Ibid: 103–4). An agent has more reason to avoid being complicit in wrongdoing the worse that wrongdoing is. In our case, I will take this to be a function of how much expected harm the principal wrongdoer is blameworthy for causing. Moral agents of the supply chain thus have stronger obligations to avoid complicity in GHG emissions, the more severe the harmful effects of these emissions are.

According to the third condition for bearing an obligation to avoid complicity, we have to consider how the attitudes of the accomplice relates to the wrongdoing (Ibid: 107–9). This is a question, first, of whether the complicit agent shares the purposes of the principal wrongdoer, second, the strength of these purposes and, third, the degree to which the overlap of shared goals guides the actions of the

160. This part of Lepora and Goodin's account is originally formulated in terms of what I take to be roughly synonymous with moral responsibility. Hence, I take their conclusions about this to be transferable to conclusions of moral *obligation* for avoiding complicity. See also Footnotes 1 and 151.

161. However, if each condition is fully met, and the agent proceeds to act so that they are complicit, then the agent is *pro tanto* responsible *for the wrongdoing*, and not just their complicity (Lepora and Goodin 2013: 110).

accomplice. This is not a necessary condition for moral obligation to avoid complicity, but strengthens the obligation in proportion to the degree to which the three subconditions are fulfilled.

Lastly, we shall consider the fourth condition of obligation—to what degree the act of the accomplice makes a contribution to the wrongdoing (Ibid: 106). This is not meant to be a measure of how much badness the agent *actually* contributed, but rather a figure of how great a contribution the agent could reasonably have foreseen their actions to have had. This is itself a function of eight different subfeatures, of which I shall only mention the one I take to be most important for our purposes: *essentiality*.[162] This refers to whether the acts of the accomplice are necessary for the wrongdoing to occur (Ibid: 60–4). Here, Lepora and Goodin differentiate between acts that are *definitely* essential to the wrongdoing and those that are *potentially* essential.[163] The difference between these is that the former refers to acts that are actually essential to wrongdoing, while the latter to acts that are necessary for *some* of the different ways in which the harms could have come about. This means that even if a supply chain agent's contribution is actually causally inefficacious, their act could have had a relevant effect. In terms of obligation, an agent of the supply chain therefore needs to avoid possibly essential contributions to wrongdoing in addition to actual ones.

So far, a rather sophisticated picture of obligation to avoid complicity has emerged. In order for an agent to bear a duty not to be complicit, on Lepora and Goodin's account, the agent thus first needs to act voluntarily and be informed of how their actions relate to the wrong, second, the wrongdoing needs to be sufficiently morally bad, and, third, the agent must reasonably foresee their action to make a causal contribution to the wrong. Furthermore, the more severe the wrongdoing is that the accomplice contributes to, and the more the agent lets those goals shared with the principal wrongdoer guide their behavior, the stronger the duty to avoid complicity becomes.

So, what is the moral import of this account for the agents of the supply chain? First, some agents of the supply chain—such as those discussed in Section 4.1, who have an insight into the wrongdoing of the principal, and have an ability to do otherwise—stand in a position to voluntarily and knowingly act so as to contribute to wrongdoing. Second, the wrongdoing involved in climatic harm is sufficiently morally wrong in some cases to ground an obligation not to be complicit in bringing it about—particularly those cases where more emissions, and thus more harm, is

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162. The other subconditions include features such as the temporal and spatial proximity of the accomplice's contribution, as well as the extent to which it is reversible (Lepora & Goodin 2013: 66–70). None of these conditions are directly relevant to the purpose of this chapter.

163. Definite essentiality refers to roughly the same type of causation as I defended in Chapter 1.

brought about. Third, some supply chain agents could reasonably have foreseen their actions to have a causal impact on the wrongdoing, especially those involved in *complicity simpliciter*, *complicity by collaboration*, and *complicity by condoning*. Fourth, while not required for bearing obligations, the end of some complicit supply chain agents and wrongdoers sometimes overlap. In effect, then, a rather large quantity of the supply chain bears obligations to avoid being complicit in wrongful contributions to climate change.

In contrast to Kutz's account, Lepora and Goodin's account lets us explain the complicity of supply chain agents even though they do not participate in organizational wrongdoing, or if they lack the intentions to contribute to the wrongdoer's end. There is still, however, thematic overlap between some of Lepora and Goodin's notions and that of Kutz's, which lets the former retain some of the appeal of the latter. To give an example, Lepora and Goodin's account can explain how an intentional causal contribution to someone's wrongdoing is a case of complicity, without limiting complicity solely to intentional wrongdoing. In conclusion, then, it seems that Lepora and Goodin's account succeeds where Kutz's account failed. I shall consequently proceed under the assumption that the former is the best suited to apply to the case of climate change.

5. Doing Away with Complicity

So far, we have looked at what I take to be the most promising account of complicity—that of Lepora and Goodin—and how it can be applied to the climate case. With the best possible statement of the notion of complicity thus on the table, I am going to argue that complicity is not a viable concept for grounding moral obligations to take action on climate change. My thesis is that presumed cases of complicity either collapse into cases involving morally permissible actions, or into cases where there is an expectation of causing wrong (and particularly, for our purposes, *harm*). Consequently, there is thus no *sui generis* moral obligation to avoid being complicit in others' wrongdoing. The agents of the supply chain thereby fail to bear duties to avoid complicity. In the following subsection, I shall present how complicity can be explained away, and in the next I consider some objections to my argument.

5.1 Subsuming Complicity under Causation

Several philosophers of complicity are critical of the notion.[164] One particular criticism that has been raised is that complicity might be a fundamentally redundant concept (Moore 2007; Bazargan-Forward 2017). According to this view, the presumed impermissibility of being complicit in wrongdoing can instead be explained with reference to causation. Bear in mind that the account of complicity remaining on the table—that of Lepora and Goodin—requires there to be a causal connection between the accomplice's act and the wrongdoing. Given that this account is the best account of complicity, I propose that cases of complicity instead are cases of expecting to cause harm.

To be more precise, I shall argue that for every purported case of obligation to avoid complicity, there are two possibilities. First, the obligation can be explained away. In these cases, there simply is no obligation to avoid the act in question. If the act of complicity does not cause, or raise the probability of harm occurring, then the act is most likely not wrong. The second possibility is that if there really is an obligation, this can be accounted for by the supposed act of complicity having certain causal properties, such as causing or expecting to cause harm. In the second type of case, the purported obligation is therefore more likely an obligation not to do harm.

Let us begin by considering the second possibility, by returning to the case of *Complicity in Murder*. In this case, the principal wrongdoer *P* murders *Q*. *R*, however, assists *P* in the murder. On Lepora and Goodin's account, this qualifies as complicity in wrongdoing. To be more precise, it appears to qualify as a case of *complicity by collaboration*, since *R* accepts and acts on the plan of the principal *P*. *Ex hypothesi*, *R* thus bears an obligation not to engage in the activity of driving *P* to *Q*'s house. My view, however, is that if *R* bears an obligation not to drive *P*, then this is because doing so somehow causes, or raises the probability of causing, harm. More precisely, I take *R*'s action to eventuate part of a joint cause which results in *Q* being murdered, such that *Q*'s death is causally dependent on *each* of *R*'s and *P*'s actions. The expected harm of bringing *P* and *Q* together is therefore quite significant. A duty not to do expected harm, as dictated by NHP, would prohibit *R*'s action of doing so and *R* consequently bears a duty not to drive *P* to *Q*'s house.

We saw in Section 2 that part of the appeal of the notion of complicity is that it makes it possible for agents to be culpable beyond being at fault for bringing about harm unilaterally. I have, however, already shown how something akin to this is possible in previous chapters. If the arguments I laid out in previous chapters about

164. For a general commentary and criticism of Lepora and Goodin's account, see Ratner (2016) and French (2016). Another objection is that obligations to avoid complicity are too demanding (Lawford-Smith 2018: 337).

the moral wrongfulness of jointly causing harm with others are correct, then complicity appears to do no additional work in explaining the wrongdoing in jointly doing harm. A similar point about complicity has been made by Saba Bazargan-Forward (2018). He argues that an agent's culpability in a wrongful act should be the same regardless of whether the agent contributes to the wrong directly, or through some other agent. Suppose that instead of dropping off their murderous friend at *Q*'s house, *R* decides to plant the bomb themselves. The result is exactly the same—*Q* is killed by the blast—but instead of making a causal contribution through *P*, *R* is now the sole perpetrator. But this does not make a difference to the basis of obligation for *R*. *R* has a duty not to do harm, regardless of how it is brought about.[165]

We have now considered one of two possibilities regarding seeming cases of complicity, namely that they collapse into cases of expecting to cause harm. Not all examples of complicity can be similarly reduced to such cases, however. Let us therefore turn to the other possibility regarding complicity. If an agent in an alleged case of complicity does *not* bear an obligation, then this is most likely because they cannot cause, or raise the probability of, harm. The case of *Complicity in Murder* does, as a matter of fact, appear to involve a duty not to do harm. But other cases that we have looked at so far definitely do not. If we maintain Lepora and Goodin's insistence on causal contribution as a necessary condition of complicity, there are still many cases of complicity on their account that might not qualify as acts of expecting to cause harm.

Take *complicity by contiguity* as an example. On Lepora and Goodin's account, this involves associating with wrongdoers, but without any requirement of explicit endorsement of the wrongdoing. Contiguity qualifies as complicity if the presence of the accomplice signals an implicit encouragement to do wrong. In a variation on *Complicity in Murder*, say that *P* does not ask *R* for a ride to commit the murder, but merely some company on the way. *R* still knows about the intentions of *P*, but does not share them and does not contribute to help *P* realize their plan. At the same time, *R* accompanies *P* to the murder while knowing what is about to happen. The causal link that is required for *R*'s act to qualify as complicity in wrongdoing is here provided in the form of the causal influence that *R*'s presence has on tacitly inspiring *P* to do wrong. There is thus enough of a causal link between *R*'s company and *P*'s wrongdoing for the case to qualify as complicity—suppose that *R*'s presence signals implicit encouragement to the murder—but not enough to ground a duty to avoid doing harm—let us assume that the expected harm of associating with *P* is not serious

165. There might still be a difference in stringency between the two duties, however. *R*'s duty not to do harm is presumably stronger in the case where they plant the bomb themselves, than if they give *P* a ride, since the expected harm of doing the former is likely greater than doing the latter.

enough. Based solely on NHP, then, it seems that *R* is lacking a duty not to accompany *P*.[166]

We have thus seen an example of the other possibility regarding cases of complicity, which is that the obligation to avoid complicity can be explained away. It therefore seems that presumed cases of complicity can be easier accounted for by duties to avoid doing harm. However, there are two additional types of case here which merit special attention. These are cases where it is less obvious how the above analysis can explain away complicity as causation of harm. The first pertains to cases of complicity *after the fact*. The second type of case pertains to so-called potential essentiality. We shall look at each of these in turn, starting with cases of complicity after the fact. As we have seen above, some of the different types of complicity as presented by Lepora and Goodin are such that the involvement of the accomplice with the wrongdoing occurs *after* the wrongful actions of the wrongdoer have been performed. It might thus be asked how the alleged act of complicity can be explained away as an instance of causing harm if the action is performed after the wrongdoing has already been done. No causal link between the two therefore seems possible.

Let us say, for instance, that in a variation on *Complicity in Murder*, *R* is asked to give *P* a lift home after *P* has murdered *Q*. *R* knows what *P* has done, but decides to give them a lift anyway. In this case, it would seem that *R*'s act of assisting *P* cannot be wrong in virtue of causally contributing to the murder of *Q*, because that has already transpired by the time *R* gives *P* a ride. At the same time, it appears that *R* is complicit in the wrongdoing of *P*. For example, it can be viewed as a case of *complicity by condoning*, in virtue of *R* retroactively pardoning *P*'s wrongdoing. So, does this mean that *R*'s perceived complicity in the murder cannot be explained away as a case of expecting to cause harm?

Not necessarily. I think there are several things that can still support that conclusion. First of all, if *P* knew that they were going to get a lift from the scene of the crime, and would not have gone ahead with the murder if *P* did not have a clear escape plan, then *R*'s act clearly increased the possibility of harm coming about. But even if *R* did not disclose their intention of driving *P* beforehand, *R*'s act might function as an encouragement to further wrongdoing. In that case, while it might not be true that there is a causal link from the act of *R* giving *P* a lift to the murder of *Q*, there can still be a causal link to future wrongful acts. The expectation of *P* doing further harm is arguably greater if they are assisted and thus implicitly encouraged in

166. It might of course be that *R*'s company incites *P* and gives them the necessary incentive to follow through with the plan. Even though *R* had not thought of it, *P* took this as an implicit signal of support that resulted in the killing. If so, then it could be that *R does* have a duty not to accompany *P*, however hard it may be to foresee the effect this would have on *P* carrying out the murder. But if this is so, then this is arguably easiest accounted for with a duty not to do harm, and not a duty to avoid being complicit by contiguity.

doing so. The presumed complicity of *R* can therefore be explained in terms of there being a duty on their hands not to cause an expectation of harm. So, in this modified version of *Complicity in Murder*, it would thus seem to be the case that *R*'s act of complicity after the fact can be subsumed under causation.

The second type of case where it is less obvious that complicity is subsumable under causation is complicity involving so-called *potential essentiality*. This is a type of causal involvement which implies that there are ways in which an agent can be complicit without there being an actual causal link between the presumed act of complicity and the occurrence of the wrongdoing. Above, I mentioned that one of Lepora and Goodin's conditions of bearing duties to avoid complicity depends on how the causal link between the accomplice and the involvement in wrongdoing looks. One of these types of causal involvement—called potential essentiality—is of a kind where a definite causal link is not required in order for the agent in question to be complicit. Instead, it merely requires the act of complicity to be causally necessary for some of the different ways in which the wrongdoing could have come about. This implies that even if an agent's contribution to a wrong is actually causally inefficacious, their act could have had a relevant effect. On Lepora and Goodin's account, this thus suffices for the act to be an act of complicity, and an agent can therefore bear duties to avoid possibly essential contributions to wrongdoing. The issue is that cases involving potential essentiality might appear not to be subsumable under causation. The thought here is that since there is no actual causal link between the alleged act of complicity and wrongdoing involving harm, then the agent's complicity cannot be explained away as an example of causing harm.

I do not think that is the case, however. The presumed duties to avoid complicity borne by agents in cases of potential essentiality can rather easily be explained away as duties to avoid doing *expected* harm. As we have already seen above, alleged duties not to be complicit in wrongdoing do not need to be actually causally linked to the harm in order to be subsumed under causation. All that suffices is that there is enough of an expectation of harm. We have seen examples of agents doing expected harm in alleged cases of complicity, such as in the original case of *Complicity in Murder*, where *R*'s action of accompanying *P* to *Q*'s house increases the probability of *P* doing harm, but does not necessarily constitute an actual causal link between that action and the occurrence of harm. It might be that the act of *R* in fact does no harm, but that their act still is potentially essential to the harm of *Q* being murdered. But that poses no problem for accounting for the expected harm of *R*'s action. Alleged cases of complicity involving potential essentiality therefore is not problematic to my analysis of cases of complicity as being subsumable under causation.

So far, the notion of complicity—on Lepora and Goodin's account—seems to be subsumable under causation. I thus conclude that the notion of complicity cannot ground moral obligation. Before we look at some criticism of this conclusion, let us see what it implies in the case of climate change. In the previous sections, we saw that there is a case to be made that agents along the supply chain engage in complicity in several respects. But if my claim in this section is correct, and complicity cannot ground obligation, then this does not seem to give them reason to refrain from engaging in such behavior, at least not on the same basis. Instead, presumed cases of complicity in climate harm are either examples that are non-culpable, or of violations of a duty not to cause harm.

To give an example of the first possibility, a marketer of an emission-producing manufacturing company might seem to bear a duty to avoid *complicity by consorting* and *contiguity* because their association with the firm encourages its wrongdoing. They thus appear to be under an obligation to refrain from associating with the company. But if the marketer is not obligated to avoid doing harm through its association with the company—for instance because their influence is too small—then there is in fact no duty to distance themselves from the company. The other possibility, of a seeming case of complicity in fact being a case involving a duty to avoid doing harm, can be exemplified with the caretakers of a business heating its facilities with energy produced with coal instead of renewable energy. It could be argued that the caretakers are complicit by condoning the harmful coal mining since they thus pardon the wrongdoing involved in the manufacturing process, thus encouraging further harm to be brought about. According to my analysis, however, it is easier to account for the culpable behavior of the caretakers by referring to the increased demand caused by its purchase, which increases the likelihood of energy producers causing further harm. The seeming complicit behavior of the caretakers is thus in fact a violation of a duty not to do harm.

To summarize so far, if we have granted that complicity does require a causal contribution, there are no duties to avoid complicity. Seeming cases of complicity are in fact either cases of wrongful contribution to harm, or else not morally faulty at all. It seems to be precisely the causal relation that obtains between complicity and wrongdoing that accounts for the obligation not to engage in it, and when that obligation fails to materialize into a duty to avoid doing harm, there seems to be no ground for avoiding the complicity.

5.2 Objections

The thought of subsuming complicity under causation, however, has been criticized. A general theme throughout the criticism is the thought that by doing away with complicity, we are losing a useful conceptual tool for analyzing moral obligation and responsibility. If we cannot identify certain acts as cases of complicity, the thought goes, then we lose some of the detail that is apparent in our moral landscape. One particular such objection is that causation (of harm) does not capture all that there is to complicity. The thought here is that the concept of complicity appears to get at something essential about how certain acts stand in relation to wrongdoing, without being reducible to that wrongdoing.

John Gardner, for instance, argues that certain cases of complicity are such that the accomplice cannot contribute to the principal's wrongdoing in a way that is reducible to a causal contribution (2007: 135). These cases involve so-called *non-proxyable acts*, that cannot be mediated through other agents (Kadish 1985: 372–85). One example is rape: If agent *A* assists *B* in raping *C*—perhaps by overpowering the victim—then *B* is the only one committing the rape, even though *A*'s contribution is integral to its coming about (Bazargan-Forward 2018). Gardner takes non-proxyable acts to show that there are situations in which agents cannot be at fault exclusively in virtue of their actions' causal contribution to wrongdoing. The thought seems to be that, since rape is a non-proxyable act, the wrongness of *B*'s actions cannot be mediated through *A*'s actions. Instead, the wrongness of *B*'s actions must be due to their complicity in the wrongdoing of the principal. Hence, it appears that the concept of complicity is not reducible to causal notions.

As Bazargan-Forward notes, however, this objection is misdirected (Ibid). Even though *A* does not commit the rape itself, it seems that causally contributing to it is morally wrong. Had it not been for *A*'s action, *B* would not have been able to rape *C*, and so it appears that the two agents nonetheless cause harm to *C*. It also does not matter that *A*'s act of overpowering *C* would have been less wrongful if *B* had not done their part. As we noted with reference to the cases above, the basis of obligation for avoiding wrongdoing is not any different simply because an agent jointly causes harm with someone else, rather than does so by themselves. Non-proxyable acts are therefore not a problem for my thesis of doing away with complicity. Furthermore, I cannot think of a clear case of an agent being morally complicit in a non-proxyable act in the climate case. So, even though we cannot explain away complicity in those instances where wrongdoing cannot be mediated causally from one agent to another, there are still no such cases of complicity for agents of global supply chains.

Another objection to the subsumption of complicity under causation is that this makes us lose our ability to say that acts of complicity, though still wrong, can be

less culpable than the principal wrongdoing. According to advocates of the notion of complicity, being an accomplice is not as morally impermissible as being the principal wrongdoer. The notion of complicity, therefore, lets us say that morality is more fine-grained than we would be able to without the notion. So, by doing away with complicity, we are therefore at a loss of being able to account for degrees of moral wrongness. Lepora and Goodin's account, in particular, seems well-suited for detailed analysis of exactly to what extent an agent's act is to count as a wrongful contribution to wrongdoing.

I think this is a mistake, though. First of all, the expected harm of different actions varies in severity in a manner that gives them differing moral weight. There is less moral reason to refrain from performing an action with a low expected harm than one with a high expected harm. The obligation to refrain from performing either action can therefore definitely be said to admit of degrees. Second, we have seen in earlier chapters that different duties have different normative force. Duties not to do harm, for instance, was assumed to be more stringent than other types of duties. Again, this lets us discern varying degrees of moral obligation and responsibility.

A final objection is that my criticism of the notion of complicity is a false dichotomy. One could argue that the above line of reasoning only makes sense if complicity is a notion rooted in causation.[167] Since complicity does not have to be a fundamentally causal notion (so the argument goes), it is not fair to say that alleged complicity cases must be either faultless or cases of doing harm. For instance, someone might object that some of the variants of complicity which I surveyed in Section 1—such as complicity through moral taint, or complicity by benefiting from wrongdoing—where there arguably is complicity but no causation of harm, cannot be subsumed under causation. The reason that I set these kinds of complicity aside is that they were not covered by the accounts of complicity which are the only two which I take to be elaborate enough to be applied to the case of climate change. It could of course be argued that this move is unwarranted, and that there might be some other conception of complicity which resists my proposed subsumption under causation. Granted, my claim is conditional:[168] If complicity as a concept ought to be understood in terms of Lepora and Goodin's account, then alleged cases of culpable complicity can be reduced to either faultless acts or acts of doing harm. In other words, it might be that the purported wrongfulness of complicity cannot be explained away as either faultless or subsumable under causation if complicity is not a causal notion. However, the only other comprehensive contender for a non-causal

167. See Footnote 150.

168. Furthermore, I have only talked about complicity in wrongdoing conceived as wrongfully causing harm. It is possible that taking other types of wrongdoing into account might yield a different result.

account of complicity was rejected, and there is no other account of complicity deemed elaborate enough for my purposes. Therefore, this objection fails.

To conclude this section, I take complicity not to be a viable concept for grounding moral obligation in general and so not in the case of climate change in particular. Under closer inspection, the cases where agents appear to be obligated to avoid complicity is easier accounted for with reference to duties not to do expected harm. Those cases where agents do not seem complicit are those cases where there is no duty to avoid doing harm either. I therefore take complicity to be a notion that can be explained away as expecting to cause harm and that no agents of the supply chain therefore hold duties to avoid complicity.

6. Concluding Remarks

This chapter introduced the notion of complicity in wrongdoing. After having presented the notion as the involvement of an accomplice in the moral wrongdoing of others, I examined the idea of grounding obligations of supply chain agents on complicity. This idea has some appeal, since it would grant supply chain agents an additional basis for duties to refrain from emitting GHGs. While the thought has received some attention in the climate ethics literature, it has so far not been given a thorough analysis. To see whether complicity could be a ground for obligation in the climate case, I first looked at an account of complicity as presented by Christopher Kutz, which was ultimately rejected. A more promising account was found in Chiara Lepora and Robert Goodin's formulation.

After explicating their account, however, I found that, as a basis for moral obligation, complicity is not a viable notion. Presumed cases of complicity in wrongdoing can either be explained away as non-culpable or as cases where agents expect to cause harm. Since the impermissibility of doing the latter has already been accounted for in my analysis of duties not to do harm, the notion of complicity seems to do no explanatory work here. What this seems to suggest is that attempts to base moral obligation of agents participating in supply chains on weaker causal relations than that of causing harm fail.

In the next chapter, we shall consider the issue of non-compliance, and how states might work to promote the compliance of the duties that are still on the table.

Chapter 6
Promoting Compliance

While agents along the supply chain have duties to reduce or offset their emissions, few of them comply with their duties. As a result, they continue to do harm, and some of them are blameworthy for doing so. In this chapter, we shall look at what can be done in terms of public policy in order to promote the compliance of agents participating in global supply chains. The question I want to ask is what can be done in order to induce these agents to fulfill their duties not to do harm. Specifically, I am going to investigate whether it can be the obligation of *states* to see to it that agents of the supply chain do not transgress duties not to cause harm. Do states, for instance, have duties to incentivize agents to act more sustainably? And can it be permissible to ban some of the means of doing harm through emissions? I will argue that states have a duty toward the agents of the supply chain that are active within their territories to facilitate these agents' compliance with duties not to do harm through emissions. I will model my proposal on an argument made by Simon Caney, according to which agents can have so-called second-order obligations to promote other agents discharging their first-order obligations.

The chapter is structured as follows. Section 1 introduces the issue of supply chain agents' failure to comply with their duties not to do harm. Section 2 presents Caney's distinction between first- and second-order obligations. I then argue, in Section 3, that states are the appropriate bearers of second-order duties to promote compliance of supply chain agents. Section 4 takes a closer look at a number of possible policies meant to promote compliance. Section 5 considers objections, and Section 6 concludes the chapter.

1. Non-Compliance

Given that the arguments I have presented in previous chapters are sound, supply chain agents have duties not to do harm through emissions. But they regularly fail to fulfill these duties (see e.g. Broome 2016: 158). Agents of the supply chain emit GHGs and cause harm and, as a consequence, some of them are blameworthy for doing so. If all these agents were to fulfill their duties, then the threat of climate change would most likely be averted. But since the possibility of dangerous climate change is still very much real, some agents are evidently not doing what they morally ought to. Let us say that agents of the supply chain thus fail to *comply* with their duties not to do harm. While there is a general discussion in climate ethics about what should be done under non-compliance (see, for instance, Miller 2011; Hohl & Roser 2011; Schwenkenbecher 2013), I shall not be concerned with this topic here. That discussion is mainly about states' failure to comply with doing their fair share of mitigating climate change. I shall instead specifically focus on supply chain agents' non-compliance with duties not to do harm through emissions.

The occurrence of non-compliance among agents who participate in the supply chain of a product or service comes as no surprise. We have seen, in Chapters 3 and 4, that there is reason for agents to disregard their obligations to reduce or offset GHGs. To cease emission-generating actions or offset emissions is, in general, contrary to the interests of individual agents. This is because those actions that lead to emissions typically satisfy highly valued interests of ours. In order to comply with our duties not to do harm, then, we might have to sacrifice culinary experiences and other forms of consumption, travel, and even certain forms of employment. What we are concerned with in this chapter is what can be done in order to get agents to comply with their duties even though they are reluctant to do so. What, in other words, needs to be done in order to induce agents to discharge their duties not to do harm?

The answer is quite simple: Make it easier for agents to make the morally right choices, and harder to make the wrong ones. For instance, it is more likely for an agent to switch to a vegetarian diet if there are reasonable vegetarian options available, to choose public transportation if there are more bus lines available and if prices are reasonable, and so on. Conversely, non-compliance is less likely under circumstances where it involves a cost of some kind. For example, consumers are less likely to use plastic bags if there is a charge on them, and fewer agents would purchase products manufactured with fossil fuels if there was a tax on them. Likewise, several philosophers have noted that institutions can enable the adoption of climate-friendly lifestyles (Nihlén Fahlquist 2009; Lichtenberg 2010: 576–7; Cripps 2013: 142; Caney

2014; Tan 2015; Lawford-Smith 2016a).[169] Furthermore, many authors already hold that fighting climate change is mainly the job of governments, and ultimately our elected politicians (see, e.g. Johnson, 2003: 283–4; Sinnott-Armstrong 2005; Tan 2015; Maltais 2013). This enables us to make a plausible case for promoting compliance through public policy. The purpose of this chapter is thus to explore the possibility of states promoting compliance of agents' duties not to do harm through emissions.

We have already looked at one type of way of inducing compliance in Chapter 3, where we introduced the notion of *offsetting by promotion*. This is a way for agents of the supply chain to offset climatic harm by encouraging others to refrain from performing emission-generating actions. Here, I shall therefore set aside the issue of duties of inducing compliance by supply chain agents. Instead, I shall look at the duties of states to induce the compliance of those supply chain agents that are active within their territory. We shall start in the next section by introducing the notion of obligations to facilitate others' compliance.

2. Second-Order Obligations

In this section, I shall present Caney's distinction between first- and second-order obligations and how it can be used to argue that there are duties to promote compliance. First-order duties are duties to act in certain ways, such as to refrain from doing harm, while second-order duties are duties to see to it that others discharge their first-order obligations (Caney 2014: 134–5).[170] Let us call the bearer of a first-order duty a *first-order agent* and the bearer of a second-order duty a *second-order agent*. Using this distinction, Caney argues that it is possible to structure the economic, political, and social contexts of first-order agents in the climate case in ways that promote their compliance.[171] This would mean that agents who are in a position to induce others to discharge their duties of avoiding doing harm through emissions could have a second-order duty to do so (Ibid: 141). While Caney is focused on climatic duties of mitigation and adaptation, I think we can successfully apply his

169. Some philosophers have proposed a duty to create such institutions, if they do not yet exist (Johnson 2003: 283–4; Sinnott-Armstrong 2005: 304; Caney 2005: 769; Booth 2012; Shockley 2017).

170. This distinction was, to my knowledge, first presented by Onora O'Neill (2010: 428). Similar suggestions of agents bearing duties to facilitate others in complying with their duties, have been put forward by Shue (1988) and Cripps (2013).

171. For a similar suggestion, see Nihlén Fahlquist (2009: 119).

distinction to duties not to do harm in the context of the supply chain too.[172] The first-order duties in this case would be the duties of supply chain agents to avoid doing expected harm through emissions, while the second-order duties are duties to create the type of context that would promote the supply chain agents to comply with their duties.

It is important to note here that the first-order duties of supply chain agents are inferred from the No Harm Principle (NHP), as introduced in Chapter 3. The second-order duties, however, are not inferred from this principle. They are not obligations to refrain from doing harm *per se*. Rather, the principle which Caney uses to justify second-order duties is the so-called Power/Responsibility Principle (PRP). In a nutshell, this principle says that those who have the power to somehow make others comply with their (climatic) obligations, have a duty to do so (Ibid). By having power over someone, Caney refers to the capacity to make others do something which they otherwise would not have done.[173] In a more formalized version, we can formulate the principle as follows.

PRP If an agent *A* has the capacity to make another agent *B* comply with their duty *d*, and *B* would not otherwise do so, then *A* has a duty to induce *B*'s compliance with *d*

We can note that PRP is a *capacity-based* principle in that the duties it generates are grounded in a set of specific capacities of the agent in question. In particular, these capacities have to do with agents' ability to prevent others from doing harm (Ibid: 144). The principle should not be confused with other capacity-based principles, such as those generating duties of beneficence (see Section 1, Chapter 4), or the *Ability to Pay*-Principle, according to which climatic burdens should be distributed according to ability to cope with the costs thereof (see e.g. Caney 2010c).

In addition, Caney also wants to cover the capability of second-order agents to make it possible for agents to bear first-order duties which they would have, had it not been for these agents currently being unable to discharge their duties (Caney 2014: 137).[174] If a second-order agent can thus enable a first-order agent to incur a

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172. While fulfilling one's duties to avoid doing harm partially overlaps with the goal of mitigation—particularly by calling for the reduction of GHGs—mitigation also calls for further action, such as limiting the magnitude of global warming in the long term.

173. Caney attributes this notion of power to Robert Dahl (1957: 202–3). It should be noted that this definition is consistent with more than one agent having power over someone at the same time. It might be the case that an agent *B* will not do something unless either agent *C* or agent *D* makes them do it, and until either of them acts, both agents possess the relevant capacity.

174. Caney also considers the capability of second-order agents making it possible for agents to bear first-order duties which they otherwise would only have been able to discharge at an unreasonable cost to themselves

duty which they previously could not discharge, then there is a duty for them to do so. We can thus make the following addition to the above principle:

PRP-II If an agent *A* has the capacity to enable another agent to incur a duty *d*, and *B* would not otherwise incur *d*, then *A* has a duty to do so

Note, however, that the object of the duty in PRP-II is slightly different from the one in PRP. It is no longer about inducing compliance with a duty that already exists, but rather about removing obstacles to agents bearing the duties they would have had in absence of those obstacles. When I henceforth refer to 'PRP', I shall refer to the disjunction of PRP or PRP-II, and when I talk about promoting compliance, I shall mean discharging the second-order duties generated by either version of the principle.

The next issue concerns the justification of PRP in particular contexts. In other words, how do we determine *when* an agent has an obligation to promote the compliance of another agent? While Caney refrains from giving a general argument of when PRP applies, he does engage in a defense of how it holds true in the case of climate change (Ibid: 142). In what follows, I shall take a look at those of his reasons that apply to my purposes. In order for second-order agents to bear duties to promote the compliance of first-order agents in the context of climate change, then, the following conditions need to hold.

First, Caney says that climate change means that we are facing a massive and fast-approaching harmful threat. In order to avert harm, we thus need to act quickly (Ibid: 142–3). Second, certain agents have the ability to effectively influence the outcome of this threat. In other words, agents with second-order responsibilities can act so as to make others avoid doing harm (Ibid: 143). Third, the role of these second-order agents is unique in the sense that most other agents lack their ability. Taken together, these three conditions imply that in order to avert imminent harm, the second-order agents need to act, in turn meaning that they bear second-order duties to promote the compliance with first-order agents' climatic duties.[175] While these three conditions are sufficient for establishing second-order agents' duties in some cases, Caney also adds a fourth, and final, condition. According to this condition, Caney maintains that the bearers of second-order obligations generally lack

(Caney 2014: 137). The thought would thus be that second-order agents could mitigate the costs of first-order agents discharging their duties. I am, however, going to set this additional focus aside, as I take the issue of reasonable cost to be best treated in relation to the issue of moral blameworthiness for violating duties—as discussed in Chapter 4, Section 4—and not in relation to bearing the duties in the first place.

175. As I said above, while Caney speaks of climate mitigation, I am only concerned with a partially overlapping issue here, in the form of avoiding doing harm through emissions. See also Footnote 172.

countervailing reasons, which is to say that they do not have other, conflicting, obligations—at least not that take priority over their second-order obligations (Ibid).

So, how do we establish whether these conditions hold? I take myself to already have argued successfully in favor of the first condition. Particularly, I showed in Chapter 2 that climate change causes harm and that the reason for this is our emission of GHGs. Consequently, in order to avert this, we must halt our emissions as soon as possible. In order to see whether the second condition is fulfilled, we must investigate whether there are any suitable second-order agents that can promote the compliance of first-order agents to avert the climate threat. In order to say that the third condition holds, we must also compare the abilities of the second-order agents to those of other potential bearers of second-order obligations to see which agents are best suited to discharge them. It is the focus of Section 4 to consider whether the second and third conditions hold. I will consider the fourth and final condition in Section 5. In the next section, we shall consider possible promoters of compliance and their moral agency.

3. Promoters of Compliance

In this section, I shall focus on *states* as the bearers of second-order obligations to promote the compliance of supply chain agents. The purpose is to ascertain whether states are the type of actors that ought to promote compliance with first-order duties. In line with what I said on the issue of collective agency in Chapter 1, I shall assume that talk about states as bearers of duties is a shorthand for those individual agents who make up the executive branch of the state.[176] The first thing I shall do in this section is to look at a number of candidates for promoting compliance, before settling on states as the best fit for such a task.

In reviewing appropriate promoters of compliance in the present context, it is natural to mainly consider political actors. These include smaller entities, such as cities, municipalities, government agencies, and so on. But there are also larger political entities, including international institutions, such as the WTO, the IMF, the World Bank, as well as the UN. Then, there are citizens, who are the political actors ultimately tasked with choosing their political representatives in democratic states. However, there are also non-political agents capable of promoting compliance. These include educational institutions, like research councils, universities, or

176. For a defense of the thesis that states can be moral agents, see Erskine (2001), Miller (2004, 2007), Wringe (2010), List and Pettit (2011: 40), and Lawford-Smith (2019). See also Footnote 9.

particular departments therein (Ibid: 140). We can also include lobby groups, think tanks, media agencies and a large set of actors that can exercise influence in more informal ways, such as religious leaders, artists (including writers, painters and movie-makers), and celebrities in general. Each of these have the potential to influence agents of the supply chain to act on their duties not to do harm.

The reason for choosing to focus on states as the appropriate promoters of compliance is that they have capabilities to affect large numbers of agents which other actors generally lack, as well as the ability to act in ways that others generally cannot. For instance, states can do things such as levy taxes, impose subsidies, and launch educational programs. Furthermore, they typically have the authority to affect the lives of anyone residing within their territory. By contrast, the smaller political entities mentioned above are too diverse for us to be able to say anything general about their setup and abilities. (The way that states are structured of course also varies, but to a lesser extent.) In conclusion, then, it appears that the state overall is the best suited type of actor tasked with promoting the compliance of first-order obligations.

A possible objection to this is that, as we have seen, the emissions of the supply chain do not always occur in the territory of one single state. Rather, because goods and services are traded between different countries, emissions occur across national borders. This gives individual states a diminished capacity to facilitate compliance of all the agents of a given supply chain.[177] In turn, this suggests that promoting compliance is a task best handled by *international* entities, such as the EU, the UN, the WTO, etc.[178] In response to this, it could be argued that no such actor has the immediate authority over any national territory, and individual states can still have their influence mediated through agreements on the international level. It will thus suffice for now to focus on states, but to also include the possibility of them coordinating their efforts with other states, such as by signing treaties to reduce global emissions.

In summary, I believe I have given a strong reason in favor of the thesis that states are the type of actors best suited to promote the compliance of supply chain agents, namely that states have the ability to affect large numbers of agents in ways that others generally cannot. We have thus begun to show that Caney's conditions of

177. One instance of this is so-called *carbon leakage*. This is when a reduction of emissions in one country due to strict climate policy causes emissions elsewhere (Branger & Quirion 2014; Rendall 2015). One example is the outsourcing of production away from strict environmental regulations to locations with more lenient—and thus less costly—ones. Another example is that due to the introduction of taxes on environmentally harmful products in country *A*, the demand—and thus the price—declines, so that the demand increases in country *B*, which does not have a tax in place.

178. Alternatively, this could be seen as part of a non-compliance problem between states, meaning that not all states do their part in combating climate change.

applying PRP to climate change are fulfilled. It is the purpose of the next section to consider how states can promote the compliance of first-order agents.

4. PUBLIC POLICY

In this section, we shall look at some of the ways that governments can discharge their second-order obligations. In order to show that PRP holds, we must first show that second-order agents can induce compliance of first-order agents and, second, that states are unique in their ability to do so. It is the purpose of this section to see whether these two points hold. To this end, we shall consider a number of different types of policy that governments can implement for the purpose of promoting compliance. A policy qualifies as a proper means of promoting compliance either if it induces first-order agents to discharge their duties not to do harm, or if it enables an agent to incur a duty that they would not otherwise be able to bear. But showing that governments have these abilities is not enough. As mentioned, we must also show that other agents generally lack that ability.

Governments can use a large set of means to discharge their second-order obligations. In order to promote compliance, they might do anything from passing new laws, levying taxes on certain products and services, implementing subsidies, to funding research and education. Caney has divided the different ways in which an agent can promote compliance according to the type of policy they concern. I shall consider five of these: *incentivization*, *enforcement*, *enablement*, *norm-creation* and *undermining resistance*.[179] In what follows, we shall look at each of these, see how they can be implemented, and what impacts they have on non-compliers.

A first way for states to promote compliance is through *incentivization* (Caney 2014: 137; Lawford-Smith 2016a: 79). Caney conceives of incentivization as a type of policy directed at awarding benefits to compliers. Incentivization policies are thus designed so that they reward agents who comply with their duties to reduce or offset emissions. One way of doing this is by subsidizing environmentally friendly products and services. For example, in 2018, the Swedish government introduced subsidies on the purchase of electrical bicycles in order to make fossil fuel-free means of transportation less expensive. This would thus give consumers an economic benefit in exchange for reducing their emissions.

179. There are two further forms of policy mentioned by Caney: *civil disobedience* and *demographic policy* (Caney 2014: 138–9). I shall not consider the former since it does not concern government action, and the latter lies outside of the scope of this thesis, since I am only concerned with emission-generating actions in the form of those actions that are performed as parts of global supply chains, and not people's reproductive choices.

The second way of inducing compliance is by *enforcement* (Caney 2014: 136; Lawford-Smith 2016a: 78). This is about imposing burdens on non-compliers. The concerned policies are thus directed at discouraging agents from acting in harmful ways by enforcing a cost of some sort on those who take part in emission activities. Examples include banning certain products or the production thereof. This could include outright prohibitions, or the restriction of select choices, such as by banning all products that fall below a certain standard of energy efficiency (Lawford-Smith 2016a: 78–9). Another example is imposing costs on certain products or services, perhaps in the form of a carbon price, or by imposing a mandatory price on plastic bags. Alternatively, governments could remove subsidies on fossil fuels (Caney 2016a: 34; Caney 2016b: 19). It should be mentioned, however, that the costs of enforcement policies do not need to be monetary in kind. Caney also proposes enforcing the disclosure of GHG emissions of certain agents to the public (Caney 2014: 136). This imposed transparency thus makes non-compliers appear in a bad light. Making commercial companies disclose their emissions to their customers, for instance, could reasonably result in firms being discouraged from emitting GHGs.

Governments can further enforce the compliance of first-order agents through sanctioning states that do not adhere to particular goals of emissions reductions (Caney 2016a: 34). A state can thus indirectly promote the compliance of supply chain agents residing in other states' territory by pressuring those states into directly promoting their citizen's compliance. One particular example would be if a state is compelled, through sanctions, to levy a tax on fossil fuels, thus reducing its citizens' consumption of emission-intensive goods. Relatedly, states may want to impose so-called *border carbon adjustments* on imported goods (Roser & Tomlinson 2014: 229–30). These are fees levied at certain products imported from countries without a carbon tax in place. The thought is that the border fee gives the exporting country—and, in extension, the producer of the good—an economic incentive to reduce emissions.

The third type of policy that Caney considers is *enablement* (Caney 2014: 137). Some first-order agents' non-compliance may be due to it being too difficult to discharge first-order duties to reduce emissions. By giving first-order agents better opportunities to fulfill their obligations, governments might thus make it possible for these to comply with their duties, when this was previously not tenable. It should be mentioned that this type of policy is mainly focused on removing obstacles that prevent first-order agents from bearing first-order duties, even though they might also induce the compliance of already capable agents. We are thus mainly concerned with the second version of PRP here.

Examples of enabling compliance include lowering the cost of clean energy, thus making it easier for agents along the supply chain to choose low-carbon energy alternatives. This can, for instance, be done by investing in and facilitating the transfer of technology (Caney 2016a: 34). It can also be done by means of introducing subsidies on particular energy sources. A further example of an enablement policy is designing more sustainable urban infrastructure (Ibid). People's transportation, for example, is a considerable source of emissions. Changing the infrastructure so as to facilitate green transportation choices would thus induce compliance with duties to reduce emissions. Governments can also launch campaigns meant to inform the public about climate change. This can both induce compliance with already existing duties and allocate new ones.

A fourth way of promoting compliance is by *creating norms* (Caney 2014: 137–8). Norms, according to Caney, "define what options count as appropriate and what not" (Ibid). This means that they have the potential to discourage as well as encourage certain choices, including the courses of actions available to supply chain agents. If governments can foster norms that discourage emission-generating activities, such as using plastic bags, and encourage greener choices, such as to eat less meat (Nyborg et al. 2016), this can induce first-order agents to comply with their duties to reduce or offset emissions.[180] One way that governments can do so is, once again, through educational programs. By informing the public about the appropriate attitude to the threat of climate change, governments can potentially change high-emission lifestyles.

The fifth and final way of promoting compliance is by *undermining resistance* to policies directed at reducing emissions (Caney 2014: 138). As Caney writes, lobby groups and fossil fuel companies actively misinform the public about the nature and the causes of climate change (see also Frumhoff, Heede & Oreskes 2015: 165–6; Arnold 2016). This increases the risk of fostering resistance to efforts of reducing and offsetting emissions, which arguably makes it worthwhile to try to combat this resistance. Again, though, such resistance can be countered with information campaigns directed at refuting the misinformation.

In this section, we have looked at a number of policy instruments that governments can use to promote the compliance of first-order agents. The purpose of this was two-fold: first, to see whether governments have the ability to induce compliance of supply chain agents and, second, to see whether this ability was unique to governments. I think it is safe to conclude that states are the type of agents that can promote the compliance of supply chain agents which are active within their

180. A similar idea has also been presented by Lawford-Smith (2016a: 79). For further discussion, see Fragnière (2016: 808).

territories, either through inducing them to act on their duties not to do harm, or through giving agents that were previously unable to the means of bearing such duties. Furthermore, I think it has been shown that governments are quite alone in their ability to do this. Compared to the other possible bearers of second-order duties, states are the only agents capable of carrying out such diverse tasks as passing new laws, implementing subsidies, levying taxes, as well as funding research, launching educational programs, and protecting the rights of its citizens. Among the other possible bearers of second-order duties that we considered in Section 3—such as small-scale political entities, international organizations, or less conventional organizations, like think tanks—none can match governments in that ability. This leads me to conclude that three of the four conditions that Caney presented for accepting PRP are fulfilled. In particular, we have shown that states have the ability to effectively influence the amount of harm that comes about through climate change (the second condition), and that other agents lack this ability (the third condition). States can therefore bear obligations to promote the compliance of the agents of the supply chain that are active within their territory. It remains to be seen what the relation is between these duties and the other duties of states.

5. OBJECTIONS

In this section, we shall consider a number of objections that can be raised against the proposal that governments bear duties to promote the compliance of agents of the supply chain. I shall consider four objections. These include *the objection from costs*, *the objection from unfairness*, *the objection from conflicting duties*, and *the objection from inefficiency*. Let us look at each of these in turn. The first objection concerns the costs incurred by the first-order agents as a result of states' compliance policies. The argument is that implementing some of the policies outlined in the previous section will limit agents' choices to the point where some of their interests are thwarted, in a sense which is too costly to them. If the objection is correct, states cannot therefore be justified in implementing the policies in question (Cripps 2011: 185; Caney 2014: 145). Let us take a look at what policies these might be.

There are primarily two types of policy which make first-order agents incur costs. The first is enforcement, which is created with the express purpose of limiting (or at least obstructing) the options of agents. For example, after levying taxes on some products and services, certain agents might not be able to afford buying them. The policy thus constitutes a cost, either in the literal sense of a higher monetary cost,

or in the form of a setback of one of the agent's interests. The second type of policy that incurs costs on first-order agents is norm-creation, since the creation of norms makes particular courses of actions inappropriate to these agents. Driving a gas-guzzling SUV, for instance, might be opposed by norms that agents should reduce their individual carbon footprints. Agents might therefore come to bear a cost in the form of being convinced that a practical means of transportation is not suitable any longer.

The relevant question now is whether some of these costs are *too* high for supply chain agents to bear. I am not going to try to ascertain exactly when the costs of a policy are too great for first-order agents in order for its implementation to be justified. Instead, I am going to mention three relevant points. First, I want to stress that even under minimal conceptions of what a state is allowed to do to its citizens, it is commonly held that a state is justified in restricting its citizens' freedom in order to prevent harm from being done to others (see also Cripps 2011: 182–3). When the cost to a first-order agent of inducing their compliance with duties not to do harm comes in the form of limiting that agent's liberty, then, it appears that this cannot be a reason against implementing the policy in question.

Second, I think it is worth mentioning that there are several policies that do not impose costs on first-order agents. Thus, the costs incurred by agents when a state promotes their compliance cannot be a reason against all kinds of policy. *Incentivization*, *enablement*, *creating norms*, and *undermining resistance* each have the potential to rather increase the options of first-order agents. Incentivizing and enabling agents might make it less costly for agents to do things than prior to the implementation of the policies. Creating norms might make it easier for agents to act in ways that they were unmotivated to before. Undermining resistance could give agents information that they lacked, thus giving them the potential to act in ways that they were previously unable to.

Finally, I want to mention one thing that can be done to relax the costs borne by first-order agents. This is to make sure that the promotion of compliance is simultaneous. Fragnière writes that it is plausible that "the social and psychological cost of giving up on some GHG intensive activities would be lower if everybody changed at the same time, and consequently [k]new that this sacrifice is not 'useless'" (Fragnière 2016: 808). In order to avoid envy, for instance, it could thus be wise to try to coordinate policies so that the concerned agents within a state's territory are all influenced by them at the same time.

So, even though some policies come with great costs for first-order agents, those that relate to limiting the freedom of these agents appear to be justified in order to avert harmful emissions. Furthermore, we should keep in mind that not all policies

directed at promoting compliance are equally costly. In fact, some of them might increase the courses of actions open to supply chain agents. Also, as exemplified by Fragnière's suggestion of coordinating policies, there are means of easing the burdens of these on first-order agents. In conclusion, I take the objection from costs not to undermine the proposal that states have duties to promote the compliance of first-order agents.

Next, let us consider *the objection from unfairness*. This objection pertains to the unfairness of taking up other agents' slack. The argument is that states (or other agents) should not have to see to it that others refrain from doing harm. This is because it is every moral agent's task to discharge their own obligations, and not anyone else's. Being burdened with promoting other agents' compliance is therefore seen as morally *unfair*. Provided that this objection is sound, it is thus unfair for states to have to take up the slack of the agents of the supply chain (for a related criticism, see Nihlén Fahlquist 2009: 119).

As I conceive of this objection, it is about the distribution of the demands of morality. The thought is that an agent should not be unfairly burdened due to another agent's duties, at least not when the former agent would not bear a corresponding duty if the latter did not. Intuitively, however, it is at least not *always* unfair for agents to incur duties to see to it that others act according to their duties. As we mentioned in Section 2, PRP is a capability-based principle and sometimes agents' special abilities place moral burdens on them, especially if they are thus in a unique position to do good or to prevent harm. Furthermore, this does not seem to be any less true just because that capability happens to be connected to getting another agent to do what they have a duty to do. As long as the values at stake are sufficiently high, it thus appears that there can be duties of second-order agents, based on their capabilities, to see to it that first-order agents discharge their duties. Since we have seen in previous sections that states possess the relevant capabilities, and provided that the harm that can be avoided if they use them is significant enough, the second-order duties of states do not seem to be morally unfair.[181]

The third objection that I will consider is *the objection from conflicting duties*. In Section 2, we saw that PRP holds in the context of climate change if the concerned second-order agents need to act in order to avert the present threat of climate harm, and provided that they do not bear conflicting duties. I have already shown the first part of the consequent to be true, and thus concluded that states can bear second-order duties. It is possible, however, that states bear stronger, conflicting duties. I will consider two versions of this argument: first, one that relates to duties that are

181. Furthermore, it could be argued that while agents generally do not have duties to take up others' slack, this is partly what states are for.

not generated by PRP, and second, one version that relates to duties generated by PRP but are aimed at promoting other first-order obligations than duties to avoid doing harm.

Let us begin by considering the first version. States have a multitude of different obligations, some of which include the duty not to wage war against other states, and the duty to further the interests of the state's citizens (Caney 2014: 144). Here, I shall only consider the latter type of duty. We saw, in relation to the objection from costs, that a state's fulfilling its second-order obligations might go counter to such interests. There thus appears to be a potential conflict with a state's second-order obligation and its duty to further the interests of its citizens. But, although certain interests—such as having food and shelter—arguably have to be secured by the state, others ought to be given less priority. In particular, states should not further the pursuit of interests that causes harm to others, such as living a high-emissions lifestyle. In conclusion, there might be a conflict between states' duties of making sure that their citizens do not cause harm to others and their duties to secure their citizens' interests, but this does not undermine the former.

The second version of the objection from conflicting duties concerns a state's other second-order obligations. If states bear duties to promote the compliance of supply chain agents' duties to avoid doing harm, then it is possible that they also are obligated to promote further first-order duties. Say that a state only has enough money to either fund a climate education program, or to fund a new road safety program. The first program promotes the compliance of citizens' duties to avoid doing harm through emissions, and the second program promotes their duties to avoid doing harm in traffic (among other things).[182] Thus, there is a conflict between the state's different second-order obligations. It is therefore possible that states have reason to give precedence to the promotion of compliance of duties to avoid other harms than those brought about through emissions. So, it seems that a state's second-order duties might, in some cases, be overridden by other duties.

The fourth objection is *the objection from inefficiency*. The thought here is that if the relative costs of implementing a policy are too great, as compared to other projects with comparable benefits, then they might be too inefficient to be justified. Let us proceed by first commenting on the costs involved in implementing the policies in question. Each of the policy types considered include costs, some of which are monetary in kind. The most obvious example is subsidies, such as those of incentivization and enablement policies. Furthermore, anything that has to do with education, such as enablement, creating norms, as well as undermining resistance,

182. Although a state might have second-order duties to promote the compliance of other types of duty than a duty not to do harm, we have already seen that duties of avoiding harm rarely are outweighed by other duties, and so there would arguably be no real conflict in the promotion of these either.

costs money. Other policies require direct funding, such as schemes set up to facilitate research on green technology.

Other policies, however, do not need to be expensive. For instance, the enforcement policy of removing government subsidies on fossil fuels is compatible with the government saving money. Furthermore, some policies might require funds in one respect, while at the same time let the state save money in other respects. One example of this could be the investment of greener urban planning. Just as much as this involves a cost, it could also yield benefits in the form of reduced air pollution, thus potentially saving health costs of the government (Stern 2015). So, while some of the policies to promote compliance are too costly in comparison with other projects of the state, some policy types might in fact be a source of income. Therefore, all policies to promote compliance of first-order agents are not inefficient, which means that there are at least some cases where governments bear second-order duties, in particular where policies to promote compliance are not excessively costly.

In summary, we have looked at a number of objections to the proposal that governments bear duties to promote the compliance of agents of the supply chain. These were *the objection from costs*, *the objection from unfairness*, *the objection from conflicting duties*, and *the objection from inefficiency*. I conclude that none of these objections ultimately undermine states bearing duties to induce the compliance of their citizens' duties to avoid doing harm through emissions. However, due to conflicting duties and the costs involved in implementing certain policies, the cases where governments are obligated might be somewhat limited. In particular, it is plausible that states bear duties to promote the compliance of some of their citizens' *other* first-order duties, most notably in cases of citizens doing harm through different means than emissions. Furthermore, due to the costs involved in implementing some of the policies in question, there might be other—more effective—projects of the government with comparable benefits.

6. Concluding Remarks

In this chapter, I have looked at duties to promote compliance. In particular, I have argued for the second-order obligations of states to induce supply chain agents to discharge their duties not to do harm, or to enable them to incur such duties. I showed this to be the case by arguing that states are the type of actors best suited to promote the compliance of supply chain agents. The reason given for this was that

states have the ability to affect large numbers of first-order agents in ways that other types of agent generally cannot.

After assessing a number of policies meant to promote the compliance of supply chain agents, I looked at some objections to my proposal, none of which turned out to undermine the claim that second-order agents cannot bear obligations to promote compliance. For instance, it turned out that concerns such as the liberty of the citizens, or the state's duty to promote their interests, did not undermine the government's second-order duty. In some cases, however, notably with regard to costs of governments and conflicting duties, it was established that second-order agents may fail to be obligated in some cases. Thus, I conclude that states have a duty to promote the compliance of the agents of the supply chains that are active within their territory, specifically with their duties not to do harm through emissions, provided that these duties can be discharged at a reasonable cost to the state, and if they do not conflict with the state's other second-order duties.

Conclusion

Let me conclude this work by first summarizing and then reflecting on my main findings. The purpose of this work has been to defend moral duties of individual agents to refrain from doing harm in the production and consumption of goods and services that emit GHGs, and the moral blameworthiness of those who violate these duties. My point of departure in establishing the duties was the claim that international trade and global supply chains play a central role in the causation of emissions. More specifically, I chose to focus on those actions that are performed as a contribution toward the supply or consumption of a product or service, and if the agent either pays for it, or receives payment (or remuneration in kind) for their services. In order to better understand how such actions can emit GHGs, I used a Counterfactual Account of Causation (CAC), according to which an action is a cause of emissions iff there is a chain of stepwise causal dependence leading from the action to the emissions. This analysis resulted in the conclusion that the emission of GHGs along the supply chain first and foremost is the product of joint causation, such that there is stepwise causal dependence between more than one antecedent event and the emissions. Crucially, this lead us to accept that a great amount of everyday actions performed as contributions to supply chains of products and services counts as a cause of emissions.

In Chapter 2, I turned to the issue of the effects of emissions. There, I defended a Comparative Counterfactual Account of Harm (HCA), according to which the impacts of emissions are harmful iff they make someone worse off than if the emissions had not occurred. The first key result of this chapter is that the non-identity problem, its seemingly implausible conclusions notwithstanding, does not constitute a problem for my purpose, mainly because the actions of individuals do not generally have enough of an effect to affect the identity of future persons. The rest of the chapter was devoted to the relation between particular emission-generating actions and harmful climatic events. On that note, the second main finding of the chapter is that emissions *sometimes* cause harm.

In Chapter 3, I moved on to defend the moral duties of agents of the supply chain. I introduced the No Harm Principle (NHP), according to which agents, on my

preferred interpretation, bear duties not to perform actions which are expected to cause harm. Using a calculation of the estimated harm caused by our GHG emissions, I concluded that the expected harm of emitting 1 kg of CO_2-e is equivalent to causing approximately 25 minutes of serious suffering to someone. I then proceeded to apply this information to individual agents participating in the supply and consumption of emission-heavy products and services. The upshot of this discussion is that agents participating in such activities bear duties not to cause harm through emissions. Furthermore, we also saw that GHG offsetting can function as a way for agents of the supply chain to refrain from doing harm through emissions. An important implication of this is that the duties of supply chain agents are considerably easier to discharge, at least at present, than they otherwise would have been. This also means that there are additional—indirect—ways for agents of the supply chain to fulfill their duties not to do harm, by influencing other agents to reduce their emissions.

Having established the duties of supply chain actors to reduce or offset emissions, I then turned—in Chapter 4—to the issue, first, of the normative force of these duties. Since duties not to do harm are stronger than other types of duty, I concluded that duties to reduce or offset emissions rarely are overridden by other moral concerns. The second part of the chapter considered the issue of blameworthiness for causing harm through emissions. Here, we saw that agents can be excused of moral blame for their violation of a duty to reduce or offset emissions due to ignorance and overdemandingness. For those agents who violate a duty not to do harm through emissions, however, ignorance and overdemandingness is rarely an excuse for being blameworthy for the harm they are expected to cause.

In Chapter 5, I presented, but ultimately rejected, an additional basis for moral obligation of supply chain agents, in the form of *moral complicity*. To be complicit in climate harm is to be wrongfully involved in other agents' causing harm through emissions, without causing it oneself. After having considered what I take to be the best account of complicity, I presented an argument to the effect that presumed cases of complicity can either be explained away as non-culpable, or as cases where agents cause, or expect to cause, harm. The key finding of this is that while it might seem that looser causal relations between an agent and the occurrence of harm through emissions can establish a duty to refrain from acting in certain ways, the notion of complicity does not give us reason to accept this conclusion.

The final chapter of the thesis dealt with states' duties to promote the compliance of the duties of supply chain agents to reduce or offset their emissions. By using a framework developed by Simon Caney, we saw that states can bear second-order obligations to induce the compliance of supply chain agents' first-order obligations. We established that these second-order duties of states have quite far-

reaching implications and that governments thus have moral reason to incentivize, enforce, enable, and otherwise promote the compliance of the agents of the supply chain that are active within their territory. Even though some of these policies might seem invasive to the agents of the supply chain, and quite costly for the state, due to the moral values at stake because of climate change, there is reason to accept that they are in many cases justified.

So, how do we summarize these different findings? Of all the varying arguments I have put forward in this thesis, I find two to be the most important. One of these is my analysis of the causation of emissions. As I hope to have shown in this work, some of the answers to the moral questions raised by climate change crucially depend on which idea of causation we accept. Trying to make sense of our climatic duties without a clear notion of how emissions are caused, or of how climatic effects depend on our emission of GHGs would be a non-starter. At the same time, it is not feasible (at least not in a work of this scope) to consider all of the different possible conceptions of what causation consists in. Nonetheless, we need to start somewhere, and I believe that one promising account of causation is the one that takes it to consist of counterfactual dependence. I hope that this has at least shown the way for how further future work on the causation of emissions and climatic harm might be pursued.

The second important argument that I have put forward is a quite general one, namely, that in order to properly understand the ethics of emissions, we must take into account how the production and consumption of emission-intensive goods and services is scattered across supply chains which span a range of different agents, national borders, and types of activities. By looking at each of the different stages of a supply chain, we can thus get a better look at what kind of activities give rise to emissions, what type of agent is involved, and see the moral relevance of how these agents' actions relate to the upstream and downstream actions of the other parts of the supply chain. In turn, this focus gives us an understanding of how the highly complex causal networks of international trade can give rise to harmful effects, even through such seemingly innocuous things as owning shares in a company, being gainfully employed, or buying groceries. Furthermore, we have seen several examples of when the location of an agent along the supply chain of a product or service affects their obligations and their blameworthiness for causing harmful emissions. Without the notion of the supply chain, we would not have seen, for instance, that the actions performed as part of the downstream processes of a supply chain can have a so-called trumping status and thus potentially be more causally relevant than other activities of the supply chain.

There are, however, further themes from this work to highlight. One of these is the far-reaching implications of arguments that started out from quite simple premises. In this thesis, I chose to focus on *negative* duties not to do harm, which are moral duties that are about as uncontroversial as they come. But despite this seemingly modest scope, we have seen that the duties of supply chain agents not only concern the impermissibility of a great deal of our day-to-day activities, but also positive actions to influence and to organize with others, which typically extend beyond the reach of what is commonly held to be contained in the notion of a negative duty.

Finally, insofar as these duties of supply chain agents are established, it is curious to see that this also has implications in the sphere of climate policy. If agents of the supply chain bear duties not to do harm through their emissions, then it seems to be their governments' job to make sure that they comply with such duties. Furthermore, I hope to have shown that this can be done through means that arguably are quite controversial, such as the enforcement of policies like levying taxes on certain products. Yet, even under minimal conceptions of what a government is allowed to do to its citizens, it is commonly held that it can justifiably restrict its citizens' freedom in order to prevent harm from being done to others. So, if this—as I believe to have shown—is what is at stake in the case of supply chain agents' emission-generating actions, then states might very well be justified in seriously restricting their citizens' freedom.

While I do not think that this is all there is to be said about what I have covered in this work, I hope to have shed some further light on the topic of international trade, GHG emissions, and the resultant climatic harm, and thereby to have drawn out some conclusions that might not otherwise have appeared as clearly.

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