



Libertarianism, Climate Change, and Individual Responsibility

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Abstract

Much has been written about climate change from an ethical view in general, but less has been written about it from a libertarian point of view in particular. In this paper, I apply the libertarian moral theory to the problem of climate change. I focus on libertarianism's implications for our individual emissions. I argue that (i) even if our individual emissions cause no harm to others, these emissions cross other people's boundaries, (ii) although the boundary-crossings that are due to our 'subsistence emissions' are implicitly consented to by others, there is no such consent to our 'non-subsistence emissions', and (iii) there is no independent justification for these emissions. Although offsetting would provide such a justification, most emitters do not offset their non-subsistence emissions. Therefore, these emissions violate people's rights, which means that they are impermissible according to libertarianism's non-aggression principle.

Keywords Libertarianism · Non-aggression principle · Boundary-crossings · Individual emissions · Offsetting · Individual climate responsibility

Introduction

Climate change threatens much of what we value, for which reason it raises several ethical questions. Do humans have a responsibility to prevent climate change? If so, on whom does this responsibility fall? Although much has been said on the ethics of climate change in general, less has been said about climate change from a *libertarian* standpoint in particular. My aim in this paper is to make a contribution in this respect, by applying libertarianism to the problem of climate change. I

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focus on libertarianism's implications for our individual responsibilities regarding climate change. More precisely, I study libertarianism's implications regarding our individual emissions.

There are several reasons why libertarianism is of interest in connection to climate change. First, many are attracted to libertarianism's core idea that individuals have rights and that those rights are what fundamentally determine right action. Arguments based on this view are common in the climate debate—not least from right-wing politicians. Second, the moral aspects of climate change have so far been studied mainly from consequentialist and welfare-based perspectives, which are perspectives that libertarians reject. Third, when something is said about libertarianism and climate change, it is often taken as a defense of such things as private property, free markets, or business as usual—which are all closely linked to climate *inaction*.¹

Moreover, libertarianism focuses on *individual* actions while climate change is the result of *joint* human emissions. Indeed, it seems that none of the harms caused by climate change are attributable to particular individuals. One could see this as posing a problem for libertarianism in relation to climate change, since, as argued by Dan C. Shahar (2009, p. 234), '...much of the concern regarding climate change cannot be reconciled with a rights-oriented paradigm'. This problem is also highlighted by contemporary libertarian Matt Zwolinski (2014), who dubs it 'the problem of *interconnectedness*', which he thinks is raised against libertarianism by environmental pollution in general:

[The] exclusive focus on the outcome of individual actions leaves many of the most serious problems posed by environmental pollution entirely unaddressed. [...] Any particular action by an individual, considered in itself, makes only a minuscule contribution to the overall problem. Either no one is harmed at all by such actions (the harm resulting only once the cumulative amount of pollution crosses a certain threshold), or the harm produced is minimal (becoming significant only when it is added up with all the other harms resulting from other individuals' actions). Intuitively, a morality of individual rights ought to have something to say about actions of this sort. (2014, pp. 16–17)

In this paper, I argue that libertarianism has something quite substantial to say about actions of this sort. As we shall see, libertarianism gives us reasons to pay serious attention even to our individual emissions.

Although it has been argued by others already that climate change infringes rights, not much has been said about *how* this is so in detail from a libertarian point of view. Also, comparatively little has been said about the concrete *recommendations* that libertarianism yields in view of such a verdict. This paper aims to make a contribution in both of these respects, by providing a clear explanation as to *why* our emissions violate rights, and *what* we concretely should do about it.

¹ To quote Jonathan Adler, '[c]onservative politicians, libertarian thinkers, and market-oriented policy experts typically argue that the best response to the risk of climate change is to do little or nothing' (2009, p. 297). One exception to this trend is the work of the Niskanen Center: www.niskanencenter.org. See also see Dolan (2006), Shahar (2009), and Dawson (2011).

The structure of the paper is as follows. In ‘[The Basics of Libertarianism](#)’, I explain the core concepts of libertarianism and spell out its non-aggression principle. In ‘[Do our Emissions Cross People’s Boundaries?](#)’ and ‘[Are Our Emissions Justified for Independent Reasons?](#)’, I investigate whether our individual emissions violate this principle. In ‘[Some Objections and Replies](#)’, I respond to some arguments that can be raised against my view. In ‘[Conclusion](#)’, I conclude that our non-subsistence emissions do violate people’s rights, and that they are therefore impermissible according to libertarianism.

The Basics of Libertarianism

There are many different kinds of libertarian theories discussed in the philosophical literature.² In this paper, I discuss libertarianism exclusively as a *basic* moral theory—i.e. in competition with utilitarianism, Kantianism, virtue ethics, etc. Hence, I shall not address forms of libertarianism derived from other moral theories (e.g. utilitarianism, ethical egoism, or contractarianism). Nor shall I discuss libertarianism considered as a *political* theory.³

One of the most fundamental ideas of the libertarian moral theory is that individuals possess *moral self-ownership*. To possess moral self-ownership is, on one description, to possess the same moral rights to oneself as a slave owner has legal rights to his slaves or as a legal owner of an inanimate object has legal rights to that object.⁴ In accordance with this idea, you, and no one else but you, have the right to decide over your body and your choices in your life.

Libertarianism also comes with the idea that individuals may gain moral ownership over *external* resources (i.e. extra-personal resources)—such as land, minerals, water, air, etc. However, rights to external resources must somehow be acquired (which the right to ourselves must not).⁵ All libertarians accept some kind of theory on how this is done. In the words of contemporary libertarian Bas van der Vossen: ‘[S]ince persons can be justified in having property rights, they must be able to appropriate’ (2009, p. 368).

Libertarianism maintains that moral ownership of an entity (oneself or one’s external property) consists of a set of *rights* over that entity. As this implies, the notion of rights is central in the libertarian tradition.

² Brennan (2012) brings a broad variety of such views up for discussion. See also Mack (2011) for a brief history of libertarian theorizing.

³ However, I will consider arguments from such views in case they are relevant to my discussion.

⁴ See, for instance, Cohen (1995, p. 68), Kymlicka (2002, p. 108), Vallentyne (2009a, p. 4) and Narveson (2013, pp. 375–376).

⁵ See Mack (2010, p. 54).

The Libertarian Notion of Rights

In the entry ‘Libertarianism’ (2014) in the *Stanford Encyclopedia of Philosophy*, Peter Vallentyne and Bas van der Vossen claim that the libertarian rights amount to rights of *control* (over the use of the entity, both a liberty-right to use it and a claim-right that others not use it), *compensation* (as rectification for whenever someone uses the entity without one’s permission), *enforcement* (e.g. pre-emptive rights of prior restraint if someone is about to violate these rights), *transfer* (of these rights to others by sale, rental, loan, or gift), and *immunity* (to the non-consensual loss of these rights). As we will see below, it is the control-right and the compensation-right that are of most interest in the case of climate change. Hence, these rights will be our focus in this paper.

It should be emphasized that libertarianism is concerned with *moral* rights, as opposed to *legal* rights. In other words, libertarianism holds that people bear their rights irrespective of whether these rights are recognized by any legal system. Moreover, libertarianism basically endorses only *negative* rights (i.e. rights to *non-interference*). The idea of universal self-ownership is inconsistent with basic positive rights (i.e. rights to assistance), since such rights would obligate individuals to actively serve as means to other individuals’ ends, which would infringe on the former individuals’ self-ownership. As libertarian Jan Narveson (2013, p. 382) puts it, ‘[a] positive right, by definition, cuts further into our liberty than the corresponding negative one: if you are *forced* to help others in need, then you do not have your choice whether to help them’. According to libertarianism, no adult individual initially has any right to any sort of positive treatment or aid from others.⁶

As indicated in ‘[Introduction](#)’, libertarianism is an *individualist* approach. This means that only individual people count as moral agents and rights-bearers. The individualist stance comes with a so-called *person-affecting restriction*, according to which all rights and duties are at bottom *personal*. This means that if an action is wrong, it involves the wronging of *someone*. If no one has been wronged, then no moral wrongdoing has occurred. As this suggests, libertarianism takes *the separateness of persons* seriously: A person’s rights (duties) are *her* rights (duties) and may not be substituted, transferred or counterbalanced by or to anyone else’s rights (duties) without her permission. Robert Nozick expresses this idea as follows:

There are only individual people, different individual people, with their own individual lives. [...] The moral side constraints upon what we may do, I claim, reflect the fact of our separate existences [...] There is no justified sacrifice of some of us for others. This root idea, namely, that there are different individuals with separate lives and so no one may be sacrificed for others, underlies the existence of moral side constraints. (1974, p. 33)⁷

⁶ See also Mack (2010, p. 62): ‘the natural right to self-ownership rules out persons’ being born to positive obligations to deliver goods or services or desirable practices to others’. Note that the compensation right is in one sense a positive right. However, since it is *conditional* on the prior violation of other rights, it is not *basic*.

⁷ See also Mack (2010, pp. 58–59).

As will be clear below, this individualist tenet of libertarianism has some interesting implications with respect to the possibility of compensating those individuals whose rights we violate. It also implies that no person initially has any duty to correct for any other person's wrongdoings.

Summing up so far, the libertarian principle can be formulated as the

Non-Aggression Principle: An act is morally permissible if and only if, and because, it does not violate anyone's rights.⁸

As the non-aggression principle entails, libertarianism is a view regarding side-constraints—i.e. it does not prescribe that we minimize rights-violations, but only that we do not violate any rights. What it means to violate a right remains to be answered.

What is a Rights-Violation?

An interesting feature of libertarianism is that it does not take rights-violations to stem from harms, but rather from *infringements*. It is thus possible to harm someone without violating her rights (e.g. punching someone in a boxing match), and it is possible to violate someone's rights without harming her (e.g. breaking into someone's house without them ever noticing). Within the libertarian framework, 'infringement' is understood partly in terms of 'boundary-crossing'.⁹ The idea is that individuals have moral boundaries that surround all and only that which make up their respective legitimate territories—i.e. themselves and their external property. In that sense, the rights of a person are determined by the boundary of that person's moral territory, and to violate her rights implies crossing her boundary.

In order for a person's boundary to be crossed, she must be subject to some kind of effect. Libertarianism originally comes with a very strict view on personal boundaries and the effects these allow for. As Vallentyne and van der Vossen argue:

Recognizing people's rights as full self-owners means condemning as wrongful even very minor infringements, such as when tiny bits of pollution fall upon an unconsenting person. [...] [F]rom the point of view of self-ownership, there is no principled difference between minor infringements and major infringements. (2014, p. 8)

In line with this idea, people's boundaries are sensitive to *any* interference whatsoever. Any physical intervention on one's legitimate territory—such as a fist, bullet, light wave, sound wave, molecule, etc.—*is* a boundary-crossing.¹⁰ As Peter Railton notes in a critical paper, strict libertarians 'do not say that whether a border is wrongfully crossed depends upon the magnitude of the effect' (1985, p. 196). In

⁸ See Nozick (1974, p. 34), Block (2004), Vallentyne (2007b), and Mack (2010, p. 59).

⁹ See, for instance, Nozick (1974, pp. 57–59), Elliot (1986), Sobel (2012), and Mack (2015). Sometimes 'impingement', 'trespassing' and 'transgression' are used synonymously to 'boundary-crossing'. However, the other constitutive part of infringement is *lack of consent*, which is explained below.

¹⁰ See also Vallentyne (2007b) and (2011).

the words of David Sobel, another critic, the libertarian view thus appears to allow a ‘simple and powerful argument against a range of activity without requiring an investigation into the significance of the infringement’ (2012, p. 34).

This, however, might sound implausible. It seems to open up for any action being a rights-violation. However, it is only *agential* interferences that count as boundary-crossings—i.e. interferences that stem from a moral agent. Effects from non-agential causes—such as from the sun, from an earthquake, or from a volcanic activity—do not count. Moreover, boundary-crossing is not sufficient for rights-violation. To infringe upon someone is to cross her boundaries *without her consent*. As Nozick (1974, p. 58) writes: ‘voluntary consent opens the border for crossings’.¹¹ In other words, this means that someone’s action does not amount to an infringement if the individuals whose boundaries are crossed by this action permit that crossing. In the real world, people often consent to many sorts of boundary-crossings. These are therefore unproblematic from a libertarian point of view.

Interestingly, ‘consent’ and ‘dissent’ may not only refer to *explicit* consent/dissent, but also to *implicit* consent/dissent. The usual way to spell out implicit consent is by reference to the actions people themselves perform and the conventions in which they take part. If a person autonomously chooses to enter a situation, aware of the rules and constituents of this situation, then she implicitly consents to these rules and constituents—even if she has not explicitly consented to them. Similarly, one could say that when an individual freely performs an action of a certain type, she implicitly consents to others performing actions of that same type.

In the words of David Friedman, the relevance of implicit consent implies that ‘by breathing and turning on lights and doing other things that impose tiny costs on others I am implicitly giving them permission to do the same to me’ (2014: §41).¹² Surely, when it comes to implicit consent, a person’s conduct amounts to such just in case she also knows what she is doing.¹³ As we shall see below, this has some interesting implications in the climate case.

So, boundary-crossing without consent equals infringement. But are all infringements rights-violations? There is a discussion among libertarians whether there might sometimes be overriding justifications for infringing on people’s rights.¹⁴ The motivation for this is captured in the following passage by Judith J. Thomson (1986):

Suppose a man has a right that something or other shall be the case; let us say that he has a right that p , where p is some statement or other, and now sup-

¹¹ See also Mack (2010, p. 61).

¹² Cf. Thomson (1975).

¹³ See Huemer (2013, pp. 37–38). This is not all there is to say about the role of consent within the libertarian framework. There is, for instance, a remaining problem regarding cases where people can neither implicitly nor explicitly consent/dissent to the actions that affect them. Many medical cases are of this kind, see Arneson (2005, p. 271). For more general cases, see Mack (2015, p. 217). One way of dealing with this problem is to take into consideration not only people’s *choices* but also their *interests*. Vallentyne (2007a, p. 193) proposes such an idea, lending room for people’s interests being lexically inferior to their choices. See Wall (2009) for problems with this proposal. However, I will not employ this idea further in this paper.

¹⁴ See Shahar (2009, p. 224).

pose we make p false. So, for example, if his right is that he is not punched in the nose, we make that false, that is, we bring about that he *is* punched in the nose. Then, as I shall say, we *infringe* his right. But I shall say that we *violate* his right if and only if we do not merely infringe his right, but more, are acting wrongly, unjustly in doing so. (1986, p. 40)

What can then be seen as potential justifiers for infringements in this respect? Relevant factors discussed in the literature are:

- (a) *Unavoidability*. The most obvious justifier is provided by the principle that ‘ought’ implies ‘can’. It entails that if an agent cannot avoid infringing on someone’s rights, then the agent does not act impermissibly when doing so.
- (b) *Avoidance of catastrophe*. Nozick, for instance, speculates that one might be justified in infringing on other people’s rights in order ‘to avoid catastrophic moral horror’ (1974, p. 30, n.). Narveson similarly speaks about cases of ‘preventing the heavens falling’ (2013, p. 374).
- (c) *Unforeseeability*. Peter Vallentyne, Hillel Steiner, and Michael Otsuka (2005, p. 207), as well as Sobel (2012, p. 51), discuss whether an infringement does not amount to a rights-violation if the agent performing the action could not have foreseen the infringement.
- (d) *Self-defense*. The enforcement right (mentioned above) involves a right to self-defense. This right implies that a defender’s infringing action does not amount to a rights-violation on part of the aggressor, if the action is performed merely in self-defense.¹⁵
- (e) *Compensation*. Another possibility discussed in the libertarian literature is that an infringement need not be a rights-violation given that those whose boundaries are crossed without consent are compensated for this crossing.¹⁶

The general idea is that whenever there is justification of any relevant kind, the infringement (i.e. unconsented boundary-crossing) does not amount to a rights-violation and hence it is not impermissible on libertarianism.¹⁷ Thus, only unjustified infringements count as rights-violations.

In the remainder of this paper, I will investigate whether our individual emissions violate people’s rights. I start, in ‘[Do our Emissions Cross People’s Boundaries?](#)’, by investigating whether our individual emissions cross the boundaries of other people. In ‘[Do our Emissions Cross People’s Boundaries Without Their Consent?](#)’, I then discuss whether that is done with or without their consent. In ‘[Are Our Emissions Justified for Independent Reasons?](#)’, I investigate whether there are any independent libertarian justifications for our emissions.

¹⁵ Cf. Railton (1985, p. 190, n. 8).

¹⁶ See Nozick (1974, Ch. 4).

¹⁷ Consider, for instance, Thomson (1977), Kagan (1994), and Vallentyne (2009b, 2011).

Do our Emissions Cross People's Boundaries?

Although early libertarian thinkers were unaware of the link between greenhouse gas emissions and climate change, they were aware of the moral problems concerning air pollution in general. In his book *New Liberty* (1973), pioneering libertarian Murray Rothbard devotes an entire chapter, 'Conservation, Ecology, and Growth', to environmental problems. There he specifically discusses air pollution:

The vital fact about air pollution is that the polluter sends unwanted and unbidden pollutants—from smoke to nuclear radiation to sulfur oxides—through the air and into the lungs of innocent victims, as well as onto their material property. All such emanations which injure person or property constitute aggression against the private property of the victims. Air pollution, after all, is just as much aggression as committing arson against another's property or injuring him physically. Air pollution that injures others is aggression pure and simple. (1973, p. 319)

In connection to this, Rothbard quotes another early libertarian thinker, Robert Poole, who makes a similar observation in his "Reason and Ecology" (1972).¹⁸ Poole first defines 'pollution' as 'the transfer of harmful matter or energy to the person or property of another, without the latter's consent' (1972, p. 245). He then argues that '[a] libertarian society would be a full-liability society, where everyone is fully responsible for his actions and any harmful consequences they might cause' (1972, p. 253). Shortly thereafter, Robert Nozick—presumably the most well-known of all libertarians—characterized 'pollution' as 'the dumping of negative effects upon other people's property such as their houses, clothing and lungs, and upon unowned things which people benefit from, such as a clean and beautiful sky' (1974, p. 77).

On the basis of these passages, it is tempting to conclude that libertarianism deems air pollution impermissible in general, and since greenhouse gas emissions are a form of air pollution, libertarianism deems greenhouse gas emissions impermissible too. However, greenhouse gas emissions differ from other air pollutions such as 'nuclear radiation' and 'sulfur oxides'. While individually caused pollution of the latter kinds might harm people directly, it is questionable whether our individual emissions of mere greenhouse gasses might do so. As mentioned above, climate change is the result of *joint* human action. Moreover, thresholds and tipping points in the climatic system suggest that the total effects of our joint emissions amount to more than the aggregated effects of our separate emissions.¹⁹ For this reason, one might be tempted to think that our individual emissions do not cross people's boundaries, and that they hence do not give rise to any rights-violations. At a closer look, however, things are more complex.

¹⁸ My quotations of Poole are taken from Rothbard (1973, pp. 324–326).

¹⁹ See IPCC (2014, pp. 39–54), Cook et al. (2013), Rockström et al. (2009), and Steffen et al. (2007).

The Ways in Which Our Emissions Cross Other People's Boundaries

Some authors—for instance, John Broome (2012, pp. 50–59), Avram Hiller (2011, pp. 59–60), and John Nolt (2011)—have argued that even individuals' emissions cause harm to others. They have done this by taking the estimated total harm that is the result of human-induced climate change, and dividing this by the total amount of emissions, and then estimating the proportional climate impact of each individual emitter. The calculation says that the harm caused by each individual emitter is serious. To quote Broome (2012, p. 56), 'the annual emissions of one single person living in a rich country shorten people's lives by a few days in total'. In the words of Hiller (2011, p. 357), 'the [emitting] actions of a full life of an American seriously harm the full life of one person'. If these claims are correct, then the emissions of a rich individual apparently make a difference that counts as boundary-crossing according to libertarianism.

It could be objected that this line of argumentation involves an aggregation, and a reference to average numbers, that is at odds with libertarianism. Broome, for instance, assumes that 'a great many miniscule, imperceptible harms add up to a serious harm' (2012, p. 75). But to shorten the lives of billions of people by a fragment of a second each is not identical to shorten *one particular individual's* life by a few days in total. Such an aggregated harm is not suffered by any particular person, and is therefore *not* relevant to libertarianism.

In response to this, however, it should be noted that even miniscule and imperceptible harms are harms. And if individuals' emissions cause such harm to other people, then their emissions amount to boundary-crossings. In this respect, it should be mentioned that fossil fuel-based energy production generates a number of additional pollutants that affect people more directly than carbon dioxide molecules. Moreover, an individual's emissions might sometimes take us over the climate thresholds, and thus give rise to quite substantial harms. This seems to hold at least for those people who emit massively—e.g. Saudi oil tycoons or CEOs of multinational corporations who fly around the world in private jets.²⁰

It is, however, a quite complicated task to determine whether or not an individual's emissions give rise to harm. As we saw in 'The Basics of Libertarianism', however, rights-violations do not fundamentally derive from harms, but from infringements. Thus, it is in the present context possible to sidestep the notion of harm and still be able to assess people's emissions from a libertarian point of view. As I will argue below, the libertarian notion of boundary-crossing suggests that our individual emissions—irrespective of any resulting harm—cross the boundaries of at least some other people. If it can *also* be argued that our individual emissions cause harm, then this will strengthen the upshot of this section: that our individual emissions amount to boundary-crossings.

The main reason for counting our emissions as boundary-crossings on libertarian standards is that they are physical signals that come into contact with other people and their property. One might think that a notion of boundary-crossing with these

²⁰ See Chancel and Piketty (2015) and Kagan (2011).

implications is *too* sensitive, since it opens up for the moral wrongness of a vast number of actions. Indeed, this seems to fit poorly with the core ideas of libertarianism. As stated by Sobel: ‘Could the philosophical theory named for liberty actually turn out to be unacceptably restrictive of our freedom?’ (2012, p. 37).

In the next sub-section, I explore the ways in which libertarians could address this issue. I argue that they all fail, and that we therefore should accept that emissions are boundary-crossing.

How Libertarians Might Argue That Our Emissions Do *Not* Cross Other People’s Boundaries

In his book *The Machinery of Freedom* (2014: §41), David Friedman claims that ‘[i]t seems obvious that we want property rules that prohibit trespass by thousand megawatt laser beams and machine-gun bullets but not by flashlights and individual carbon dioxide molecules. But how, in principle, do you decide where along that continuum the rights of the property owner stop?’ One answer, discussed by Friedman himself, is that only *significant* boundary-crossings should count. He does not specify what would count as significant, but it suggests a strengthened notion of boundary-crossing that is less sensitive to external influence.

Perhaps such a strengthening could be made along the lines of Rothbard, who claims that ‘[a]ir pollution [...] of gasses or particles that are *invisible* or *undetectable* by the senses should not constitute aggression per se, because being insensible they do not interfere with the owner’s possession or use’ (1982, p. 83, my emphases). Since separate individuals’ greenhouse gas emissions are precisely of this sort—invisible and undetectable—one could argue that they should not count as boundary-crossings.²¹

However, this proposal is inconsistent with some of the core beliefs in the libertarian tradition. It might avoid some problems with minor infringements, but only at the cost of creating new problems. For instance, it has the implication that many clearly problematic actions—such as physically molesting a sleeping person who is incapable of detecting this—do *not* amount to boundary-crossings, and hence will not be wrong on libertarianism. Also, exposing ignorant people to nuclear radiation, that cannot be seen or detected by their senses, would not be boundary-crossing. But, intuitively, such acts *should* count as boundary-crossing on libertarianism.

Eric Mack (2015) has come up with a defense of a refinement in the location of boundaries that is supposed to avoid these problems. His basic idea is that having a right to something, X, implies a right to some *use* of X. If that were not the case, Mack argues, we would end up with a ‘hog-tying problem’, as we would then be prohibited from doing almost anything. For that reason, he postulates an ‘elbow room for rights’. According to this postulate, ‘a reasonable delineation of basic moral rights must be such that the claim-rights that are ascribed to individuals do not systematically preclude people from exercising the liberty-rights that the claim-rights

²¹ This argument is also stressed by Block (2011, p 5).

are supposed to protect' (2015, p. 197). Mack's refinement suggests that 'minor intrusions', defined as 'impositions of very low-level physical effects upon another person or her property' (2015, p. 196), do not count as boundary-crossings. Exactly what this means, he argues, is to be settled by convention.²² However, he does make a further specification:

The moral elbow room reasoning is that, while individuals must be at liberty to engage in *non-malicious* (and *non-wanton*) minor intrusions if they are to be at liberty to dispose of their *own* persons and possessions as they see fit, this liberty need not extend to malicious (or wanton) minor intrusions. It suffices to solve the hog-tying problem that non-malicious and non-wanton minor intrusions be permissible. As long as the minor intrusions on others are incidental to the agent's decisions about how to deploy his person or property we reasonably view these deployments as fundamentally exercises of that agent's rights. However, if those intrusions are wanton or malicious – done for or verging on being done for their intrusiveness – they are more reasonably seen as the agent doing as he sees fit with others or their property and, hence, as boundary-crossing. (2015, p. 212, my emphases)

This idea avoids my previous objection. Since individuals have the right to use *only their own* persons and properties, the elbow room postulate is supposed not to allow individuals to steal things, molest sleeping people, or the like, even if doing so would be undetectable by the victims. Since Mack's account implies that non-malicious and non-wanton minor intrusions do not count as boundary-crossings, and since only boundary-crossings can be rights-violations and hence impermissible, his account implies that no non-malicious or non-wanton minor intrusion can be impermissible.

But it seems that some non-malicious or non-wanton minor intrusions *are* boundary-crossings on libertarianism. For example, if I happen to scratch your car when walking my dog, then that *is* a boundary-crossing even if it would be done non-maliciously and non-wantonly. Of course, this does not necessarily mean that it is a rights-violation. But if it is not a rights-violation, then the best explanation to that is not that it is not a boundary-crossing. The explanation is rather that it is either consensual somehow (e.g. by parking one's car in the public street one consents to it being subjected to small scratches), or that there is some justification for that crossing. In any case, therefore, I do not think that libertarians should accept a strengthened notion of boundary-crossing *à la* Mack. If non-wantonness and non-maliciousness matters—which I think Mack is right that it does—then this is most plausibly as a justifier for infringement (to be discussed in '[Are Our Emissions Justified for Independent Reasons?](#)').

²² Although Mack says that '[t]he permissibility of minor intrusions is explained on the basis of a refinement in the location of boundaries rather than a general attenuation of rights' (2015, p. 198), his reference to convention seems to imply that his proposal concerns the notion of consent. In other words, it seems to be an idea about what people give their permission to, rather than what their boundaries are resistant to. I will return to this in the next section.

In effect, I think individuals' emitting activities constitute boundary-crossings, even if they would be mere non-wanton and unintentional effects of exercises of liberty-rights. Whether they might still be permitted is a separate question (to be discussed in '[Do our Emissions Cross People's Boundaries Without Their Consent?](#)' and '[Are Our Emissions Justified for Independent Reasons?](#)'). The only remaining potential way for libertarians to avoid counting emissions as boundary-crossings, is, I think, by interpreting boundary-crossing in terms of *liberty-restriction*. Based on such an understanding, an action crosses somebody's boundary only if it hinders her from performing some actions that she would otherwise have been able to perform.²³ In other words, an action is boundary-crossing (on this account) only if it restricts someone's legitimate choice-set compared to what the choice-set would look like were the action not performed. Thus, it might be argued that since no individual's emissions restrict any other individual's liberty, no individual's emission crosses any other individual's boundary. In this way, libertarianism would provide a solution to the problem of miniscule effects.

Although liberty-restriction would perhaps be plausible as a *sufficient* condition for boundary-crossing, it is not plausible as a *necessary* condition for boundary-crossing. Considered as a necessary condition, it is inconsistent with the libertarian control-right—in particular the claim-right that others not use one's property without permission. To see this, suppose that I use your car impermissibly for a short ride, before I return it unnoticed to you. Assume that there is nothing that you cannot do because of my action that you could have done had it not been performed. In this case, my action does not in any relevant sense restrict your choice-set. Still, the libertarian control-right gives you the claim-right that others do not use your property without your permission. Hence my action is impermissible and so it constitutes a boundary-crossing. Consequently, liberty-restriction cannot be a necessary condition for boundary-crossing.

Libertarians therefore have reason to stick to a strict notion of boundary-crossing on which particular individuals' emitting activities are boundary-crossings—they are neither intentional, noticeable, malicious, wanton, nor liberty-restricting in any relevant sense. However, as we saw in '[The Basics of Libertarianism](#)', not all instances of boundary-crossings amount to rights-violations. First and foremost, an action that crosses another person's boundary is an infringement only insofar as it *lacks the consent* of this person. If the person somehow permits the crossing, it does not constitute an infringement.

²³ This is in line with an idea of Rothbard's, that '...we must refine our concept of invasion to mean not just boundary crossing, but boundary crossings that in some way interfere with the owner's use or enjoyment of this property' (1982, p. 151). See also Vallentyne (2011) and Oberdiek (2008) for discussions of similar views.

Do our Emissions Cross People's Boundaries *Without Their Consent*?

Although individuals' emissions cross the boundaries of others, it seems plausible to assume that people will not dissent to them on the basis of their direct effects—especially not when considered in isolation. Indeed, people care little about things that are unnoticeable to them, and the effects of individual emissions of greenhouse gases are miniscule and imperceptible. If the absence of dissent is taken to be equally relevant as presence of consent, then libertarianism seems to imply that our individual emissions do *not* amount to infringements.

However, libertarianism takes wrongdoing to require only *the absence of consent* (and thus not the presence of dissent) from those people whose boundaries are crossed.²⁴ Even if people do not dissent to the emissions of others, the interesting question is whether they do, or do not, consent to them. In this section, we shall take a look at whether people might consent either explicitly or implicitly to our emissions.

People's Lack of Explicit Consent to Emissions in General

Although the major effects of climate change are to be seen in the future, some of the effects are perceivable today already. Some individuals are harmed or even killed by climate change at this moment. This appears to be the main reason why some people raise their voices against the high emissions even of separate individuals—although they know that each and every one of these emissions may be considered inoffensive in isolation—because they realize that these emissions taken together put the survival of themselves and their children at risk.

There is also dissent from people who are not yet themselves affected by climate change, but who care for others. This, I surmise, is also why we have a debate on climate change in the first place. Even if the survival of the human species is not protected by libertarianism per se, and even if the identity of future people is contingent on the activities of present people, some present people express concern for future generations and the human species. And for *that* reason, they dissent to these emitting activities. Consequently, there is clearly no explicit consent to people's emissions in general.

Before we can conclude that this turns our emissions into infringements, a few questions need to be answered. One question concerns whether the dissents at issue are *valid*—i.e. whether they can make the actions at issue count as infringements. Indeed, one person's dissent (or lack of consent) to an action can make that action an infringement only if that action is a boundary-crossing of that person. I cannot make

²⁴ Note that this does not require that lack of consent must be morally equated with dissent, since we could allow for different roles or magnitudes between them. For instance, one might want to argue that although a person's lack of consent to another's boundary-crossing action *suffices* for making that action an infringement, if the person moreover dissents to that action then it cannot be excused or in other ways justified. We will get back to related issues in '[Are Our Emissions Justified for Independent Reasons?](#)' section.

an action impermissible by dissenting to that action, if my own boundaries are not crossed by that action. So, what is the case regarding people's lack of explicit consent to emissions in general?

One worry here is due to temporal distances. If the crossings of present individuals' boundaries are entirely due to the emissions of past individuals (e.g. those who lived in the nineteenth century), then present individuals' boundaries are not crossed by other present individuals' emissions. Hence, they cannot validly dissent to the emissions of present individuals, meaning that these emissions cannot violate any present individuals' rights. Perhaps, therefore, it does not matter that some present people raise their voices against the high emissions of others.

As we saw in '[Do our Emissions Cross People's Boundaries?](#)', however, our greenhouse gas emissions are spread very fast and widely in the atmosphere, which means that at least some of the boundary-crossings of our emissions occur to present individuals here and now, as well as to present individuals later in their lives. Consequently, these present individuals may validly dissent to these emissions.²⁵

We need to establish, however, that there is no conflicting *implicit* consent in the background. If there is, it might outbalance the lack of explicit consent to emissions in general. As can be inferred from the discussion in '[The Basics of Libertarianism](#)', the notion of implicit consent suggests that anyone who emits greenhouse gases to a certain extent gives her implicit consent to others to emit such gases to that same extent. Since almost anything we do gives rise to greenhouse gas emissions (even the poorest of the poor emit *some* amount of greenhouse gases), *all* present individuals implicitly consent to *some* emissions simply by performing acts that are needed in order to stay alive (breathing, eating, digesting, etc.).

This suggests that people who emit only small amounts of greenhouse gases do *not* give their implicit consent to the massive emissions of others. This is true for most poor people, and also those (relatively few) people among the rich who do not emit the same quantities as the typical rich. Unless these low-emitting individuals have given their *explicit* consent to higher emissions, they do not consent to those emissions.

People's Implicit Consent to Other's Subsistence Emissions

The previous line of reasoning suggests that we may distinguish between the amount of emissions that everyone makes, and those emissions that exceed this amount. This may be done along the lines of a seminal paper by Henry Shue (1993), making a distinction between *subsistence emissions* (i.e. emissions required for satisfying basic needs) and *non-subsistence emissions* (i.e. emissions required for satisfying non-basic needs). If we stick to this terminology, and take 'subsistence emissions' as a technical term for the amount of emissions that everyone makes (and has to make in order to satisfy basic needs), and 'non-subsistence emissions' as a technical term for any emissions that go beyond that amount, then we may infer that subsistence

²⁵ In a similar vein, Nicholas Stern has argued that 'the rights of a young person now to enjoy life and property in the future are being violated by the emissions of the current generation' (2014, p. 415).

emissions are implicitly consented to by everyone, while non-subsistence emissions are not. Consequently, libertarianism implies that only our non-subsistence emissions amount to infringements.²⁶

Some might want to object that since the poor do not really have any choice but to emit as little as they do, their emissions cannot be taken for implicit consent to only such minor emissions. Presumably they would consent to some major emissions—even some of the non-subsistence emissions—if they had the opportunity to emit more themselves. This, however, would be a form of *hypothetical* consent—i.e. consent that *would* be given by the agent were she in a somewhat more ideal position (with more knowledge, more opportunities, more capacities, etc.). However, hypothetical consent is ruled out from a libertarian point of view. What matters for libertarianism is what people *actually* consent to (explicitly or implicitly). And the poor do not actually give any such consent.²⁷

Perhaps one could object to this reasoning by questioning the understanding of implicit consent that I have adopted: By performing an action of a certain type, the agent implicitly consents to others performing actions of that same type. An alternative way of understanding implicit consent, with different implications, would be in terms of proportionality: By consuming a certain proportion of what the agent herself could consume, she consents to others consuming the same proportion of what they themselves could consume. But this understanding is implausible. For example, it implies that any poor person who consumes everything there actually is for him to consume would thus consent to any consumption levels whatsoever of everyone else. For that reason, we should stick to the previous understanding of implicit consent. We should also accept that our non-subsistence emissions amount to infringements on at least *some* people.

Of course, one might want to reject the relevance of implicit consent completely, and endorse the notion of explicit consent only. Doing so is, however, of no help in the context of climate change. Given that many people do not even explicitly consent to other people's subsistence emissions, this would imply that *all* emissions amount to infringements on libertarianism. This gives libertarians reasons to accept the relevance of implicit consent. Hence, *at least* our non-subsistence emissions count as infringements on libertarianism.

Still, it is not clear how subsistence emissions should be distinguished from non-subsistence emissions *more concretely*. Plausibly, whether a particular emitting act is to count as an instance of subsistence emissions or non-subsistence emissions will depend on the extent to which the agent has already emitted in the past, as well as on how much she will emit in the future. This suggests that emissions should be counted from an *annual* or a *lifetime* per capita perspective. From the annual perspective, a person's emissions would count as subsistence emissions only if her total

²⁶ Doing so is also in line with Locke, who thought that people's most fundamental right is 'the right everyone had to take care of, and provide for their Subsistence' (1690: Vol. 1, First treatise, §87).

²⁷ Cf. Nozick: 'tacit consent isn't worth the paper it is not written on' (1974, p. 287). If we would take hypothetical consent to be relevant, then, since many people actually suffer from the harms caused by climate change, some of them would not even hypothetically consent to such high amounts of emissions.

amount of emissions during that year would not exceed the amount needed for satisfying basic needs during that year (whatever that amount is). From the lifetime perspective, her emissions would count as subsistence emissions only if her total amount of emissions made in her life would not exceed the amount needed for satisfying basic needs during her lifetime (whatever that amount is). Considering the lifetime perspective, an individual would be allowed to rectify her non-subsistence annual emissions made in previous years by emitting sufficiently less in the remainder of her lifetime. This suggests that our non-subsistence emissions *in this sense* count as infringements on libertarianism.

The next question to answer is whether our non-subsistence emissions, *qua* infringements, are impermissible on libertarianism. This depends on whether they can be justified for independent reasons.

Are Our Emissions Justified for Independent Reasons?

Any plausible moral theory, including libertarianism, should allow for some non-consensual boundary-crossings. As I have argued above, the most coherent way for libertarianism to do this is *not* through a modification of the notions of boundary-crossing or consent. On my view, the most plausible way to do this is instead by reference to justifiers for infringements. As stated in ‘[The Basics of Libertarianism](#)’, the potential justifiers discussed in the libertarian literature concern (i) unavoidability, (ii) avoidance of catastrophe, (iii) self-defense, (iv) unforeseeability, and (v) compensation. In this section, I explore whether any of these potential justifiers are relevant with respect to libertarianism’s implications for our individual emissions. I will also say something about Mack’s ‘elbow room’ view, discussed in ‘[How Libertarians Might Argue That Our Emissions Do Not Cross Other People’s Boundaries](#)’, in this regard.

When it comes to (i), unavoidability, it could be argued that it is impossible to make *no* emissions at all. Breathing and digesting yields emissions. However, this unavoidability is already accounted for by the distinction between subsistence and non-subsistence emissions. And the focus here is on the potential permissibility of our non-subsistence emissions. Regardless of where we want to draw the line between those emissions that are possible to avoid and those that are not, it is clear that non-subsistence emissions are of the former kind. Therefore, unavoidability fails to justify our non-subsistence emissions.

Concerning (ii), avoidance of catastrophe, it is safe to say that our greenhouse gas emissions—especially our non-subsistence emissions—are not plausible candidates for this kind of justification. If there is any catastrophe to worry about, it is rather *because* of our emissions.

Regarding (iii), self-defense, it suffices to say that people’s non-subsistence emissions are typically not performed for the sake of defending themselves. People might emit as a means to improve their lives, but they do not do it as a means to defend their rights. If any emissions could count as self-defense, then those are subsistence emissions. Hence, the right to self-defense cannot function as a justifier for our non-subsistence emissions.

When it comes to (iv), unforeseeability, I find it implausible as a justifier for infringement in general. Although unforeseeability plausibly affects the judgment of *blame* for people's actions, it is not obvious that it affects the *permissibility* of their actions.²⁸ However, the effects of our climate-relevant activities are nowadays quite foreseeable. Even if we accept that early industrialists were justified in doing what they did, for the reason that they could not foresee the environmental consequences of their actions, this does not imply that unforeseeability constitute a justifier for present people's non-subsistence emissions.

Regarding (v), compensation, things are more complex.

Is Compensation a Means to Justify Our Non-Subsistence Emissions?

There are several ways in which compensation might be considered as a potential means to justify non-subsistence emissions. It seems obvious, for instance, that compensation could work in a *proactive* sense as a means for obtaining prior consent to subsequent boundary-crossings. If a non-subsistence emitter were to persuade mere subsistence emitters—by way of compensation—to let him continue to make non-subsistence emissions, then there would no longer be any valid dissent to his non-subsistence emissions, thus making them permissible. In this sense, however, compensation would not constitute any justifier for infringement, but rather a means for assuring that a boundary-crossing does not amount to an infringement in the first place. As things are at the moment, however, non-subsistence emitters do not compensate their victims in this proactive respect (this will be addressed below).

Ever since Nozick (1974, Ch. 4), there has been a discussion among libertarians whether compensation could perhaps also work in a justificatory respect—i.e. whether it would be permissible to cross people's boundaries without their consent provided that compensation is paid to them later. Nozick labels this option 'cross and compensate'.²⁹ Nevertheless, I think this option is unavailable from a libertarian view. As we saw in 'The Basics of Libertarianism', ownership consists of a bundle of rights, of which the right to compensation is one. This right is due to the more basic control-right that others do not infringe on one's own territory, and it kicks in whenever someone does. Consequently, *if* a rights-violation has already occurred, *then* compensation is prescribed as a means for rectifying that violation. This suggests that it is impermissible to cross people's boundaries without their consent *even if* we compensate them afterwards. Thus, compensation cannot function as a justifier for infringement.

In any case, compensation would be practically problematic in the case of non-subsistence emissions. As Railton puts it, '[i]f a polluting activity harms an individual, the compensation required would be such that the victim would have been indifferent before the fact between not suffering the harm at all and suffering the harm but receiving the compensation given' (1985, p. 213). The problem with

²⁸ See Sobel (2012, p. 51) and Thomson (1990, p. 234) for similar arguments.

²⁹ See also Railton (1985), Arneson (2005), Wall (2009), Sobel (2012), and Mack (2015, p. 196).

compensation for our individual emissions becomes clear as soon as we try to spell out what it would require in practice. The main problem is that some individuals are not indifferent before the fact between not being affected by our emissions and receiving the compensation given, no matter the amount of compensation. Some people are dying from climate change and cannot be compensated at all. And even if we *could* compensate our victims, we would not know exactly *to whom* we owe compensation (or *how much* we owe each of them).³⁰ Even if compensation would work as a means for rectifying *some* infringements, it does not seem to work when it comes to rectifying the infringements that are due to our non-subsistence emissions.

A related possibility for justifying our non-subsistence emissions concerns so-called *offsetting*.

Is Offsetting a Means to Justify Our Non-Subsistence Emissions?

To offset emissions is to make sure that for every unit of greenhouse gas you add to the atmosphere, you also subtract one unit from it. Offsetting is thus, to put it in economists' terminology, a way of internalizing the external costs of one's emissions. In other words, it means that the emitter pays for all the *social costs* related to his emitting activities. Offsetting has been suggested as a justifier for emissions by, for instance, John Broome (2012), and is a popular idea among libertarians as well.³¹

All measures of offsetting are external to the agent's own activities, in the sense that they either amount to helping others *produce less* greenhouse gases, or to helping nature *absorb more* of the gases already produced. Investing in projects that generate renewable energy, for instance via solar panels and wind turbines, is an example of the first kind of offsetting. Investing in projects that plant carbon-absorbing trees, or developing methods for capturing carbon in underground storage facilities (to the extent it works), are examples of the second kind. The gist is that offsetting lets you neutralize your total emissions. Thereby, the idea goes, you make sure they give rise to no boundary-crossings, meaning that you may continue to make even some non-subsistence emissions.

The problem with this idea, however, is that while one's emitting acts produce greenhouse gases immediately, one's offsetting acts that reduce greenhouse gases do so only after some time. To fly from New York to London and back, for instance, will emit more than a ton of greenhouse gases during the flight.³² But the time it takes to offset one ton, via whatever offsetting program one may choose, is most likely far longer than that. Consequently, one's offsetting will not affect the same

³⁰ See Broome (2012, p. 79), and Railton (1985, pp. 214–217). There would also be problems due to transaction costs. See Nozick (1974, p. 76): 'the appropriate compensation would seem to involve enormous transaction costs'. Nozick here speaks about the problems of compensations to 'those persons who undergo a *risk* of a boundary crossing' (my emphasis). However, the nature of climate change suggests that the same worries hold for *actual* boundary-crossings as well.

³¹ See, for instance, Adler (2009), Epstein (2009), Brennan (2012), and Friedman (2014: §64).

³² This example is from Broome (2012, p. 74).

particular people that are affected by one's emissions. Given that one's non-subsistence emissions cross the boundaries of *particular* people, one's offsetting cannot assure that these emissions do not cross these people's boundaries.

But even if offsetting one's non-subsistence emissions does not undermine the boundary-crossing aspects of those emissions, it might be relevant for another reason: If offsetting can make sure that people's non-subsistence emissions do not contribute to climate change, then offsetting may undermine the motives that people have for not consenting to these emissions. In this respect, offsetting might provide an alternative to stop producing non-subsistence emissions.

There are, still, many practical complications with offsetting, not least from a libertarian point of view. First, there is the obvious restriction that our offsetting must not violate anyone's rights. Second, our offsetting must be additional, which means that the reductions in question would not have happened even if we had not made our offsets. Otherwise the emissions that we reduce through our offsetting measures will not really even out the non-subsistence emissions we make.³³ The fact that our emissions do not decrease, however, is evidence that most emitters do not successfully offset their non-subsistence emissions.

What About Mack's 'Elbow Room' for Rights?

In 'How Libertarians Might Argue That Our Emissions Do Not Cross Other People's Boundaries', I discussed Mack's 'elbow room' view, according to which non-malicious and non-wanton minor intrusions do not count as boundary-crossings and hence do not count as infringements. I objected to this view, since some non-malicious or non-wanton minor intrusions *are* boundary-crossings on libertarianism. However, I opened up for the 'elbow room' view to be relevant when it comes to *justifying* infringements.

Now, having discussed the role of consent (in 'Do our Emissions Cross People's Boundaries Without Their Consent?'), and thus distinguished between subsistence and non-subsistence emissions and explained what counts as subsistence emissions and non-subsistence emissions, respectively, it seems clear that a prohibition of non-subsistence emissions neither implies the 'hog-tying problem', nor 'preclude[s] people from exercising the liberty-rights that the claim-rights are supposed to protect' (Mack 2015, p. 197). As this means, a prohibition of non-subsistence emissions does not give rise to the problems that the 'elbow room' view is meant to avoid.

As this unveils, the 'elbow room' would function as a justifier in a similar way as (i), unavoidability, discussed above. Even though it is impossible to make *no* emissions at all, it is clear that non-subsistence emissions are possible to avoid. This also suggests that if non-wantonness and non-maliciousness is at all relevant as a justifier for infringing emissions, then it is so only with respect to subsistence emissions. Consequently, the 'elbow room' view cannot justify the infringements that are due to our non-subsistence emissions.

³³ Cf. Broome (2012, pp. 87–89).

Some Objections and Replies

Before drawing any final conclusions, I wish to answer some potential objections to the account given so far.³⁴ Most noticeably, it could be argued that the reciprocal character of the account of ‘implicit consent’ that I am adopting has some troublesome implications.

For instance, suppose some person who, for reasons of economic deprivation, is forced to endure standards of living *below* subsistence. In this case, it seems that we cannot appeal to this person’s implicit consent to justify others’ subsistence emissions. The case moreover suggests that the level of acceptable emissions might be much lower than subsistence emissions. One way to escape this implication is to appeal to *unavoidability*. As was argued in ‘[Are Our Emissions Justified for Independent Reasons?](#)’, people can be said to have a right, due to unavoidability, to subsistence. This in turn justifies people to emit up to a subsistence level *even if* others are emitting less.

However, this seems to assume that subsistence emissions are really *necessary* for subsistence to be achieved. But suppose someone who actually achieves subsistence while successfully offsetting her emissions to the point of having zero net impact on the climate system. In this case, it seems that subsistence emissions are not necessary for that person to achieve subsistence. Moreover, that person cannot be said to implicitly consent to others’ subsistence emissions. Hence, it seems that this person’s offsetting implies an obligation on others to offset their emissions to zero as well.

It is correct that it follows from my interpretation of libertarianism that as long as some people reduce their net emissions to zero—e.g. via carbon offsetting—then this obligates others to offset their emissions too, *given that they can*. Since different people have different capacities and live under different circumstances, this implies that what is (in the relevant sense) necessary or unavoidable for one person might not be necessary or unavoidable for another. If someone cannot offset (or in other ways neutralize) their emissions, e.g. due to economic deprivation, then that someone is justified in not doing so.

Still, it seems that the version of libertarianism that I have defended is incompatible with industrial civilization. Consider, by way of illustration, the first person building a factory in a previously unindustrialized society. Since no other factories would exist at the time, the industrialist would not be able to appeal to others’ implicit consent to justify this project. Since industrial civilization revolves around people being allowed to take innovative actions that increase the level of impacts on others (i.e. without antecedently securing the consent of every affected individual), this seems to make my interpretation of libertarianism incompatible with any real material progress.

However, it could be argued that, although my account implies that the emissions of the first industrialists did cause boundary-crossings to some people, it is not

³⁴ I want to thank two anonymous reviewers for bringing up these objections.

obvious that these people did not consent to them. As mentioned in ‘[Do our Emissions Cross People’s Boundaries Without Their Consent?](#)’, the reason that people tend not to consent to carbon emissions is the climatic effects of these emissions. But it is only after the carbon budget is exempted that any relevant threshold in the climate system is passed, for which reason the first industrialisers did not themselves give rise to any climate change. Moreover, if the affected people voluntarily took benefit from the factories (e.g. by being employed in them), then they could be said to have implicitly consented to the related emissions.

Of course, not everyone affected by the polluting activities of the early industrialists benefitted from their activities. And when it comes to assessing these activities, climate change as such is not the main issue. The early industrialists emitted not only carbon dioxide but also large quantities of lead, sulfur, mercury, and nitrogen oxides, etc. The negative impacts of *these* emissions were readily perceived at the time, and it is quite obvious that not everyone affected by them consented to them. For that reason, these activities were nonetheless impermissible according to libertarianism.

However, this verdict is not counterintuitive. If the first industrialists actually did cause such harm to their contemporaries, then libertarianism implies that what they did was wrong. In effect, libertarianism requires that these people are compensated, which seems fair enough. Note that this does not mean that libertarianism is incompatible with industrialization *as such*, but only with industrialization *as it actually evolved*. If the question is whether existing factories should be allowed to continue to operate, then the answer is clear: Libertarianism allows this only as long as the responsible agents make sure that their factories will not violate anyone’s rights henceforth (and that they rectify any relevant historical injustices). As this means, libertarianism is in fact compatible with industrial civilization, it is just that it requires a rights-respecting development of such a civilization.

Interestingly, there is nothing specifically libertarian about this condemnation of the actual history of industrial civilization. Most moral theories yield similar verdicts. Utilitarianism, for instance, implies that early industrialists acted wrongly for the reason that they could have chosen other alternative actions which would have produced more utility. Kantianism implies that early industrialists acted wrongly for the reason that the maxims on the basis of which they acted were not universalizable (in the relevant sense). Virtue ethicists would, presumably, say that early industrialists acted wrongly for the reason that they were not acting out of virtuous motives. This suggests that the fact that libertarianism did not allow industrial civilization to evolve the way it actually did does not make an argument against libertarianism in favor of other moral views.

Conclusion

In this paper, I have argued that although our individual emissions in separation would cause no harm to others, they do cross the boundaries of other people. Although it can be argued that the boundary-crossings that are due to our subsistence emissions are consented to by others, the boundary-crossings that are due to our non-subsistence emissions are not consented to by everyone. Therefore, these

non-subsistence emissions amount to infringements according to libertarianism. Moreover, I have argued that there is no independent justification for these infringements, although there is an alternative to stop making non-subsistence emissions: to offset our non-subsistence emissions completely. At present, however, most people do not offset their non-subsistence emissions. Therefore, these emissions violate people's rights, which means that they are impermissible according to libertarianism's non-aggression principle.

Interestingly, this conclusion hinges on the current differences between people's emissions. If everyone were a non-subsistence emitter, then all emissions would be implicitly consented to by everyone. In that case, libertarians would have to turn to other resources in order to find reasons for condemning our non-subsistence emissions. On that note, I have in this paper neglected the lives of future people, as well as the question regarding the joint responsibilities we might have regarding climate change. I have also disregarded the various risks that are associated with climate change, as well as the libertarian proviso for appropriations of the natural resources (e.g. coal, oil, and gas) that are used in our emitting activities. If this was taken into consideration, then we would presumably find separate reasons for libertarians to take climate change seriously.

Nevertheless, it should be noted that the conclusion of this paper also depends on the specific notions of 'rights-violation', 'infringement', 'boundary-crossing', etc., that I have argued for. As this implies, a critic could argue that I have not used the most plausible version of libertarianism and that, therefore, the conclusion is of limited value to the debate. However, whether there are other more plausible versions of libertarianism that could avoid these implications is a topic for further investigation. At the very least, I hope that the arguments made in this paper provide a direction for further theorizing on libertarian morality and its implications for climate change.

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