

Ecology, Time, and the Global Economy: Towards a Critical-Relational Theory of Global Justice*

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Abstract

Thomas Pogge presents a relational theory of global justice. He suggests that, in the present global economy, the global affluent have a special relationship, and thus a special responsibility, to the global poor. However, Pogge has failed in causal attribution. This paper aims to present an alternative relational theory which can avoid this failure. Drawing from critical social science, I shall argue that two kinds of injustice – injustice in ecological space and injustice in time – can be causally attributed to the present global economy. Also, I shall apply this argument to support Iris Marion Young's model of responsibility.

Keywords: global justice, relationism, critical social science, ecology, time

1 Introduction

Philosophers have discussed the responsibility of the global affluent to improve the situation of the global poor, and they have done so in either non-relational or relational ways (Risse 2012, 92-94). Non-relationists argue that the affluent should assume responsibility to the poor whether or not the former have a special relationship to the latter. They, for example, identify morally paramount principles which should be applied globally (see Caney 2005; Shue 1996; Singer 1972). In non-relational views, a state of affairs which infringes upon the identified principles is morally unacceptable. The present situation of the poor infringes upon a morally paramount principle (e.g. the principle of human rights). Therefore, someone should assume the responsibility to put right that situation. And non-relationists normally argue

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that this responsibility should be assigned to the affluent mainly because the affluent are able to put right the situation without incurring a significant cost. Meanwhile, relationists argue that the affluent should assume responsibility to the poor because the former have a special relationship to the latter, such as a relationship mediated by institutional arrangements. In relational views, the responsibility of the affluent to improve the situation of the poor is a responsibility of a particularly stringent kind – a responsibility of *justice* – because it is grounded in a special relationship between the affluent and the poor.

Both approaches have difficulties. For example, non-relational arguments may be unable to prompt compelling calls for decisive political action. The kind of responsibility discussed by non-relationists can be described as *humanitarian*. People have a humanitarian responsibility to each other ‘purely in virtue of their humanity and not in virtue of their special relationship’ (Nagel 1977, 59). But humanitarian responsibilities are distinct from, and less stringent than, responsibilities of justice (Miller 2007, 247-59). So, if non-relationists wish to present compelling arguments which can urge the affluent to take decisive action for the poor, then they may need to establish that the responsibility of the affluent to take such action is a responsibility of justice, and not of a less stringent kind. But, for this, non-relationists need to explain how common humanity generates such a stringent kind of responsibility (Risse 2012, 94). Meanwhile, relationists are better equipped to discuss responsibilities of justice because they discuss special relationships which generate such responsibilities. However, they need to bear the burden of empirical investigation. They need to explain how a given injustice can be causally attributed to a given relationship. Without such causal attribution, one cannot argue that the injustice in question has occurred *as a result of the relationship in question*. What one can say is only that the injustice has *simply occurred*.

The aim of this paper is to present a relational theory which can successfully attribute injustices to a certain relationship between the affluent and the poor. More exactly, this paper shall present a theory which can attribute injustices to the global economic relationship (the relationship mediated by global economic institutions). Despite this aim, I do not assume that non-relationists cannot present a plausible argument for the claim that the responsibility of the affluent is a responsibility of justice, and not a humanitarian one. If non-relationists can find a way to present such an argument, their argument may suffice to urge the affluent to take decisive action. But, even if a sufficiently compelling non-relational argument can be presented, it is nevertheless meaningful to present a plausible relational argument too because it provides an additional reason for the affluent to take action.

My point of departure is a relational theory presented by Thomas Pogge. Pogge’s theory is a good point of departure because it exhibits both a way of seeing which other relationists have generally accepted and a problem which they need to overcome. Pogge argues that the affluent are involved in the global economy which is so structured as to reproduce injustices to the poor. And this argument has been generally accepted (with modification) by other relationists such as Tim Hayward (2008) and Iris Marion Young (2004). However, as I shall show in the second section, Pogge has failed in causal attribution. He

has failed to offer a convincing causal explanation which can attribute injustices to the global economy. In the second section, I shall also explain how I aim to avoid the same failure.

In the third section, I shall offer a causal explanation which can successfully attribute injustices to the present global economy. In that section, more exactly, I shall argue that the present global economy is so structured as to reproduce two kinds of injustice: injustice in ecological space and injustice in time. For this argument, I draw on three influential critical social scientists: David Harvey, Alf Hornborg, and Saskia Sassen. These social scientists have drawn from various disciplines in social science (e.g. economics, sociology, geography, anthropology, and development studies) in order to understand how the present global economy works. Their analyses are particularly important in my present project because their analyses show how the injustices in ecological space and time can occur as a result of the present global economy. In the fourth section, I shall apply the explanatory theory presented in the third section to support the normative theory concerning responsibility presented by Iris Marion Young. In the same section, I shall also explain why I support Young's argument concerning responsibility, and not Pogge's.

This paper will contribute to the literature on global justice by presenting a relational theory which can succeed in causal attribution – a theory which is therefore more convincing than Pogge's. But this paper will also make three additional contributions. First, this paper will integrate insights from critical social scientists into the philosophy of global justice. In doing so, this paper will present a conceptual framework which can transcend the conventional liberal framework. Liberal philosophers such as Pogge tend to accept the optimistic assumption that the present global economy, although presently unjust, can be rendered just with minor modifications. In Pogge's view, for example, the present global economy is only '*imperfectly developed*: it needs reform rather than a revolutionary overthrow' (Pogge 2005, 59L; quoting Risse 2005a, 18L, original emphasis). 'Minor redesigns', therefore, Pogge argues, 'would suffice to avoid most of the severe poverty we are witnessing today' (Pogge 2005, 59L). Based on this assumption, Pogge has proposed a modest solution which does not alter the fundamental features of the present global economy (see Pogge 2008, 202-21). However, one might ask, what if the present global economy is so structured as to produce/reproduce injustices – thus, profoundly unjust – and therefore needs revolutionary reorganisation (if not overthrow) rather than minor reform? Although this question has not been sufficiently considered within liberal political philosophy, it has been taken seriously by critical social scientists (see Chandhoke 2010, 70). Therefore, if critical social scientists are right, and thus if the argument presented in this paper is right, it has profound implications for how we think about global justice.

Second, this paper will identify one form of injustice which has been largely disregarded in the literature on global justice: namely, injustice in time. Philosophers have already started to discuss time in the context of social justice (see Burchardt 2010; Goodin 2010). They have discussed how 'discretionary time' – time which is free to spend as one pleases – is distributed within affluent societies (see Goodin et al

2008). However, clearly, there are poor people outside affluent societies as well. And, as we shall see in this paper, their time can be affected most severely by the present global economy: the present global economy is so structured as to undermine not only poor people's discretionary time, but even time necessary for their healthy subsistence.

Third, this paper will both support and supplement the critical strand of relationism developed by environmental philosopher Tim Hayward. Hayward has discussed global injustice in ecological space. More exactly, he has argued that the present global economy is profoundly unjust because it is so structured as to reproduce injustice in ecological space, and that this kind of injustice cannot be corrected without a radical reorganisation of the present global economy (see Hayward 2008). This paper will support this argument by drawing on the analyses conducted by critical social scientists. This paper will also supplement Hayward's argument by discussing global injustice in time as well.

2 Beyond Pogge's Liberal Relationism

As noted above, a relational theory needs to offer a certain causal explanation which can attribute a given injustice to a given relationship (in my present project, the global economic relationship). Pogge (2008, 18-26) aims to offer such an explanation, drawing on the relational concept of 'harm'. He discusses two ways to attribute harm to the present global economy. First, Pogge (2008, 19-23) argues that harm can be causally attributed to the present global economy on the basis of what he calls a 'diachronic' comparison. This refers to a comparison between how people fare under the present global economic system (in Pogge's argument, the WTO regime) and how people used to fare under the preceding system, or alternatively how people would fare now if the transition to the present system had not occurred. According to Pogge, this comparison can show that inequalities have grown under the present system. Therefore, he argues, the present global economy is harmful to people at the bottom of inequalities – namely, the global poor. Second, Pogge (2008, 23-26) also argues that harm can be causally attributed to the present global economy on the basis of what he calls a 'subjunctive' comparison. This refers to a comparison between how people actually fare under the present global economic system and how people would fare under a feasible alternative system. According to Pogge, this comparison can show that the global poor 'are worse off than anyone would be if the design of the global order were just' (Pogge 2005, 55R). Pogge suggests that poor people would fare better under an alternative system where what he calls the 'Global Resources Dividend' (GRD) is in place (see Pogge 2008, 202-21). Therefore, he argues, the present global economy is harmful to the global poor. However, it can be argued that these comparisons cannot show what Pogge wants to show – namely, that the present global economy is so structured as to harm the global poor.

According to Pogge, a diachronic comparison can show that the present economic system has

increased global inequalities in several dimensions such as income, child mortality, and literacy. If this is empirically true, then it can be argued that the global poor have been harmed by the transition to the present system. They have been harmed in the sense that they have been made worse off than they used to be under the preceding system. However, this argument is problematic from an empirical point of view. As Mathias Risse (2005a, 12L-R) argues, it is next to impossible to compare the magnitude of inequalities under the present system with Pogge's second diachronic benchmark (how poor people would fare now if the transition to the present system had not occurred). We cannot know for sure what things would be like had the past been different: we are completely ignorant of what people who were never born would have done, how events which never occurred would have turned out, or how innovations which were never made would have changed lives. Therefore, the only diachronic benchmark which makes sense is the first one (how people used to fare under the preceding system) (Risse 2005a, 14R). But this benchmark cannot show what Pogge wants to show because global inequalities in income, child mortality, and literacy have actually declined under the present system (Risse 2005b, 370). Therefore, at least in so far as inequalities in these dimensions are concerned, the present system has made the poor better off, and not worse off, than they used to be (Risse 2005a, 12L).

One can also challenge Pogge's subjunctive benchmark – namely, the GRD. Pogge's claim is that poor people would fare better if the GRD were put into practice. The GRD is a redistribution scheme based on a global tax levied on the extraction of selected natural resources and the discharging of selected pollutants. Arguably, the tax levied on these activities would fall most heavily upon the poor societies engaged in primary resource extraction and pollution, and not upon the affluent societies which have command over finished products. But Pogge suggests that the tax burden could be passed on to affluent societies through higher prices for resource commodities. However, as Hayward argues, 'Pogge "forgets that it will be passed right back to poorer nations, in the form of higher prices for manufactured goods, which is what those commodities are exchanged for"' (Hayward 2005, 320; quoting Heath 2005, 215-16). Therefore, poor people (in poor societies) would not necessarily fare better under the GRD regime. If Pogge wants to show that poor people would fare better under an alternative system than under the present economic system, then he needs to find a more plausible benchmark than the GRD.^{*1}

These observations show that Pogge has failed in causal attribution. One cannot attribute harm or

^{*1} I suggest that Hayward's 'ecological space tax' may be a better alternative (Hayward 2005). This is a global tax levied on each society's per capita utilisation of ecological space (ecological footprints). However, as Hayward himself admits, this scheme would serve only global income redistribution, but not ecological sustainability (Hayward 2005, 322). This means that, even if this tax were in place, there would still be people who would be severely disadvantaged by ecological unsustainability. And it is possible that such ecological disadvantages would be greater than the redistributive benefits from the tax scheme. (As I shall discuss later, ecological unsustainability could deprive people of life and health.) Therefore, even if Pogge accepted this scheme as his subjunctive benchmark, I suggest, he would be unable to show what he wants to show (that poor people would fare better under an alternative system than under the present system).

other kinds of injustice to the present global economy on the basis of Pogge's diachronic or subjunctive comparison. How can one formulate a relational theory which can successfully attribute a given injustice to the present global economy?

Risse (2005b, 367-68) indicates a possible direction in which relationists could move. He argues that Pogge could draw on 'dependency theory' – an explanatory theory presented by critical social scientists. As Risse explains, this theory aims to identify a specific causal mechanism through which poor societies, or the 'peripheries' of the global economy, can be made worse off (thus harmed). This theory, or at least one of its versions, aims to establish that 'prices of primary commodities (their main export articles) are bound to fall relative to manufactured goods' (Risse 2005b, 367). However, Risse himself turns down this theory because this theory 'comes with a heavy burden of proof' (Risse 2005b, 367). Indeed, this particular theory has lost most of its defenders because social scientists have been unable to find convincing evidence which supports this theory (Velasco 2002). But critical social scientists have developed other explanatory theories which seem more convincing from an empirical point of view. I shall draw on such theories. More specifically, I shall draw on the theories presented by Harvey, Hornborg, and Sassen. These social scientists explain how the present global economy works. Their analyses do not explain how 'harm' can occur as a result of the present global economy. (This is what Pogge needed to explain.) But their analyses do explain how 'injustice' more broadly conceived can occur as a result of the present global economy.*²

Also, it should be noted that those critical social scientists have applied a certain method of causal attribution which is firmly established in the literature on the philosophy of social science (the study to find reliable methods of understanding the social world). This method can be described as 'mechanism-based' (see Brady 2008; Hall 2004). This method aims to identify a specific causal mechanism through which a certain cause *c* produces/reproduces a certain effect *e*. There is also another method which can be described as 'difference-making'. This method aims to establish a robust connection between *c* and *e*. One can establish such a connection by demonstrating both that if *c* occurred *e* would always occur and that if *c* did not occur *e* would never occur. In my present project, the cause in question is the present global economy, and the effect in question is a certain kind of injustice. But it seems extremely difficult to establish a robust connection between these two with the difference-making method. This is because, as explained above, we cannot know for sure what things would be like if the present global economy did not exist. Therefore, it is reasonable to draw on the mechanism-based method instead. This method can identify a specific causal mechanism through which the present global economy (cause) can

*² I think there is no point in sticking to the concept of 'harm' as Pogge does unless one wishes to defend a particular libertarian position. Even libertarians seem to disagree on their starting concepts. For example, David Miller (1989) discusses 'freedom' and 'exploitation' rather than 'harm', whereas Daniel Butt (2009) discusses not only 'harm' but also 'exploitation', 'duties of reciprocity', and 'duties of assistance'. I am indebted to Eric Palmer for his enlightening comment on this point.

produce/reproduce a certain injustice (effect).

To sum up, I shall transcend the traditional liberal ways of formulating a relational theory by integrating insights from critical social science. Meanwhile, liberal values will nevertheless play a significant role in the formulation of my theory. Specifically, as we shall see shortly, some of the values identified by liberal philosopher Martha C. Nussbaum will provide a basis for my conception of justice/injustice. Those values are not particularly ‘liberal’ but ‘human’: they are valuable because they characterise the kind of existence which can be properly described as *human*.

3 Global Injustice in Ecological Space and Human Time

As just noted, Nussbaum’s (2011, 17-45) discussion provides a basis for my observation of the injustice attributable to the present global economy. She identifies fundamental human faculties and capacities including the following:

- *Continued life* – the ability to live a life of normal length;
- *Bodily health and integrity* – the ability to live a healthy life without unwarranted disruption to one’s physical security;
- *Practical reason* – the ability ‘to form a conception of the good and to engage in critical reflection about the planning of one’s life’ (Nussbaum 2011, 34); and
- *Affiliation* – the ability ‘to live with and toward others, to recognize and show concern for other human beings, to engage in various forms of social interaction’ (Nussbaum 2011, 34).

Nussbaum (2011, 33-34) presents a longer list than this, and also defines ‘affiliation’ in a broader way. Meanwhile, I shall limit the scope of my enquiry to the elements listed here in order to avoid unnecessary controversy. Also, two points should be noted for my subsequent discussion. First, what Nussbaum describes as ‘practical reason’ relates closely to the concept of ‘autonomy’: the former is necessary for a person to live an autonomous life (a life directed by one’s own decisions, plans, and goals).^{*3} Second, family can be assumed to be a special form of affiliation which generates the special responsibility to take care of each other.

The elements listed here can be taken to be fundamental human values, or fundamental human interests. A life which lacks the opportunity to enjoy those elements cannot be properly called a ‘human’ life. Therefore, it can be assumed that every person is entitled to the opportunity to live a life characterised by those elements. Also, this entitlement can be taken to identify the absolute baseline of justice which Henry Shue would call the ‘morality of the depths’: ‘the line beneath which no one is to be

^{*3} ‘Autonomy’ is a broader concept than ‘practical reason’. It refers not only to one’s ability to form a conception of the good and to engage in critical reflection about one’s life. But it also refers to one’s ability to act upon such conception and reflection (see Raz 1986, 369, 370, 381).

allowed to sink' (Shue 1996, 18). Therefore, a social/global system which is so structured as to undermine this entitlement can be judged to be unjust.

In what follows, I shall show that the present global economy is unjust in this sense. For this, I shall identify a specific causal mechanism through which the present global economy can set back necessary conditions for the said entitlement. More exactly, I shall argue that the present global economy is so structured as to set back ecological and temporal prerequisites for the elements listed above.

3.1 Ecology, Time, and Human Existence

3.1.1 Ecological Space and Human Existence

Everything which exists exists in space and time. The kind of space which is particularly important for human existence is what ecological economists have called 'ecological space'.^{*4} Hayward has discussed ecological space in the context of global justice. According to him, 'natural resources are not straightforwardly "used up" in their extraction; nor do they disappear at any point in the processes of production, exchange and consumption; they are certainly not destroyed' (Hayward 2005, 323). He continues:

What actually happens is that their form and composition change. The physical and energetic constituents of raw materials and fuels continue to be embodied in the products manufactured from them; the constituents that are not embodied in the products are also not destroyed but rather contribute to changes in the environment – changes which can also be conceived in terms of utilization of the environment itself as a resource in providing absorption services. Thus those who valorize resources, even in increasingly 'refined' forms, are all the time drawing benefits from natural resources in one state or another which are under their command. (Hayward 2005, 323)

Hayward's point is that economic benefits drawn from the consumption of natural resources necessarily entail ecological disbenefits in the form of pollution.^{*5} There is, therefore, as Hayward argues, 'just one

^{*4} To describe the same thing, ecological economists have used different words such as 'ecological space' (Daly 2014), 'natural space' (Hornborg 2013), and 'eco-space' or 'environmental space' (Martinez-Alier 2002). Following the terminology used in the literature on global justice (see Hayward 2005, 2008, 2013), I have chosen 'ecological space'.

^{*5} One may challenge this way of seeing by pointing out that humanity has developed green technology to reduce ecological disbenefits resulting from economic activities – notably, solar panels. However, the perspective of 'ecological space' to be adopted in this paper can question how green such technology is really. As we shall see shortly, 'ecological space' is a holistic perspective: it enables us to see the earth's biophysical system as an integrated whole and track down any use of this whole which occurs with regard to a given item, from its production to its disposal. In the case of solar panels, this perspective leads us to question: how such panels are produced, using what kinds of ecological resource, causing what kinds of ecological impact; how such panels are used (whether they are used to facilitate further production and consumption, which entail further resource consumption on the earth, or whether they

biophysical reality to which the various categorizations of environmental goods and bads relate' (Hayward 2005, 323).

The concept of 'ecological space' can grasp such goods and bads, benefits and disbenefits, in a holistic way. This concept refers to the totality of the earth's biophysical functions required to produce/reproduce the resources a given species consumes and to assimilate the wastes that species generates (Hayward 2005, 324, see also 2017). So, ecological space for humans is the totality of the earth's biophysical functions required to produce/reproduce the resources humans consume and to assimilate the wastes they generate, using prevailing technology. This concept tracks down any use of the said totality which occurs in the processes of production, exchange, consumption, and disposal. It is appropriate to describe this totality as *ecological space* because it makes no conceptual reference to any particular territorial *place* other than the planet earth as a whole (Hayward 2005, 325-26). Also, this shift of focus from each society's territorial endowment of natural resources to global ecological space is meaningful because, in the globalised economy as we have it today, what determines the wealth of a given society is no longer its territorial resource endowment, but its power to use, occupy, and command resources no matter where they originate (Hayward 2005, 324, 2017, 314-16).

What implications does ecological space have for the fundamental entitlement identified above (the entitlement to the opportunity to live a life characterised by continued life, bodily health and integrity, autonomy, and affiliation)? Human interaction with ecological space is now commonly mediated by the complex technology and infrastructure under a society's command. However, no matter how much mediated our reliance upon it may be, ecological space is a necessary prerequisite for individual well-being. To realise continued life or bodily health and integrity, a person needs food, drink, clothing, shelter, essential medicines, etc. And the production of these requires productive inputs from, and waste outputs to, ecological space (via productive infrastructure and technology). Also, the production and maintenance of productive infrastructure and technology require such interaction with ecological space. Ecological space is, therefore, a 'productive force' for societies (Hornborg 2013, 105). Each society needs secure access to ecological space in order to accumulate wealth – wealth of the kind which is conducive to the well-being of its members.^{*6} Finally, ecological space is also a prerequisite necessary for a person to live an autonomous life. It provides resources necessary for human subsistence. However, as Cécile Fabre

are used to constrain such production and consumption); and how such panels are to be disposed of, using what kinds of ecological resource, causing what kinds of ecological impact. From this holistic perspective, one can say, solar panels are not so green as they are normally assumed to be because their production requires polluting chemicals and emits greenhouse gases (see Nunez 2014).

^{*6} Some philosophers (Miller 2007, 56-57, 242-43; Risse 2005b, 355-59, 365) deny that the appropriation of ecological space, historical or ongoing, plays a significant role in the accumulation of societal wealth. But empirical research shows that it actually does (Barbier 2005; Global Footprint Network 2018; Jorgenson 2003; Jorgenson, Rice, and Crowe 2005; Pomeranz 2000; Rice 2007; Venetoulis, Chazan, and Gaudet 2004).

writes, ‘if through lack of resources we must spend most of our time and energy fighting for subsistence, it is unlikely that we will find both the time and the energy necessary to make use of available opportunities, to decide, on the basis of these opportunities, what we want to do with our life’ (Fabre 2000, 19).

These points indicate that secure access to ecological space is a necessary prerequisite for the fundamental entitlement identified above. Therefore, if every person has the said fundamental entitlement, then every person also has the entitlement to a minimally adequate share of ecological space (adequate to guarantee continued life, bodily health and integrity, autonomy, and affiliation). And, if the present global economy is so structured as to set back this entitlement concerning ecological space, then it can be judged to be unjust.

3.1.2 Time and Human Existence

We can speak of two ways in which people use time.^{*7} First, there is time spent on the ‘necessities of life’ – factors (a), (b), and (c) to be identified below. Second, there is time which people can choose to spend as they please – factor (d) to be identified below. Since life is finite, the longer it takes a person to secure the necessities of life, the less time the person has for discretionary use. The following temporal factors are necessary prerequisites for continued life, bodily health and integrity, autonomy, and (familial) affiliation (see Goodin et al 2008, 27-60; Burchardt 2010, 319-27).

First, continued life indicates (a) normal temporal lifespan. Second, for bodily reproduction, or the maintenance of bodily health and integrity, a person needs (b) a certain amount of time a day which can be spent on personal care (e.g. resting, eating, bathing, and procuring various means of subsistence). Additionally, a person may have family members who need assistance (e.g. children, elderly members, etc.). As noted above, one has the special responsibility to take care of one’s family members. Therefore, third, a person needs (c) a certain amount of time which can be spent on familial care. Time necessary for reproduction in the generative sense (the birthing and rearing of a child) also falls under this third category of time. Meanwhile, time for familial activities beyond familial care falls under a fourth category: (d) ‘discretionary time’. According to Robert E. Goodin (2010, 1-2), ‘discretionary time’ refers to the time which is not dictated by the necessities of life such as personal or familial care and productive labour. People who are substantially deprived of discretionary time lack an important resource for an autonomous life. As Goodin argues, ‘whatever plans or projects one might care to pursue, without time to devote to them an absolutely essential input would be missing’ (Goodin 2010, 2).

Two points should be noted. First, *discretionary* time is different from *free/spare* time (see Goodin 2010, 3). Discretionary time refers to the time left under one’s autonomous control *after procuring the*

^{*7} ‘Time’ is a very rich concept. The complexity of this concept has been explored by Barbara Adam (1990, 1995, 2004) and many notable thinkers preceding her (e.g. Hegel 1977[1807]; Kant 1998[1848]; Bergson 1921[1889]; Husserl 1991[1893-1917]; Durkheim 1976[1912]; Heidegger 1973[1927]). In this project, I shall focus on one specific aspect of time – namely, time as a resource necessary for individual well-being.

means of healthy subsistence, whereas free/spare time refers to the time left *after all working hours*. This distinction has an important implication for how we should think about poverty in time. It indicates that people who are materially affluent but work long hours because they choose to do so or because of the nature of their chosen occupations cannot be referred to as the ‘time poor’. The time poor are people who have no choice but to work long hours in order to eke out a bare living – namely, the global poor.

Second, by shifting the focus of discussion from poverty in income to poverty in time, one can shift the burden of proof back to Risse. As explained above, Risse’s observation is that poverty in income has declined in the present global economy. However, this observation overlooks the possibility that the poor may be earning subsistence income by sacrificing discretionary time or time for personal care or familial care. The question which matters from the temporal perspective is not how much money a person earns per day, but how many hours per day it takes a person to secure subsistence income and other necessities of life. Therefore, even if poverty in income has declined in the present global economy as Risse argues, the present global economy can be nevertheless judged to be unjust if it is so structured as to make the poor work long hours, and thus make them lose discretionary time or time for care.

To sum up, every person needs the four temporal factors identified here in order to secure the fundamental entitlement identified above (the entitlement to the opportunity to live a life characterised by continued life, bodily health and integrity, autonomy, and affiliation). Therefore, if every person has the said fundamental entitlement, then every person also has the entitlement to the temporal factors identified here. And, if the present global economy is so structured as to set back this entitlement concerning time, then it can be judged to be unjust.

3.2 Ecology, Time, and the Global Economy

As Harvey (2010) observes, the present global economy is a capitalist one so structured as to facilitate endless capital accumulation. A capitalist economy is also characterised by fierce competition: capitalists must either sustain a ‘healthy’ rate of profitability – according to Harvey (2010, 27), 3 per cent per annum or higher – or lose to competitors. This kind of competition creates a strong incentive for capitalists to either overcome or circumvent barriers to profit maximisation, including spatial and temporal ones. Profitability depends partly on how fast (in terms of time) capital can be circulated. As Harvey explains:

Those who can move faster through the various phases of capital circulation accrue higher profits than their competitors. Speed-up nearly always pays off in higher profits. Innovations which help speed things up are much sought after. (Harvey 2010, 41)

Also, as Harvey (2010, 42) continues, profitability depends on how far (in terms of space) capital can be circulated. Capital circulation entails spatial movements of productive resources and commodities, such

as money, labour, resources from ecological space, and productive infrastructure. For profit maximisation, capitalists must overcome technological and institutional barriers to such movements of resources and commodities. The result has been the phenomenon which Harvey describes as ‘time-space compression’: the emergence of ‘a world in which capital moves faster and faster and where distances of interaction are compressed’ (Harvey 2010, 158).

Meanwhile, as Hornborg points out, time-space *compression* experienced by some in the global economy requires time-space *appropriation* experienced by others (see Hornborg 2013, 19-20). In the present global economy, Hornborg (2001, 2003, 2013) observes, space and time – more exactly, ecological space and labour time – tend to be appropriated in one region of the world so that they can be saved elsewhere. Hornborg’s account reveals the basic mechanism through which the present global economy can reproduce what critical social scientists (e.g. Wallerstein 2004, 28) have called ‘unequal exchange’. We can supplement his observation with Sassen’s.

3.2.1 Ecological Space and the Global Economy

In explaining how unequal exchange can occur in relation to ecological space, Hornborg draws on the work of ecological economist Nicholas Georgescu-Roegen (1975). Georgescu-Roegen highlighted the significance of the Second Law of Thermodynamics – and what is called ‘entropy’. ‘Entropy’ is an index of disorder and dissipated energy: higher entropy means greater disorder, and lower energy available for human use, while lower entropy means greater order, and higher energy available for human use. The Second Law of Thermodynamics stipulates that entropy necessarily increases through irreversible transformations of energy. Since production processes are subject to this law, finished products represent an increase in entropy and disorder, and a decrease in available energy, compared to the resources they are produced from. Therefore, what is thought of from an economic perspective as an *investment* of socially productive energy can be taken, from the ecological perspective, to involve the *dissipation* of socially productive energy.

A key point is that, in order to stay in business under the present economic system, ‘every industrialist will have to be paid more money for his products than he spends on fuels and raw materials’ (Hornborg 2001, 45). This means that people who command later stages of a production process will be paid more money than those who export the original resources dissipated through that process (fuels and raw materials). The corollary to this is that people who command and export final products will gain the greatest purchasing power in the form of money – namely, the power to use, occupy, and command productive resources available globally. Mostly, such people are located in affluent societies, or, in Hornborg’s words, ‘industrial centres’.

As a result, in aggregate, ‘industrial centers exporting high-utility commodities will automatically gain access to ever greater amounts of available energy from their hinterlands’ (Hornborg 2003, 6R). ‘The

more energy they have dissipated today’, therefore, ‘the more “new” energy they will be able to buy – and dissipate – tomorrow’ (Hornborg 2003, 6R). Meanwhile, the part of energy which has been dissipated cannot be employed for human use again. Therefore, as the ‘centres’ dissipate greater amounts of energy, the ‘hinterlands’ lose access to the amounts of energy which could be otherwise employed for their use. This relationship can be described as the unequal exchange of ecological space (socially productive energy from ecological space).^{*8}

In Hornborg’s observation, the centres of the global economy refer to affluent societies whereas the hinterlands refer to poor societies. Also, in his observation, people who command and export final products are people in affluent societies, or, more exactly, capitalists in those societies (‘industrialists’ in Hornborg’s terminology). (‘Capitalists’ here refer not only to individual capitalists, but also to capitalist firms, and people who own or work for those firms.) Some may ask whether it is capitalists in affluent societies who command and export final products even today, because, in this age of globalisation, capital can move anywhere in the globe, and production can now take place anywhere in the globe. However, drawing on Sassen (2001, 23-36), we can argue that Hornborg’s observation is relevant even today.

Sassen observes that the present global economy exhibits both the process of *dispersal* and the process of *centralisation*. The former refers to the dispersal of production processes to any place where capital can find cheap ecological and labour resources. The latter refers to the centralisation of ownership and control over production processes and final products to affluent parts of the world. According to Sassen, production can now take place anywhere in the globe. However, as Sassen thinks, what really matters is the location of people who *command* production. And, as Sassen shows, in general, such people (or capitalist organisations which contain such people, i.e. head offices) have not moved from affluent parts of the world. Also, as Sassen shows, in affluent parts, there has been rapid expansion of such producer services which consolidate command over dispersed production chains (e.g. financial, legal, accounting, consulting, advertising, research and development, etc.). These points support Hornborg’s observation – namely, the one that it is after all people in affluent societies who command and export final products, and thus tend to benefit most from the productive dissipation of ecological space, whereas people in poor societies tend to lose secure access to ecological space.

To sum up, Hornborg’s observation shows that the present global economy is so structured as to

^{*8} One may object that Hornborg’s observation – or any observation drawing on thermodynamics – is true only if the earth is a closed energy system. Humanity has developed technology to capture energy from outer space – namely, solar panels. And such technology can convert the earth into an open energy system. I wish to raise two points to shift the burden of argument back to those who may object in this way. First, this objection seems to overlook the fact that solar energy must be captured on the earth in the first place, using solar panels. But the production, installation, and maintenance of solar panels require energy flows on the earth such as greenhouse gas emissions (see Hornborg 2019). Second, global energy use still relies heavily on non-renewable energy resources such as fossil fuels. Based on these, it can be argued that the earth is, at least now, a closed energy system, and that Hornborg’s observation is therefore, at least now, relevant.

reproduce the unequal exchange of ecological space. His main point is that people in affluent societies command productive energy available from global ecological space whereas people in poor societies lose access to such energy necessary for development.*⁹

Hornborg's observation can be applied to support Hayward's (2008, 2009) relational view. According to Hayward, the total amount of resources available from ecological space (available for sustainable human use) is finite. In this ecological finitude, he argues, the exchange of ecological space can be seen as a 'zero-sum' game, or at least something similar to it: a gain to one party will result in a loss to another (see Hayward 2008, 14, 2009, 283-89). In Hayward's view, the finitude of ecological space has resulted in the following zero-sum relationship: to the extent that people in affluent societies are drawing economic benefits from excessive amounts of ecological space, people in poor societies are losing even adequate amounts. This situation is setting back the entitlement of the poor – especially, those in poor societies – and also of future generations to a minimally adequate share of ecological space (see Hayward 2008, 14). Therefore, this situation is, as Hayward suggests, unjust. Meanwhile, Hornborg's observation shows that the unjust situation observed by Hayward can be causally attributed to the structure of the present global economy. Therefore, ultimately, the present global economy can be judged to be unjust.

Of course, as the present circumstances show, both affluent and poor societies can pursue greater resource consumption simultaneously, disregarding ecological limits. But the result has been ecological unsustainability on a global scale. And, as I shall explain below, ecological unsustainability and consequent ecological problems (e.g. climate change, pollution, and resource depletion) can set back the entitlement of the poor concerning time.

3.2.2 Time and the Global Economy

It has been shown that the present global economy is unjust from the ecological perspective: it is so structured as to set back the entitlement of the poor concerning ecological space. But the present global economy can be also judged to be unjust from the temporal perspective too: it is so structured as to set back the entitlement of the poor concerning time. There are four ways in which this kind of injustice – injustice in time – can be observed.

Unequal exchange of labour time. In the present global economy, the affluent are able to save time precisely because the poor spend even longer on securing subsistence income. It is often hard to recognise this kind of inequality – inequality in time – because the quantity and quality of the temporal gain reaped by the affluent do not necessarily correspond to those of the temporal loss incurred by the poor. As I argued elsewhere with Hayward, 'however many millions or even billions of people might be driven into effective servitude with all prospect of any free or rewarding time removed from them, the rich minority can never make a remotely equivalent gain for themselves' (Hayward and Iwaki 2016, 392). But

*⁹ For my earlier view on Hornborg, see Hayward and Iwaki 2016, 389-92.

Hornborg reveals the basic mechanism through which inequality in time can be reproduced by the present global economy.

Besides ecological space, time which workers spend on productive labour (labour time) is also a productive force for societies. But, according to Hornborg (2003, 7L-R, 2013, 83-109), the exchange of labour time between affluent and poor societies can become unequal in the same way as that of ecological space.^{*10} A key point is again that, in order to stay in business under the present economic system, people who command later stages of a production process will have to be paid more money than those who provide original labour inputs. The corollary to this is that people who command and export final products will gain the greatest purchasing power in the form of money, and thus the power to use, occupy, and command the fruits of labour. Mostly, as explained above, such people are located in affluent societies. Therefore, in aggregate, affluent societies tend to gain ever greater command over the fruits of labour produced in poor societies. Meanwhile, workers in poor societies tend to receive only meagre earnings. The EU, for example, 'has 6 times as much employment embodied in imports as in exports', but 'compensation of employees associated with imports corresponds to only 0.9 that associated with exports' (Simas, Wood, and Hertwich 2015, 352L).

We can supplement this observation with Sassen's again. As Sassen (2001, 10, 33) observes, a number of low-paying jobs exist even in affluent societies. Some of these jobs relate to the cleaning and maintenance of office buildings, and others relate to lifestyles of affluent workers (e.g. the staffing of restaurants and convenience stores, storage and transportation of consumer goods, etc.). Many of these jobs are performed by unskilled immigrant workers. This means two things. First, the unequal exchange of labour time can take place not only between societies, but also within societies – between affluent workers and poor workers. Second, the unequal exchange of labour time can entail the geographical movements of poor unskilled workers, rather than the movements of their fruits of labour. Additionally, there is also a trend for 'brain drain' – the emigration of skilled workers to affluent societies. Such movements of unskilled or skilled workers can be conceived in terms of unequal exchange too – gains to affluent societies and losses to poor societies – because those workers could otherwise contribute to the development of poor societies.

These observations show that the present global economy is so structured as to reproduce the unequal exchange of labour time. These observations also show one way in which the present global economy can set back the entitlement of the poor concerning time. Labour is necessary for workers to secure access to the means of life in the form of income. However, if a person needs to work long hours in order to secure

^{*10} Hornborg's focus is placed primarily on the unequal exchange of labour time which happened during the Industrial Revolution in Britain. Meanwhile, there has been development in empirical research which supports the view that this kind of exchange is also prevalent in the present world (see Alsamawi, Murray, and Lenzen 2014; Dorninger and Hornborg 2015; Simas, Wood, and Hertwich 2015).

subsistence income, this person can lose time for autonomous activities (discretionary time). In a worse case, this person can also lose time for personal care and familial care. The unequal exchange of labour time is one way in which poor workers can be made to work long hours, and thus lose discretionary time or time for care. And, as Hornborg's observation shows, this exchange relationship can be causally attributed to the structure of the present global economy. Therefore, the present global economy can be judged to be unjust from the temporal perspective.

Ecological unsustainability. As already noted, the present global economy is so structured as to facilitate endless capital accumulation. However, endless capital accumulation is ecologically impossible. Therefore, the global economy has caused ecological problems such as climate change, pollution, and resource depletion (Foster, Clark, and York 2010). These ecological problems can set back the entitlement of the poor concerning time. For example, pollution can make poor farmers work longer hours to produce adequate amounts of food, or walk farther to get clean water. Those farmers can lose discretionary time. Also, ecological problems can cut short poor people's temporal lifespans. Air pollution, for example, has actually done so (WHO 2014).

Direct labour exploitation. In order to sustain a 'healthy' rate of profitability, some capitalists have imposed unhealthy and unsafe working conditions upon poor workers (BBC 2000, 2010; Kawakami 2015). Such working conditions can prolong the time workers have to spend on personal care: people who suffer health or bodily damage have to spend more time (and energy) on sleep, curing, medical care, or rehabilitation than they would otherwise need to. Therefore, injured workers can lose discretionary time. Meanwhile, the recovery of injured workers may require familial assistance. Therefore, the members of the families of injured workers may have to spend longer on familial care, and thus lose discretionary time. Also, because humans are sentient beings, unhealthy and unsafe working conditions can even cut short workers' temporal lifespans.

Additionally, people in extreme poverty are vulnerable to forced or child labour (ILO 2010, 2012, 2013). The victims of these kinds of labour exploitation lack any choice, and voice, with regard to their working conditions. So, they are vulnerable to direct physical harms from their employers. And such harms can prolong the time the victims have to spend on personal care, and thus reduce their discretionary time, or, in the worst case, cut short their temporal lifespans.

Gender inequality in time. Finally, the present global economy can affect the time of poor women most severely. Women, in every society, affluent or poor, tend to spend far more time than men on familial care. But, as Harvey observes, women in poor societies tend to be seen by capitalists as a convenient source of cheap and long labour – because of their conformity to certain cultural values such as 'patriarchy, respect for authority, social relations of dominance and subservience' (Harvey 2010, 104). Therefore, while women in general tend to lose more time than men, women in poor societies can lose even

more in the present global economy (see Bardasi and Wodon 2009).^{*11}

4 Towards Young's Social Connection Model of Responsibility

To sum up, the present global economy can be judged to be unjust from both ecological and temporal perspectives. It is so structured as to set back poor people's entitlements concerning ecological space and time – and, ultimately, their fundamental entitlement concerning continued life, bodily health and integrity, autonomy, and affiliation. From this judgement, relationists can move in different directions. For example, they could apply this judgement to support Pogge again – to support his model of responsibility. Pogge argues that 'one should be willing to contribute toward reforming unjust institutions', and that how much one should be willing to do so 'depends on how much one is contributing to, and benefiting from, their maintenance' (Pogge 2008, 56). In this argument, Pogge identifies an important kind of responsibility which the affluent should certainly assume in order to improve the situation of the poor: namely, the responsibility to change the present global economic structure. However, it should be noted that myriad people are involved in the maintenance of the present global economy in myriad ways. In this situation, it is next to impossible to know how or how much each affluent agent is contributing to or benefiting from the maintenance of the present global economy.^{*12} Therefore, I shall move in another direction. I shall support the model of responsibility presented by another relationist: Young. Young develops a model of responsibility which is different from Pogge's. Meanwhile, like Pogge, Young suggests that certain kinds of injustice can be causally attributed to the institutions or structural processes which mediate the global relationship between the affluent and the poor. In this sense, like Pogge, Young can be regarded as a relationist.

The discussion in the previous section highlights two kinds of injustice which Young (2011) would describe as 'structural'. According to Young, 'structural injustices' refer to the injustices causally attributable to the institutions or processes in which myriad people are involved in myriad ways. Normally, people are involved in such unjust institutions and processes without being morally blameworthy. As Young explains, people are just 'minding their own business and acting within accepted norms and rules' (Young 2011, 106). Therefore, they are not *morally* responsible. Or, to use Young's terminology, they are not responsible in a 'liability' sense – in the sense that they are 'guilty' or 'at fault' (Young 2011, 97-104). But they are responsible in another sense. They are responsible because they are involved in the structural processes which can (re)produce unjust outcomes. As Young argues:

^{*11} For my earlier view on injustice in time, see Hayward and Iwaki 2016, 392-95.

^{*12} How or how much particular agents are involved in a given institution/process and how that institution/process can reproduce unjust outcomes are two distinct questions. This paper has discussed the latter, and not the former. It is next to impossible to answer the former question. But, as this paper has shown, it is possible to answer the latter.

Our responsibility derives from belonging together with others in a system of interdependent processes of cooperation and competition through which we seek benefits and aim to realize projects. Within these processes, each of us expects justice toward ourselves, and others can legitimately make claims of justice on us. All who dwell within the structures must take responsibility for remedying injustices they cause [...]. (Young 2011, 105)

This describes what Young refers to as the ‘social connection model of responsibility’ (Young 2011, 104-13).

Young’s model of responsibility does not question how much each particular agent is contributing to or benefiting from unjust institutions or processes. As Young explains, ‘there is no point in trying to seek redress from only and all those who have contributed to the outcome, and in proportion to their contribution’ (Young 2011, 109). Instead, the point is in ‘changing the institutions and processes so that their outcomes will be less unjust’ (Young 2011, 111). But no one can change institutions or processes alone. Therefore, the kind of responsibility referred to in Young’s model – the responsibility to change unjust institutions and processes – is a collective responsibility. Young’s model demands collective political action.

Now, how does the discussion in the previous section contribute to Young’s model of responsibility? The kind of responsibility discussed in Young’s model is primarily *forward-looking*: the question asked by Young is how we can change present institutions or structural processes so that they *will no longer* produce unjust outcomes. However, as Young admits, her model ‘does need to look backward in one respect’ (Young 2011, 109). It needs to explain ‘how structural processes produce and reproduce injustice’ (Young 2011, 109). Young suggests that this kind of causal explanation ‘helps those of us who participate in those processes understand our role in them’ (Young 2011, 109). But, I suggest, we also need such a causal explanation to argue that a given injustice is ‘structural’ – causally attributable to a given institution or a given structural process. Without such a causal explanation, one cannot plausibly argue that a given injustice is causally attributable to a given institution or a given structural process. In the previous section, I offered such a causal explanation. I explained how a given structural process – namely, the global economy – produces or reproduces two kinds of injustice – namely, injustice in ecological space and injustice in time. I did so by performing a mechanism-based analysis. I identified a causal mechanism through which the present global economy (a structural process) produces or reproduces the injustices in ecological space and time. That analysis demonstrates that the injustices in ecological space and time are causally attributable to a structural process (the global economy). In this sense, those injustices are ‘structural’. According to Young, people who are involved in the causation of ‘structural injustices’ should assume the kind of responsibility discussed by her. People involved in the present global economy

are involved in the causation of two kinds of ‘structural injustice’ – namely, injustice in ecological space and injustice in time. Therefore, people who are involved in the present global economy should assume the kind of responsibility discussed by Young.

Among those who are involved in the present global economy, I suggest that it is mainly the global affluent (such as capitalists and affluent workers) who should assume the kind of responsibility discussed by Young. Clearly, there are people who are poor but nevertheless involved in the present global economy, such as poor workers engaged in low-paying jobs. However, such people can be assumed to be exempt from the kind of responsibility discussed by Young because it is too demanding to ask them to take on this responsibility. The temporal perspective adopted in this paper supports this assumption. Political time – namely, the time which one can devote to collective political action – can be regarded as a part of discretionary time. However, poor workers, or the global poor more broadly conceived, may have already lost considerable amounts of discretionary time, and even time for personal or familial care. Therefore, they cannot devote time to political action without sacrificing time for more important personal activities.

5 Conclusion

This paper has done two things. First, this paper has argued that relational theories need a plausible causal explanation of how a given relationship can produce/reproduce a given injustice. This paper used Pogge’s theory as an example which failed to offer such a causal explanation. Second, this paper has sought to present an alternative relational theory which can offer such a causal explanation. In doing so, this paper has integrated insights from critical social science, and also supported Young’s model of responsibility.

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References

- [1] Adam, Barbara. 1990. *Time and Social Theory*. Cambridge: Polity.
- [2] ———. 1995. *Timewatch: The Social Analysis of Time*. Cambridge: Polity.
- [3] ———. 2004. *Time*. Cambridge: Polity.
- [4] Alsamawi, Ali, Joy Murray, and Manfred Lenzen. 2014. “The Employment Footprints of Nations: Uncovering Master-Servant Relationships.” *Journal of Industrial Ecology* 18(1): 59-70.
- [5] Barbier, Edward B. 2005. *Natural Resources and Economic Development*. Cambridge: Cambridge University Press.
- [6] Bardasi, Elena, and Quentin Wodon. 2009. “Working Long Hours and Having No Choice: Time Poverty in Guinea.” Policy Research Working Paper 4961. Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/597951468257932521/pdf/WPS4961.pdf> (accessed 16 August 2018).
- [7] BBC (British Broadcasting Corporation). 2000. “Gap and Nike: No Sweat?” *BBC News*, October 15. <http://news.bbc.co.uk/1/hi/programmes/panorama/970385.stm> (accessed 10 February 2015).
- [8] ———. 2010. “Tracing the bitter truth of chocolate and child labour.” *BBC News*, 24 March. http://news.bbc.co.uk/panorama/hi/front_page/newsid_8583000/8583499.stm (accessed 10 February 2015).
- [9] Bergson, Henri. 1921[1889]. *Time and Free Will: An Essay on the Immediate Data of Consciousness*, translated by F.L. Pogson. London: George Allen & Unwin.
- [10] Brady, Henry E. 2008. “Causation and Explanation in Social Science.” In *The Oxford Handbook of Political Methodology*, edited by Janet M. Box-Steffensmeier, Henry E. Brady, and David Collier, 217-270. Oxford: Oxford University Press.
- [11] Burchardt, Tania. 2010. “Time, income and substantive freedom: A capability approach.” *Time and Society* 19(3): 318-344.
- [12] Butt, Daniel. 2009. *Rectifying International Injustice: Principles of Compensation and Restitution Between Nations*. Oxford: Oxford University Press.
- [13] Caney, Simon. 2005. *Justice Beyond Borders: A Global Political Theory*. Oxford: Oxford University

Press.

- [14] Chandhoke, Neera. 2010. “How Much Is Enough, Mr Thomas? How Much Will Ever Be Enough?” In *Thomas Pogge and His Critics*, edited by Alison M. Jaggar, 66-83. Cambridge: Polity.
- [15] Daly, Herman E. 2014. *From Uneconomic Growth to a Steady-State Economy*. Cheltenham: Edward Elgar.
- [16] Dorninger, Christian, and Alf Hornborg. 2015. “Can EEMRIO analyses establish the occurrence of ecologically unequal exchange?” *Ecological Economics* 119: 414-418.
- [17] Durkheim, Émile. 1976[1912]. *The Elementary Forms of the Religious Life*, translated by Joseph Ward Swain, with introduction by Robert Nisbet. London: George Allen & Unwin.
- [18] Fabre, Cécile. 2000. *Social Rights Under the Constitution: Government and the Decent Life*. Oxford: Oxford University Press.
- [19] Foster, John Bellamy, Brett Clark, and Richard York. 2010. *The Ecological Rift: Capitalism's War on the Earth*. New York: Monthly Review Press.
- [20] Georgescu-Roegen, Nicholas. 1975. “Energy and Economic Myths.” *Southern Economic Journal* 41(3): 347-381.
- [21] Global Footprint Network. 2018. “Country Trends” (dataset). Oakland, CA: Global Footprint Network. <http://data.footprintnetwork.org/#/countryTrends?cn=5001&type=BCpc,EFCpc> (accessed 30 July 2018).
- [22] Goodin, Robert E. 2010. “Temporal Justice.” *Journal of Social Policy* 39(1): 1-16.
- [23] ———, James Mahmud Rice, Antti Parpo, and Lina Eriksson. 2008. *Discretionary Time: A New Measure of Freedom*. Cambridge: Cambridge University Press.
- [24] Hall, Ned. 2004. “Two Concepts of Causation.” In *Causation and Counterfactuals*, edited by John Collins, Ned Hall, and L.A. Paul, 225-276. Cambridge, MA: MIT Press.
- [25] Harvey, David. 2010. *The Enigma of Capital: and the Crises of Capitalism*. London: Profile Books.
- [26] Hayward, Tim. 2005. “Thomas Pogge's Global Resources Dividend: A Critique and an Alternative.” *Journal of Moral Philosophy* 2(3): 317-332.
- [27] ———. 2008. “On the Nature of Our Debt to the Global Poor.” *Journal of Social Philosophy* 39(1): 1-19.
- [28] ———. 2009. “International Political Theory and the Global Environment: Some Critical Questions for Liberal Cosmopolitans.” *Journal of Social Philosophy* 40(2): 276-295.
- [29] ———. 2013. “Ecology, Ethics and Global Justice.” In *Linking Ecology and Ethics for a Changing World: Values, Philosophy, and Action*, edited by Ricardo Rozzi, S.T.A. Pickett, Clare Palmer, Juan J. Armesto, and J. Baird Callicott, 231-240. New York: Springer.
- [30] ———. 2017. “Ecological Space: The Concept and Its Ethical Significance.” In *The Oxford Handbook of Environmental Ethics*, edited by Stephen M. Gardiner and Allen Thompson, 311-320.

Oxford: Oxford University Press.

- [31] ——— and Iwaki, Yukinori. 2016. “Had we but world enough, and time: integrating the dimensions of global justice.” *Critical Review of International Social and Political Philosophy* 19(4): 383-399.
- [32] Heath, Joseph. 2005. “Rawls on Global Distributive Justice: A Defence.” *Canadian Journal of Philosophy* Supplementary Volume 31: 193-226.
- [33] Hegel, Georg Wilhelm Friedrich. 1977[1807]. *Hegel’s Phenomenology of Spirit*, translated by A.V. Miller, with analysis of the text and foreword by J.N. Findlay. Oxford: Clarendon Press.
- [34] Heidegger, Martin. 1973[1927]. *Being and Time*, translated by John Macquarrie and Edward Robinson. Oxford: Blackwell.
- [35] Hornborg, Alf. 2001. *The Power of the Machine: Global Inequalities of Economy, Technology, and Environment*. Walnut Creek, CA: AltaMira Press.
- [36] ———. 2003. “The Unequal Exchange of Time and Space: Toward a Non-Normative Ecological Theory of Exploitation.” *Journal of Ecological Anthropology* 7(1): 4-10.
- [37] ———. 2013. *Global Ecology and Unequal Exchange: Fetishism in a Zero-Sum World*. Abingdon: Routledge.
- [38] ———. 2019. “A Globalised Solar-Powered Future is Wholly Unrealistic – and our Economy is the Reason Why.” *Brave New Europe*. Berlin: Brave New Europe. <https://braveneweuropa.com/alf-hornborg-a-globalised-solar-powered-future-is-wholly-unrealistic-and-our-economy-is-the-reason-why> (accessed 5 March 2020).
- [39] Husserl, Edmund. 1991[1893-1917]. *On the Phenomenology of the Consciousness of Internal Time*, translated by John Barnett Brough. Dordrecht: Kluwer Academic.
- [40] ILO (International Labour Organization). 2010. *Global child labour developments: Measuring trends from 2004 to 2008*. Geneva: ILO. <http://www.ilo.org/ipecinfo/product/viewProduct.do?productId=13313> (accessed 16 August 2018).
- [41] ———. 2012. *Global estimate of forced labour: Executive summary*. Geneva: ILO. http://www.ilo.org/global/topics/forced-labour/publications/WCMS_181953/lang--en/index.htm (accessed 16 August 2018).
- [42] ———. 2013. *Marking progress against child labour: Global estimates and trends 2000-2012*. Geneva: ILO. https://www.ilo.org/ipec/Informationresources/WCMS_221513/lang--en/index.htm (accessed 16 August 2018).
- [43] Jorgenson, Andrew K. 2003. “Consumption and Environmental Degradation: A Cross-National Analysis of the Ecological Footprint.” *Social Problems* 50(3): 374-394.
- [44] ———, James Rice, and Jessica Crowe. 2005. “Unpacking the Ecological Footprint of Nations.” *International Journal of Comparative Sociology* 46(3): 241-260.
- [45] Kant, Immanuel. 1998[1848]. *Critique of Pure Reason*, translated and edited by Paul Guyer and

- Allen W. Wood. Cambridge: Cambridge University Press.
- [46] Kawakami, Takashi. 2015. "Uniqlo suppliers criticized for harsh working conditions." *Nikkei Asian Review*, 20 January. <http://asia.nikkei.com/Business/Companies/Uniqlo-suppliers-criticized-for-harsh-working-conditions> (accessed 10 February 2015).
- [47] Martinez-Alier, Joan. 2002. *The Environmentalism of the Poor: A Study of Ecological Conflicts and Valuation*. Cheltenham: Edward Elgar.
- [48] Miller, David. 1989. *Market, State, and Community: Theoretical Foundations of Market Socialism*. Oxford: Clarendon Press.
- [49] ———. 2007. *National Responsibility and Global Justice*. Oxford: Oxford University Press.
- [50] Nagel, Thomas. 1977. "Poverty and Food: Why Charity Is Not Enough." In *Food Policy: The Responsibility of the United States in the Life and Death Choices*, edited by Peter Brown and Henry Shue, 54-62. New York: Free Press.
- [51] Nunez, Christina. 2014. "How Green Are Those Solar Panels, Really?" *National Geographic*. Washington, DC: National Geographic Society. <https://www.nationalgeographic.com/news/energy/2014/11/141111-solar-panel-manufacturing-sustainability-ranking/> (accessed 5 March 2020).
- [52] Nussbaum, Martha C. 2011. *Creating Capabilities: The Human Development Approach*. Cambridge, MA: Harvard University Press.
- [53] Pogge, Thomas. 2005. "Severe Poverty as a Violation of Negative Duties." *Ethics and International Affairs* 19(1): 55-83.
- [54] ———. 2008. *World Poverty and Human Rights*. 2nd ed. Cambridge: Polity.
- [55] Pomeranz, Kenneth. 2000. *The Great Divergence: China, Europe, and the Making of the Modern World Economy*. Princeton: Princeton University Press.
- [56] Raz, Joseph. 1986. *The Morality of Freedom*. Oxford: Clarendon Press.
- [57] Rice, James. 2007. "Ecological Unequal Exchange: Consumption, Equity, and Unsustainable Structural Relationships within the Global Economy." *International Journal of Comparative Sociology* 48(1): 43-72.
- [58] Risse, Mathias. 2005a. "Do We Owe the Global Poor Assistance or Rectification?" *Ethics and International Affairs* 19(1): 9-18.
- [59] ———. 2005b. "How Does the Global Order Harm the Poor?" *Philosophy and Public Affairs* 33(4): 349-376.
- [60] ———. 2012. *Global Political Philosophy*. Basingstoke: Palgrave Macmillan.
- [61] Sassen, Saskia. 2001. *The Global City: New York, London, Tokyo*. 2nd ed. Princeton: Princeton University Press.
- [62] Shue, Henry. 1996. *Basic Rights: Subsistence, Affluence, and U.S. Foreign Policy*. 2nd ed. Princeton: Princeton University Press.

- [63] Simas, Moana, Richard Wood, and Edgar Hertwich. 2015. "Labor Embodied in Trade: The Role of Labor and Energy Productivity and Implications for Greenhouse Gas Emissions." *Journal of Industrial Ecology* 19(3): 343-356.
- [64] Singer, Peter. 1972. "Famine, Affluence, and Morality." *Philosophy and Public Affairs* 1(3): 229-243.
- [65] Velasco, Andrés. 2002. "Dependency Theory." *Foreign Policy* 133: 44-45.
- [66] Venetoulis, Jason, Dahlia Chazan, and Christopher Gaudet. 2004. *Ecological Footprint of Nations 2004*. Oakland, CA: Redefining Progress.
- [67] Wallerstein, Immanuel. 2004. *World-Systems Analysis: An Introduction*. Durham, NC: Duke University Press.
- [68] WHO (World Health Organization). 2014. "7 million premature deaths annually linked to air pollution." Geneva: WHO. <http://www.who.int/mediacentre/news/releases/2014/air-pollution/en/> (accessed 12 May 2014).
- [69] Young, Iris Marion. 2004. "Responsibility and Global Labor Justice." *The Journal of Political Philosophy* 12(4): 365-388.
- [70] ———. 2011. *Responsibility for Justice*. Oxford: Oxford University Press.

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