

The Non-Identity Objection to Intergenerational Harm: A Critical Re-Examination

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ABSTRACT: In this article I analyse those that I consider the most powerful counter-arguments that have been advanced against the non-identity objection to the idea of intergenerational harm, according to which an action cannot cause harm to a given agent if her biological identity does actually depend—in a partial but still determinant way—on the performance of this action. In doing this, I firstly go through the deontological criticisms to the person-affecting view of harm, before moving on to sufficientarian and communitarian accounts of intergenerational harm. My argument is that neither of these theories manage to defuse the non-identity objection. Yet, I conclude by observing that a possible way out of the non-identity paradox might consist in developing an ethical account of intergenerational negative justice that focuses on the functional value of the natural and social structures in which humans develop their lives, rather than on their instrumental or intrinsic value.

KEYWORDS: harm, intergenerational justice, non-identity, person-affecting, social structures

I

The issue of intergenerational justice has only recently attracted the interest of political and moral philosophers. For millennia we have completely ignored the fact that the actions of the living generation might have a negative impact on the wellbeing of posterity. This has occurred neither for carelessness nor simply because of limited scientific awareness. Humans did not attach importance to the fact that they could potentially wrong future people because the harm they might cause to their descendants was in actual fact negligible. This continued to be so up until the industrialisation of our societies and subsequent interconnection through supranational financial markets. In the last couple of centuries, four phenomena have progressively led political and moral theory to broaden the discourse on justice and harm, not simply in space but also in time, thus creating a new branch of enquiry based on intergenerational social relations:

the discovery of the irreparable damage that human agency has brought (and is bringing) upon the environment, the depletion of non-renewable resources—and the correlative inability to come up with technical solutions that can efficiently replace non-renewable resources with renewable ones—, the unfair distribution of adaptive costs and economic benefits stemming from industrial processes and rates of consumption, the creation of huge public debts—through which current generations increase their standards of living above their real possibilities while leaving the costs to posterity.¹

Usually, when applied to traditional intragenerational scenarios, any credible account of justice consists both of positive and of negative principles. Positive principles of justice pertain to the realm of socio-economic justice and are those that impose the duty to undertake actions aimed at improving the condition of others—in virtue of the most disparate political justifications as, for example, maximizing utility, respecting hypothetical social contracts, letting everybody live flourishing lives, helping the most people we can toward sufficiency thresholds, and so on. Negative principles of justice, on the other hand, are those that subtend the duty to not cause avoidable harm to others, provided this can be averted without incurring unsustainable costs.²

Whether or not we have obligations of socio-economic justice toward posterity is an open issue in political theory. Much depends on whether, and to what extent, we can come up with rational justifications for extending intragenerational models on the temporal axis.³ In this article I shall leave aside intergenerational duties of socio-economic justice, at least in the first part, and I will focus instead on the issue of intergenerational harm. In particular, looking at intergenerational justice from a negative perspective opens up two further difficulties, one of which is easily solvable, while the other is the topic of this article. Firstly, can an agent who lives at time $t1$ be said to cause harm, through one of his actions, to another agent who will live at time $t2$? Secondly, can an agent who lives at time $t1$ be said to cause harm, through one of his actions, to another agent who will live at time $t2$, if the identity of this second agent does partially depend on the performance of the action we are examining?

Providing a positive answer to the first question is of paramount importance for assessing whether intergenerational harm exists or not. I think we do not need many arguments for doing it. Even though we maintain that future people do not have rights now, they will surely have rights at the moment of birth—or some time after conception—, and it is indisputable that our actions can undermine the rights of future people. Assume, for example, that agent A has a picnic in a forest without cleaning up after leaving, and that some years later agent B happens to walk barefoot on the broken glass left by A and gets hurt. Here there is no doubt that A has caused harm to B.⁴ So at least we can say that there is some margin for talking about intergenerational harm. How wide this margin is depends on how we respond to the second question.

Consider this further case. Scientists have warned us that if we want to have a realistic chance of keeping the global average temperature from exceeding the critical limit of 2°C beyond pre-industrial levels—the crucial point beyond which the majority of scientists agree that the consequences for both human beings and

the environment would start to be severe and irreversible—we should contain the total emission of greenhouse gases below one trillion tonnes. It has been calculated that from the end of the eighteenth century to the present day we have already emitted more than 600 billion tonnes of CO₂ and that we run the very serious risk of reaching one trillion before the end of the first half of this century.⁵ If these estimates are correct, by keeping unaltered our modes of production and of consumption, and hence also our lifestyles, we are going to deliver to future people a world in which they will have serious problems of adaptation. Thus, future people might try to advance the claim that they have been harmed by our actions—or inactions, depending on the perspective.

Nonetheless, differently from the picnic case, here we have the philosophical complication that the identity of the victims of harm is a variant of the same actions—or inactions—that are charged with causing harm. For the biological identity of any individual, that is a non-sufficient but necessary component of the more general concept of individual identity, is the result of the very empirical contingency of which pair of cells match together at the moment of procreation. This result clearly depends on which individuals have sexual intercourse and at what time. A simple variation in the combination of couples or in the time of procreation would alter the biological identity of their children. Therefore, even if we assume that two possible children, conceived by the same couple, would receive the same social inputs to the process of creation of their identity, the difference in their biological origin—the combination spermatozoon/ovum—should prevent us from maintaining that these two possible children are the same person. This is the non-identity problem, first formulated by Derek Parfit,⁶ and later extensively discussed in the literature.⁷

This simple biological argument about non-identity becomes a moral ‘problem’ in our case of carbon emission because the identity of those people that in the future might claim to be harmed by our excessive emissions will owe their identity—in a non-sufficient but still determinant way—to the fact that our emissions have been excessive. For were we to undertake the radical reforms that scientists are advocating to remain below the threshold of 2°C beyond the pre-industrial era, we would consistently alter the course of our lives, hence we would modify the spermatozoon/ovum combinations that we would have in the status quo. Accordingly, we would give birth to different people to those who, we imagine, might in future blame us for emitting too much CO₂. This is so because in order to achieve our ecological goal we would have to rethink our economic models, on which our location, our jobs, our encounters, what we do during free time, what kind of transportation we use, how much money we have, and so on, depend.

It might be objected that radical economic reforms would not necessarily entail that two persons deciding to have a child in the status quo scenario would not meet and would not take the same decision in the reform scenario. This is true. Nevertheless, the chances that they would procreate at the same moment—hence providing the same spermatozoon/ovum combination—are so low that in practical terms we can consider this occurrence as impossible.⁸ This last point explains why non-identity is a problem for moral philosophers also when discussing reforms that are not as radical as those needed to safeguard the planet’s temperature. Just

think, for example, of the causal relation that exists between the national saving rate of the present generation and the biological identity of future people: the choice between expansionary and austerity measures has pervasive effects on individual choices of life—hence, also on procreation.

In a few words, the simple but cogent question that the non-identity problem poses to those who appeal to intergenerational duties of justice on the basis of a normative account of harm is the following: how can we maintain that a given person is harmed by a given action, if in the hypothetical case in which that given action had not been carried out, that given person would have never been born?⁹ The article is divided into two parts. In the first part, I shall defend the non-identity argument from the various objections that have been raised against it, explaining why they are unsuccessful in bypassing the issue of intergenerational individual rights. In the second part, I shall sketch a brief proposal for a philosophical research that might defuse the non-identity objection to the concept of intergenerational harm.

II

The non-identity objection to intergenerational harm holds up only insofar as we adopt a person-affecting view of harm.¹⁰ According to the latter, it can be said that I cause you harm through my action A if, as a consequence of this action, I make conditions worse for you than they were before I performed A. In other words, to establish that harm has been inflicted—and hence also that compensation is due as a matter of rights—we need a person to find herself in worse conditions in some respects, and more generally we need this person to exist. The philosophical extent of such a precondition for harm and compensation might seem negligible as long as we cast our analysis on an intragenerational plane, but it becomes determinant once we look at the intergenerational consequences of our actions. For if, as the proponents of the non-identity problem have rightly—in my view—highlighted, by undertaking at time t some radical actions A, B, C aimed at safeguarding the wellbeing of people X, Y, W . . . who have not been born yet, but who will live at time $t1$, we do actually alter the identity of the people who will live at $t1$, so that instead of persons X, Y, W . . . there will exist persons Ψ , Ω , \dot{I} . . . , we cannot hold that our unwillingness to perform now the radical actions A,B,C in favour of future people X, Y, W . . . is harming them or will harm them in the future. For if we do decide to perform A, B, C, the future people X, Y, W . . . will never exist.

Some authors have sought to circumvent the non-identity problem by shifting the focus of harm from individual wellbeing to actions. Both James Woodward and Rahul Kumar, for example, have argued that future persons will be in a position to say they have been harmed by our actions for the simple reason that our actions have violated their ‘legitimate expectations’ to be treated as means rather than ends—to put it in a Kantian way—regardless of whether they are better off or worse off as a consequence of these actions.¹¹

Kumar, for example, describes the situation in which a drunk driver gets very close to killing a pedestrian, but at the very last moment avoids the accident, without the pedestrian even having time to be frightened. Kumar argues that even

though in this case the pedestrian is not ‘in any way worse-off as a result of his life having been put at risk,’ it is undeniable that the pedestrian ‘has been wronged by the drunk driver.’¹² Whereas, Woodward rattles off many cases against what he defines as the ‘no worse-off argument,’¹³ among which the most powerful one is probably the complex promise. Agent X can either promise agent P to carry out the actions A and B together, or he can make no promise and perform no action to P. The two premises are that X knows that he can perform A but he is unable to carry out B, and that P would be better off with A only, rather than with neither A nor B. In the end Agent X decides to make the promise of A + B and performs only A. Can X be said to make P better off? Woodward maintains that even though X increases P’s welfare, X cannot justify his choice on this ground, because ‘there is nothing self-evidently absurd or conceptually incoherent about the judgment that X’s failure to fulfil his promise completely wrongs P [. . .]. Indeed, this possibility must be allowed for under any moral theory which assigns an independent weight to obligations to keep promises.’¹⁴

Both authors challenge the person-affecting view, with the admirable aim of disentangling the notion of harm from the non-identity trap, or in other words of defending a comprehensive account of intergenerational justice that does not exclude a discourse on rights and correlative duties. I do not have the chance here to dedicate the due attention to their refined arguments, hence I will limit myself to explaining why I disagree with the conclusions they draw from their examples.

In the case of Kumar’s driver, I do not think that the driver’s reckless behaviour leaves the pedestrian in the same conditions as before they interacted. At least we can believe that this episode will lead the pedestrian to reason upon the safety of the street he chooses to walk down—or even on the safety of the more general action of walking, instead of using public transport, for example—and we have reasons to believe that after the escaped accident he would feel less secure than before.¹⁵ More generally, I would say that it is not so easy to think of a situation in which the mere violation of an expectation harms a person ‘without anything having happened to her.’¹⁶ Yet, assume that a first agent offends the second agent, but this second agent does not suffer any loss in his welfare because of the offense. Can we say that this offense is not simply blameworthy but also harmful? If the first agent has been deprived of his legitimate expectation to be treated with respect, yet such deprivation has no effect on his wellbeing, I would say that the offence was not harmful.

In contrast, my response to the Woodward case, that is more complex than the previous one, is very simple. Agent X carries out two actions that should be analysed separately. He promises P to perform A + B while knowing that he can perform only A, and this is surely a wrongful action that harms P. Then he gives A to P, and since we know that P is better off with A than without it, we can say that this second action benefits P. How we judge the two actions in sequence depends on which moral paradigm we adopt. Radical deontologists might say that it would have been better if X had given nothing to P if this was the only way not to break a promise. On the contrary, utilitarians would compare the loss of utility caused by a broken promise to the marginal utility that A has for P. If the increase in utility is higher than the loss, they would rank possible scenarios

in this way: the best solution is that X gives A to P without promising A + B, the second best is that X gives A to P after having promised him A + B, the third best is that X gives nothing to P and does not promise anything.

Yet, even if Kumar and Woodward were right in holding that a person can be harmed without being made worse off, for the simple fact that his legitimate expectations—e.g., to be made promises that are honoured, to be respected, and so on—are violated, I cannot see how this would solve the non-identity problem at the intergenerational level. Let us imagine that we bite the bullet and accept that the drunk driver harms the pedestrian without affecting his wellbeing: how can actions A, B, C violate the legitimate expectations of persons X, Y, W if the identity of the latter cannot prescind from A, B, C? In other words, X could legitimately make the claim that past generations have been blameworthy for having produced energy in a way that unfairly allocated externalities across time. But we can imagine that people from previous generations might hypothetically retort to X: yes, you are right, we are to blame because by adopting pollutant models of production we have failed to treat posterity as ends rather than means, but you are wrong in saying that you have been harmed by our blameworthy behaviour—and hence also in advancing any hypothetical claim of compensation—because had we turned to green economy—that is to say, had it not been for our reproachable actions—you would have never existed.

I think the latter is a fundamental crux, because usually those who try to dismiss the non-identity problem on deontological grounds make an arbitrary inference on the arbitrary effects of actions deriving from their blameworthiness. We can disagree with consequentialists and maintain that an agent is to blame for committing a given action independently from its consequences, but from this first claim, we cannot directly jump to the further claim that this given action, if it does not have negative consequences, is also harming someone. My point is that the non-identity problem cannot allow us to pass from the first to the second claim advocated by intergenerational deontologists like Woodward and Kumar.

Other thinkers have defended the idea that future people can be harmed by a past action also when the non-identity conditions occur by relying on an impersonal conception of harm. Some of them have put forward the idea that present people are performing actions harmful toward posterity if these actions cause posterity to fall below a minimal subjunctive threshold. Gregory Kavka, for example, has proposed the notion of restricted life, 'a life that is significantly deficient in one or more of the major respects that generally make human lives valuable and worth living'¹⁷ as the metric we can use for evaluating the acceptability of social conditions throughout time. If action A performed at time $t1$ "foreseeably"¹⁸ causes individual X to live a restricted life at time $t2$, action A is harming individual X. The fact that the identity of individual X is partly determined by action A cannot lead to different conclusions, in Kavka's view, because even though X would probably egoistically prefer A to have been committed—given that a restricted life is still better than no life—, A would remain morally impermissible as long as the action violates the impersonal duty of justice to prevent restricted lives.¹⁹

A similar argument has been deployed by Edward Page in his sufficientarian account of intergenerational justice. According to Page, 'earlier generations

are bound by a sufficientarian duty to ensure that their successors have access to a climate system that is hospitable for decent human **lives!**²⁰ In more practical terms, sufficiency would require, in relation to climate change, the reduction of CO₂ emissions and huge investments for adaptation—quantities and modalities should be left to what Page defines as ‘the best scientific evidence.’²¹ Accordingly, within the context of intergenerational sufficientarianism, action A can be said to harm agent X if it leads X below the sufficiency threshold, even though A does not make X worse off in a diachronic sense.²²

Now, keeping aside the evident difficulty in drawing a line between a restricted and a non-restricted life and in specifying what sufficiency is and where we should place the threshold,²³ and also passing over an articulate discussion regarding the opportunity of employing the idea of sufficiency as a bellwether for harm rather than in relation to positive duties of justice, I do not believe that the sufficientarian interpretation of subjunctive thresholds could be of much help in defusing the non-identity objection to intergenerational harm. Even if we buy the argument that justice should prevent us from leading others below a subjunctive threshold, there is no doubt that if we leave things unaltered, individuals X, Y, W, though living a restricted or insufficient life, will owe their existence to our same actions that have led them below the subjunctive threshold. To put my argument simply, it is illogical to argue that we have a duty of justice to abstain from performing an action that will cause an individual to live below sufficiency even when the mere existence of this individual cannot prescind from the performance of this action.

Quite different, because not sufficientarian, but still impersonal, is the solution that was initially given to the non-identity problem by the same author who raised the paradox, Parfit. He argued that the person-affecting view can be opposed by a principle that he calls Q, according to which: ‘if in either of two outcomes the same number of people would ever live, it would be bad if those who live are worse off, or have a lower quality of life, than those who would have lived.’²⁴ As we can see, the person-affecting view and Q lead to different moral conclusions when dealing with outcomes in which people are equal in number but different as individuals. For according to Q, we should always opt for the outcome in which aggregate welfare is higher, regardless of individual identities. So, for example, when reasoning about the actions we might undertake with regards to climate change, we ought to choose those actions that will make posterity happier, even if this entails different people existing with respect to the status quo.

Nonetheless, the issue becomes trickier when we move from hypothetical ‘same number choices’ to more realistic ‘different number choices.’ Assume, as an example, that a radical reform plan P is expected to lead to the birth of a certain number of future people, and that these people will be better off but inferior in number to those who would live if we do not execute P. Are we morally justified in implementing P? Principle Q is of no use in this choice, hence, if we do not want to fall back on the person-affecting view, we have to find a moral theory that explains why we ought to carry out P. Parfit calls this theoretical tool theory X and he says that it should both solve the non-identity problem and avoid the ‘repugnant conclusion,’ according to which for any possible scenario in which

there are n people living, we can imagine another scenario in which there are n^n people living in much worse conditions and that we ought to deem it, for aggregative reasons, preferable to the first one, in which there are much fewer people who are much better off. Yet Parfit reiterated also more recently that he was 'not sure what (X) should be.'²⁵

However, in his latest contribution to the subject, Parfit maintained that a solution to both the non-identity problem and the repugnant conclusion can consist in the 'Wide Dual Person-Affecting Principle,' according to which 'one of two outcomes would be in one way better if this outcome would together benefit people more, and in another way better if this outcome would benefit each person more.'²⁶ Yet, the difficulty of this solution consists in explaining how we should assign priority to either the first part (the 'collective principle') or to the second part (the 'individual principle') of the dual principle, when they enter into conflict.

The same Parfit offers a good practical example. Consider that we had to choose between A) 'One million people will exist at level 1,000' and B) 'One hundred billion people will exist at level 1.' The collective component of the dual principle would suggest us to opt for B, given that it will maximise aggregate welfare over time, but the individual component of the same principle would lead us to prefer A, given that in A every member of the group would enjoy a good standard of living while in B they would experience a life that is barely worth living. Parfit holds that this latter fact ('the lives of the people in A would be roughly a thousand times more worth living') 'would do much more to make . . . [A] . . . better,' given that 'though it matters whether what happens would together benefit people more, it matters more whether what happens would benefit each person more.'²⁷

Unfortunately, the article in which Parfit was presenting this theory was unfinished, and he did not have the chance to further elaborate it. What remains unclear is how from the formulation of the 'Wide Dual Person-Affecting Principle' Parfit infers the priority mechanism that he later proposes to regulate the functioning of its two components. Accordingly, it is only by considering the second component as superordinate to the first one that we can avoid the repugnant conclusion. Yet, we cannot simply take as a given that, from a person-affecting prospective, a relatively small aggregate amount of welfare divided among a relatively small group of individuals can outweigh almost *ad infinitum* a relatively bigger aggregate amount of welfare divided among a relatively bigger group of individuals. Nonetheless, I cannot exclude that this path of philosophical enquire opened by Parfit may offer in the future a sound response to the non-identity objection, hence for the purposes of this article I leave it as an open possibility.

III

Another promising defensive strategy for intergenerational harm might consist in ascribing it to the community rather than to single individuals. Avner de-Shalit took up this road when he proposed the notion of the 'transgenerational community,' to which we can—and should—extend our duties of justice. De-Shalit unravels a refined voluntary model of intergenerational community that

is based on moral similarity rather than cultural interaction. Moral similarity is firstly achieved among contemporaries, he says, when the dominant 'norms and values,'²⁸ are put under rational scrutiny within the community. Some people will oppose them, some others will support them or will eventually decide to abandon the community. In the end, the community would need to agree on 'a comprehensive and more or less coherent concept of the good.'²⁹ The norms and values that make up this shared concept of the good will form part of the communitarian identity and will extend into the future to the next generations. The latter will have to undertake a second process of moral reflection. Are the norms and values that permeate the society in which I was born and raised up to the historical contingencies I am living? Are they able to keep up with the changes in technology, society, politics, and so on? Some people will say yes, some others will say no, and a new concept of the good will have to be agreed upon. This is how the community keeps in place the constant process of moral reflection on itself and preserves moral similarity as generations follow one another.³⁰

De-Shalit uses this idea of moral similarity to call communitarians to extend the scope of their theories of justice beyond contemporaries. More specifically, he advocates a decreasing model of moral responsibility in which obligations get weaker as long as we move from contemporaries to remote descendants, passing through the closest ones.³¹ Although it was not initially proposed in response to the non-identity problem, the communitarian argument developed by de-Shalit in favour of intergenerational justice could easily be employed as a philosophical version of the intuitive objection that many people would raise against Parfit's paradox: I do not care whether specific future individuals can be said to be harmed by past actions, because it suffices to maintain that the community as a whole is harmed by the blameworthy behaviour of its past members.

Against the argument that this objection presupposes, the counter-objection might be raised that it is based on a radical collectivistic methodology, in which the individuals making up the community are perfectly interchangeable. Yet, the methodological issue could also be raised against the strong individualism on which the non-identity problem is based. Therefore, I shall not pursue this argumentative line. Rather, I wish to highlight a considerable limit of the communitarian approach to intergenerational justice. It is firmly anti-cosmopolitan, hence incapable of tackling properly the environmental challenges that a comprehensive account of intergenerational justice should take into account.

Phenomena like climate change, the accumulation of greenhouse gases in the atmosphere, the rise in the earth's temperature and so on have local causes but global onsets. If we want to properly frame the harm that these environmental threats pose to posterity, we should consider posterity as a whole, not as a national community. For these threats stem from negative externalities that cross political borders. The advantages are usually distributed locally, while the burdens are clearly global. Thus, unless we can demonstrate that something like de-Shalit's process of moral similarity occurs at a global level—or in other words, that a global community exists—we might have reasons to explain why a current Belgian does have moral reasons not to leave the burden of his wellbeing to a future Belgian,

but we would not have any argument to justify the extension of this moral duty toward a future Jamaican.

The latter point becomes extremely relevant, I believe, when we take into consideration the costs of adaptation. Assume, as an example, that some new expensive technologies have been discovered for mitigating the effects of violent floods due to climate change. The present Belgian could then feel less guilty for emitting CO₂, given that his children will suffer less from the pollution that he has contributed to creating. Yet, this lightening of his moral obligations toward the next generation is unjustified, because some other future people living in places where the adaptive technology is unavailable—e.g., because it is too expensive—will pay the price of his dissoluteness. What arguments would communitarians have for convincing a present person to take into consideration the effects that his action will have on future foreigners? I do not think they would have any.

IV

So far, I have argued that none of the aforementioned philosophical arguments are successful in disentangling the rights of future people from the non-identity paradox. Yet, a quite alternative way of looking at the harm suffered by future generations might consist in emphasising its continuity, or, more precisely, the fact that it can be inherited. After all, there is no philosophical dilemma that could deny the existence of intragenerational harm, and it may happen that heirs suffer from the circumstance that their parents have been inflicted an—intragenerational—loss that has not been rectified. If this is true, heirs might demand a compensation in virtue of the fact that they were born from people who were worse off than they would have been had intragenerational justice been respected. Such a response to the non-identity problem has been brilliantly elaborated, for example, by George Sher in his discussion on transgenerational compensation.³²

Both climate change and public debt might be partially—although never completely—included in this scheme of inheritance of injustice. An individual raised by a couple who has unjustly paid the costs of adaptation to an impervious environment, or the price of a debt she has not contracted, is surely worse off in comparison with a subjunctive threshold that indicates the hypothetical situation in which his parents had not suffered wrongs. Nonetheless, I am not sure that this approach might sweep away the non-identity problem when the injustice suffered by parents precedes the conception of the child. For we might have reasons to believe that had the parents been compensated, a different child would have been born—for all the reasons regarding the impact of marginal increases of income on individual choices.

The same discourse holds true for historical injustice. As an example, we might say that the biological identity of a descendant of slaves cannot be separated from the same past slavery. Accordingly, there is no doubt that slavery in itself is horrible and morally wrong, and that slaves are victims of a long series of actions and practices that are deplorable—so they are worse off than they would be in a free world. However, despite the fact that the descendant of slaves is worse off than a hypothetical descendant of free ancestors, the latter would be a completely

different person from the first one, because slavery is a determinant factor in the chain of events within which the reproductive choices of the ancestors are framed.³³

Sher explicitly dismisses this conclusion when observing that ‘an obvious strategy for avoiding the non-identity problem is to say that where the child of an original victim of injustice is concerned, the wrong for which he is owed compensation is not the original one, which was committed before he was conceived, but rather some subsequent wrongful failure to compensate *for* the original wrong that takes place *after* he is conceived.’³⁴ This would amount to saying that the child can legitimately demand to be compensated also for an action or social practice that—although being wrongful—is one of the preconditions to his existence. Or in other words, it would imply that even though it is in the child’s interest that the parents be wronged, he can subsequently pretend to be compensated for that wrong. I think that such a conclusion would not easily be accepted. It is philosophically correct to say that the parents are due a compensation, but it does not make much sense to say that we can elude the identity causality by simply disentangling on the temporal axis the wrongful action from the wrongness of not rectifying it.

Moreover, another problem with inherited injustice is that, as rightly explained by Jeremy Waldron, it can happen to be superseded when circumstances change.³⁵ If, for example, future generations were able to make a radical shift to green and renewable resources, the new circumstances would surely reduce the onus of compensation from the heirs of over-appropriators of non-renewable resources toward the heirs of under-appropriators, in comparison to before the technological shift occurred. And, most importantly, even though all my counter-objections were misplaced, the harm for which the proponents of inherited injustice demand compensation would remain intragenerational harm. What would be inherited is only the rectification for an action that was performed in the past. Therefore, this solution would only partially rescue the idea of intergenerational harm.

V

Lastly, there remains to respond to the most powerful objection levelled against the non-identity scepticism toward intergenerational harm. It might be called the over-sensitivity objection and can be spelled out in these terms: from a purely analytic point of view, the non-identity problem might be sound, yet the issue of biological identity should be kept out of the moral discourse, because if we follow this slippery slope we will be obliged to admit that even the most insignificant actions—such as drinking a glass of water, tying up shoelaces, and so on—have a decisive impact on the identity of future people, hence we would run the risk of continuously wondering whether any action we make could be reshuffling future identities. Moreover, from this line of reasoning we might also infer what Tremmel defines as ‘the ‘butterfly-effect’ argument,’ according to which the concurrence of a myriad of different actions—of different magnitude and importance—to the identity of future beings cannot allow us to isolate only one action—or one class of actions—and assign to it the whole causality.³⁶

Both the over-sensitivity point and the ‘butterfly-effect’ argument are surely correct in the description but wrong in the conclusion. For they overlook the

important moral difference that exists between the reasons why we undertake the various actions that concur to determine future identities. Surely, both the act of watching a movie and the act of using the electric bus instead of the scooter have the potential of influencing the identity of a future child—by delaying the moment in which the sexual intercourse occurs. But while the reason behind the first act has nothing to do with the wellbeing of future people—we simply watch a movie for the pleasure of doing it—I am here assuming that the second action is performed for the purpose of not contributing to make future people worse off with respect to the environment. Therefore, while we can remain indifferent to the consequences that watching a movie will have on the child's identity, it would be illogical to hold at time t , before deciding to use the electric bus, that we are doing it in the interest of the future child that at time t we would have expected to be conceived at time $t + \textit{something}$, if we know that this same action will cause a different child to exist.

In sum, the issue of biological identity is a problem for justification in terms of negative justice of all those actions that find their reason in the restraint from inflicting harm to posterity. Obviously, the wider the scope of the action, the bigger the philosophical problem. If, in the case I was sketching above, there is only one child whose identity depends on whether one of his parents takes the bus instead of the scooter, and a huge number of other future people that would benefit from the green choice of this individual without any effect on their identity, when we reason about the drastic political decision that might restrain climate change or the increase of national debt, we are dealing with very wide projects that will surely have pervasive effects in the composition of next generations. In the sense that if we were really to implement on a global scale what scientists are recommending us with regard to climate change, we would reshuffle the great majority—if not the totality—of future identities.

VI

I have sought to argue so far that the non-identity problem poses an insurmountable obstacle to the notion of intergenerational harm. Even if we argue that the victim of past harm is the future community as a whole, rather than its single components, we would get irremediably stuck in a statist understanding of harm, that is unable to take into account the international externalities of phenomena like climate change usually posed on the frontline when discussing the possibility of causing harm to posterity. Moreover, I have also defended the non-identity paradox from the objection that the action that could harm future beings is only one of the innumerable components that determine their identity, and I have argued that while we can remain indifferent to the non-identity problem in relation to all those actions that we do not undertake in the interest of future beings, we cannot overlook the paradox of doing something in favour of a person who owes her existence (partially but still in a determinant way) to the contingency that we do not undertake that action.

Yet, **it might objected** that even though present actions cannot be said to harm posterity, they can surely have a negative impact on the environment, and

this fact is a moral problem per se, regardless of its consequences on humanity. In other words, if we shift our moral obligations from posterity to non-human nature, we can condemn our polluting behaviour while remaining indifferent about who will exist after us. I do not have the chance here to dwell much on the differences between an anthropocentric and a biocentric approach. Roughly speaking, anthropocentrism only recognises instrumental value to the environment—in the sense that we care about things like climate change, earth temperature, pollution, and so on, only insofar as these phenomena threaten the healthiness of the environment in which humans have to live. Diversely, biocentrism ascribes intrinsic value to nature, hence any damage inflicted on the environment is to be condemned, even in the hypothetical case in which it does not have any impact on human wellbeing.³⁷

It is evident that biocentrism might solve only one part of the problem of intergenerational harm, because the whole issue of financial prudence would remain untouched. Moreover, even though biocentrism might benefit future people, it does not rescue the idea that future human beings can be harmed by past actions. Most importantly, without dwelling on the normative validity of the claim according to which everything that is ‘alive’ is a unit of moral concern,³⁸ we can easily appreciate the very practical difficulties that would stem from embracing this principle. If we have serious motivation problems in implementing minimal ecological provisions—that is to say, the minimal things needed to keep the planet hospitable for humans—, imagine how many chances we would have of implementing policies that recognise the intrinsic moral value of a leaf of grass.

Perhaps a less drastic philosophical option could be a sort of sentientism, as proposed by Peter Singer, for example.³⁹ In this case, we would include in our moral reasoning only those creatures able to experience pain and pleasure. The resulting requirement of negative justice would be less demanding than with biocentrism. Nonetheless, I am afraid that this account of harm cannot be disentangled from an extended version of the utilitarian doctrine on which not even all utilitarians agree, and that would raise the same doubts that characterise aggregative theories in general.⁴⁰ Lastly, from this prospective how shall we judge the lion that kills the gazelle? Can it be blamed for the pain inflicted?

The only way to lead the notion of intergenerational harm out of the non-identity trap could be probably found in a theory of intergenerational justice that shifts the moral focus away from individuals without giving in to the intrinsic value of non-human nature. Accordingly, we would not have duties of negative justice directly toward specific future people; rather we would be constrained in our actions by a duty of financial and environmental carefulness, aimed at preserving the integrity of the natural and social structures that allow humans develop a ‘flourishing’ life. With natural structures that are indispensable for humans to lead a flourishing life I refer to all the abiotic and biotic constituents of an ecosystem that, if kept sustainable, provide humans with the resources to fulfil their basic needs and to conduct their life in a non-hostile environment.⁴¹ With the social structures having the same purpose, I refer to those practices, institutions, formal and informal norms that determine the distribution of basic wellbeing and that contain the gap between different social positions within limits that are

sufficient to guarantee individual autonomy.⁴² From this prospective we would not incur the non-identity problem because we would be concerned—functionally but not intrinsically—about structures rather than about their users. Does such a theory exist?

In discussing the issue of indirect reciprocity that challenges the possibility of reaching a social contract agreement between different generations, Stephen Gardiner does quickly examine the idea of considering humans as ‘stewards of the land’ instead of ‘indirect reciprocators.’⁴³ According to this moral model, individuals would not be primarily interested in intergenerational fairness, rather they would be mainly concerned with the conditions of the environment in which the human species lives. Thus, were future generations to inherit an over-polluted planet, they would not complain with their grandparents for having been unfairly penalised, but they would feel indignant for the fact that humanity as a whole is falling short of its obligations toward the earth.

Two things are missing in the theory of the ‘stewards of the land.’ First, why should humans consider themselves as bearers of obligations toward the environment? If the answer is because they ascribe intrinsic value to the earth, we would fall back on biocentrism—so we need a different justification. Second, what is the method for assigning priorities to the different components of the land? Again, if we cannot distinguish between the part of non-human nature that we have an obligation to preserve and the part toward which we only have supererogatory duties, we end up in the radicalism that is inherent to biocentrism.

In order to respond to these questions, imagine the lodge model. A mountain lodge has been realised near the top of a mountain through the funding from a rescue association, and it has been left to free use for those who may need it—mountaineers or climbers just have to bring a sleeping bag and they can spend the night there. What are the moral obligations of a guest of this mountain lodge? The guest knows that he is not free to act as if he were in his own house insomuch as he has to leave the lodge in conditions allowing re-use after a standard tidying up—let us call it moral duty H. Yet, the question that interests us here is why the guest has duty H. If the guest had to stick to H because he should refrain from causing harm to those who will come after, we would implicitly maintain that the lodge has a pure instrumental value, hence the lodge model would be of no use for us in the non-identity case. If, on the contrary, we hold that the guest has to observe H because the lodge is important in itself, regardless of the people who will enjoy it, as a sculpture or a piece of art could be, we would be saying that the lodge has pure intrinsic value, hence for the case we are examining the lodge model would not have any advantage over the biocentric approach.

Accordingly, the lodge model can only suit us if we find a reason why any guest has to respect H but only as long as he can reasonably expect that someone else will use the lodge afterwards. In other words, we need a reason why in the hypothetical situation in which the guest were certain that no other human being will use the lodge in the future, H would expire (meaning that we do not assign pure intrinsic value to the lodge). One reason, I shall maintain, why the guest has moral duty H is that he recognises the functional value of the lodge as a shelter structure whose aim is to host people, who would be otherwise exposed

to extreme weather conditions. In short, the guest respects the purpose for which the rescue association created the lodge, and that we can sum up in the ideal of hospitality. But at the same time, the guest knows that the value of the ideal of hospitality cannot be dissociated from the existence of one or more indeterminate subjects who can receive this hospitality — as, on the contrary, it might be argued that the value of artistic beauty is not necessarily dependent on the existence of one or more subjects who admire it. Accordingly, the value of the lodge is neither purely instrumental because it is expressed in the implementation of an ideal, hospitality, that we deem as valuable *per se* rather than in the marginal increases of the wellbeing of the guests (which occur, but are a consequence of the realisation of the ideal of hospitality), nor is it purely intrinsic given that there can be no sense in hospitality without guests. What is intrinsically valuable is the ideal of hospitality, and the value of the lodge is functional with respect to the possibility of hospitality.

My point is that if we look, philosophically, at the sustainability of the environment and of the fiscal burden as the minimal conditions for natural and social structures to replicate themselves in time, hence we assign them functional value, we could obtain a moral theory that safeguards the wellbeing of future people without appealing to their individual rights, hence without running into the non-identity problem. Following the lodge model, we may hold that although it is true that the polluting action A cannot be said to harm agent X if his existence depends on the performance of A, it can still be said that A causes harm to the ecosystem and that this action is not to be condemned because the ecosystem has value *per se*, but rather because keeping the environment below the threshold of irreparable pollution is one of the minimal conditions for natural and social structures to last. However, there would remain to explain why I am taking as given that there is something valuable in the fact that society can replicate itself in the future, as in the lodge case I postulated there was something valuable *per se* in hospitality. Again, if natural and social structures were valuable only for the consequences they have on individuals, we would fall back into the grips of the non-identity trap.

One possible answer is that safeguarding the basic functioning of natural and social structures is important *per se*, independently of the identity of the persons that will inhabit them, so far as it is an indispensable prerequisite for the realization of an impersonal ideal, as for example a relational account of socio-economic justice. Thus, the functional value of both the environment and fiscal stability might consist in the fact that they allow for an equal distribution of wellbeing. Think for example of climate change and about the circumstance that those individuals who are more vulnerable to it, because of either their geographical or social positions, risk to carry the heaviest burden.⁴⁴ The same discourse holds true for public debt so long as it worsens the life opportunities of some individuals from one municipality with respect to other municipalities, or of a region in relation to other regions or of a state in comparison with other states—depending on whether we are talking of local or national debts.

Let us suppose, in fact, that at time *t* we live in a society that is troubled by both excessive emissions and deficit expenditures, whose negative consequences

are likely to be suffered by future generations. We have two options, either we preserve the status quo, so that individuals X , Y , W will be born, or we adopt reformative actions thus leading to the conception of Ψ , Ω , \bar{I} . In the first case, we can assume that our dissipation will increase inequality, either within the group X - Y - W or between this group and other individuals, given that some costs will have to be paid and the most vulnerable individuals will be most affected. Whereas, in the second scenario we can maintain that natural and social structures capable of containing inequalities will be transferred to Ψ , Ω , \bar{I} . If we believe that equality is valuable per se,⁴⁵ we can recognize the functional value of natural and social structures and prefer the second scenario to the first one, notwithstanding that different individuals will be conceived. The limit of this argumentative strategy is that those who might adopt it would have to bite the bullet and accept that in the first scenario X , Y , W could not have claimed to be harmed by the inaction of their forefathers, hence by undertaking reformative actions we would reshuffle individual identities without the justification of saving someone damage, but rather only for the sake of equality.

A second possible answer to the question why natural and social structures have functional value is to say that they are important for 'securing justice,' rather than implementing a specific principle of justice. This is, for example, the reading that David Heyd proposes of Rawls's just saving principle.⁴⁶ According to the latter, saving is required between generations only for the purpose of 'preserv[ing] a just basic structure over time,' and when this has been guaranteed 'net real saving may fall to zero.'⁴⁷ Heyd maintains that Rawls is defending an intergenerational moral duty to preserve a social system that can promote political duties of justice among contemporaries. In Heyd's own words, 'maintaining a system of justice is arguably a desirable goal for human beings, a social good, even an intrinsic value.'⁴⁸ In this sense, the duty to fulfill the conditions for justice is superordinate to the various principles in which justice can be explicated (as for example the principle of equality we were considering above as intrinsically valuable).

In tune with this interpretation of the idea of just saving, we might hold that even though reformative actions at time t will cause different individuals to exist at time $t1$, these actions cannot be avoided as long as they are necessary to safeguard the basic conditions of justice over time. Even in this case, we would have to bite the bullet and accept that X , Y , W would not have been wronged in the status quo scenario, yet we prefer a world inhabited by n individuals having the institutional resources to realise their ideal of justice rather than a world in which these basic conditions are missing, because justice is valuable per se.

Both solutions have the potential to offer a theoretical foundation to the functional value of natural and social structure, which in turn can explain why the present generation ought to act in the interest of future beings even when this would change the identity of these individuals—in comparison to the status quo alternative. The advantage of a moral argument based on the intrinsic value of a relation, as equality, over a theoretical solution to the non-identity problem that looks at absolutes, as the sufficientarian arguments proposed by either Kavka or Page, is that it is disentangled from the identity of the persons to whom the distributive principle we consider as intrinsically valuable is addressed. As

argued before, if equality is valuable per se, we can justify a series of actions that constitute the minimum requirement to preserve equality over time, also when these actions will alter the identity of the individuals that we expect to stand in a relation of equality in the future. Conversely, if we maintain that having enough of some goods or resources is intrinsically valuable, we cannot prescind from the identity of the persons who are supposed to have enough of something, and above all we cannot ignore that having a set of resources that is higher than zero but less than enough is better than having nothing at all. If at time t we could either abstain from carrying out action A thus making X exist in a world in which he will be below sufficiency, or carry out action A which will make Ψ exist above sufficiency, the same ideal of sufficiency cannot justify the non-existence of X. In the same way that if X was an individual who is structurally under sufficiency because of a serious handicap (whose negative consequences cannot be neutralized through economic means) we cannot maintain—from a sufficientarian perspective—that whether he continues to live or instead passes away is irrelevant from the point of view of an aggregate calculation of well-being—thus implying that his life under sufficiency is worth nothing.

On the other hand, the advantage of an approach that addresses the temporal sustainability of the minimum conditions for justice, rather than for a specific relational principle, is that it does not require prior adherence to a given conception of justice. However, the limit is that the scope of this theoretical tool is quite limited, since it is not always a given to prove that some actions or some practices might endanger justice *tout court*, meaning the functioning of the basic institutions that can implement a just distribution of burdens and benefits of social cooperation—regardless of what we consider as just. Accordingly, we might have to admit that a given action A, as for example polluting a river, which is morally wrongful on an intragenerational level, does not cause an intergenerational harm as long as future individuals could have a reasonable opportunity to secure justice, in spite of this action.

This is just a modest proposal for a research agenda that I wished to make at the end of the article, also to stress that although I believe the non-identity objection to intergenerational justice is much stronger than it is usually thought to be, it is not inescapable. To do it, we just need more philosophical work. Moreover, it is important to stress that both the first and the second solutions to the non-identity problem (respectively based on telic equality and securing justice) should not be confused with theories of intergenerational socio-economic justice, which I have left aside in this article. Accordingly, my attempt has been to read the notion of intergenerational harm in relation to the chances future people will have either to realise a relational ideal of justice or to secure justice *tout court*, two things that I have assumed to be intrinsically valuable. From this derives the functional value of both natural and social structures. The final argument is that a useful and so far quite unexplored philosophical path that might possibly lead us out of the non-identity trap, and that would require further theoretical elaboration, consists in explaining why a given action A that is carried out at time t can be said to violate a negative duty of justice for the 'mere' reason that it creates obstacles

to the reproduction of natural and social structures. And I have explored the possibility that it might be so in virtue of the functional value of these structures.

CONCLUSION

I have defended the non-identity objection to intergenerational harm from the scepticism that has been levelled against this argument by those maintaining that it makes sense to say that a person has been harmed by an action even when she partially owes her existence to the performance of this action. I have argued that if we take the issue of biological identity seriously, we cannot condemn the financial and environmental dissoluteness of contemporaries by appealing to the individual rights of posterity. This is not to say that future people cannot have rights, quite the opposite. Even if we maintain that future people do not have rights now, they will surely have rights at the moment of conception or soon after. Furthermore, it is indisputable that an action performed at time t can jeopardise the individual right of a person who will be conceived at time $t1$. I have offered the example of the picnic case and the abandoned glass, but we might make many others.

My point is simply that when advocating pervasive economic and social reforms in the name of the right of posterity to have the chance of living a decent life, we cannot overlook that, by changing our models of production and by radically altering our public debt policies, we will give birth to different future individuals to those whose rights we wanted to safeguard at the very beginning. And I have sought to argue why all the counter-objections that have been made against the non-identity paradox within the grounds of individual rights have failed to deliver a coherent defence of intergenerational justice.

Lastly, far from surrendering to the non-identity objection, I have maintained that a way out of this theoretical trap probably exists, and it should be looked for neither in aggregative doctrines nor in purely biocentric ethics. Rather, the normative focus should be directed toward the natural and social structures that allow the human life to replicate itself in the future and to their functional value. Only in this way we can defend what we might expect humans to need throughout subsequent generations without incurring the theoretical problem of explaining who these humans are.

ENDNOTES

1. On these phenomena see also Anver de-Shalit, *Why Posterity Matters: Environmental Policies and Future Generations* (London: Routledge, 1995), 2–4. He also lists population growth among the issues that should be covered by an account of intergenerational justice. This is perfectly correct, but I am not sure whether the demographic problem is a primary cause of intergenerational concern. I would probably define it as a secondary cause, because it does not give rise to problems of justice toward posterity per se, but only in conjunction to the four processes I mentioned in the text.

2. Here I sought to keep the definition of negative duties of justice as open as possible. I am aware that specifying what it means for costs to be unsustainable would trigger a very long discussion.

3. See Merten Reglitz, “The Practice-Independence of Intergenerational Justice,” *Utilitas* 28.4 (2016): 415–40.

4. See also Parfit’s example of the broken glass. Moreover, Parfit argues that we cannot discount harm at a rate that declines with time. In the sense that whether B gets hurt seven or ten years after the glass was abandoned in the forest has no importance in assessing the severity of harm. Parfit, *Reasons and Persons*, 356–357.

5. See the real time calculator of CO₂ global emissions with data provided by the Department of Physics of Oxford University, at <http://trillionthtonne.org/>. On the issue of the so-called ‘carbon budget’ and on its ethical implications see also Henry Shue, “Climate Hope: Implementing the Exit Strategy,” *Chicago Journal of International Law* 13.2 (2013).

6. Derek Parfit, “On Doing the Best for Our Children,” in *Ethics and Population*, ed. M. D. Bayles (Cambridge, MA: Schenkman Publishing Company Inc., 1976), 100–15; Derek Parfit, *Reasons and Persons* (Oxford: Oxford University Press, 1984), 349–71. For more recent discussions of the non-identity problem by the same author you can see Derek Parfit, “Energy Policy and the Further Future: The Identity Problem,” in *Climate Ethics: Essential Readings*, ed. Stephen M. Gardiner, Simon Caney, Dale Jamieson, and Henry Shue (Oxford: Oxford University Press, 2000), 112–21; Derek Parfit, “Future People, the Non-Identity Problem, and Person-Affecting Principles,” *Philosophy & Public Affairs* 45.2 (2017): 118–57.

7. See, for example, Gregory Kavka, “The Paradox of Future Individuals,” *Philosophy & Public Affairs* 11.2 (1982): 93–112; James Woodward, “The Non-identity Problem,” *Ethics* 96.4 (1986); Rahul Kumar, “Who Can Be Wronged?,” *Philosophy & Public Affairs* 31.2 (2003): 804–31; George Sher, “Transgenerational Compensation,” *Philosophy & Public Affairs* 33.2 (2005): 181–201; Edward Page, “Justice Between Generations: Investigating a Sufficierarian Approach,” *Journal of Global Ethics* 3.1 (2007): 3–20; Ernest Partridge, ‘Future Generations,’ in *A Companion to Environmental Philosophy*, ed. D. Jameson (Malden MA: Blackwell Publishers Ltd., 2001), 277–389; David Boonin, *The Non-Identity Problem and the Ethics of Future People* (Oxford: Oxford University Press, 2014).

8. See also Parfit, *Reasons and Persons*, 351–2.

9. Obviously, the same problem applies to those who conceive intergenerational justice in terms of positive duties of justice—e.g., the capability approach. How can a future person claim to having been violated in his positive right to receive something from an ancestor if, had the ancestor provided that thing the descendant would have never existed?

10. See also Parfit, *Reasons and Persons*, 369–70.

11. See Kumar, “Who Can Be Wronged?,” 114; and Woodward, “The Non-identity Problem,” 808.

12. Kumar, “Who Can Be Wronged?,” 103.

13. Woodward, “The Non-identity Problem,” 808–9.

14. Woodward, "The Non-identity Problem," 810.

15. This psychological mechanism of the loss in security can be understood more clearly in the case of the failed apartment theft. It is unreasonable to hold that the thief has wronged the lodger simply because he has violated a moral norm without having had any negative influence on his wellbeing. For the odds are that the lodger would also suffer a loss in tranquility due to the fact that the thief's failed attempt has reminded him of the concrete possibility of the danger that someone might break into the apartment. So we can expect the lodger to be scared, to sleep badly and so on, at least for some days.

16. Kumar, "Who Can Be Wronged?," 103.

17. Kavka, "The Paradox of Future Individuals," 105.

18. Ibid.

19. Ibid., 110.

20. Page, "Justice Between Generations," 12.

21. Ibid., 11.

22. See also Joerg Chet Tremmel, *A Theory of Intergenerational Justice* (London: Earthscan, 2009), 45–6; Matthew Rendall, "Non-identity, Sufficiency and Exploitation," *Journal of Political Philosophy* 19.2 (2011): 229–47.

23. On this issue see also Richard Arneson, "Good Enough is Not Good Enough," in *Capabilities Equality: Basic Issues and Problems*, ed. A. Kaufman (London: Routledge, 2006), 26–32.

24. Parfit, *Reasons and Persons*, 360. For a more recent formulation see also Parfit, "Energy Policy and the Further Future," 119.

25. Parfit, "Energy Policy," 120. See also Parfit, *Reasons and Persons*, 415–7.

26. Parfit, "Future People," 154

27. Ibid., 156.

28. de-Shalit, *Why Posterity Matters*, 38.

29. Ibid., 28–9.

30. Ibid., 29–49.

31. Ibid., 54–5.

32. Sher, "Transgenerational Compensation."

33. An alternative case of historical injustice that does not involve slavery, but rather a single action from the past, is discussed in Elizabeth Finneron-Burns, "Contractualism and the Non-Identity Problem," *Ethical Theory and Moral Practice* 19.5 (2016): 1153.

34. Sher, "Transgenerational Compensation," 192.

35. Jeremy Waldron, "Superseding Historic Injustice," *Ethics* 103.1 (1992): 24.

36. See Tremmel, *A Theory of Intergenerational Justice*, 40–2.

37. I would add, even in the hypothetical case in which we were sure that nobody will be conceived after us. See also Dale Jamieson, *Ethics and the Environment: An Introduction* (Cambridge: Cambridge University Press, 2008), 145–9. For an example of biocentric ethics you can see Paul W. Taylor, *Respect for Nature A Theory of Environmental Ethics* (Princeton: Princeton University Press, 1986).

38. See Nicholas Agar, "Biocentrism and the Concept of Life," *Ethics* 108.1 (1997): 147–68. A further different ethical theory is ecocentrism, in which all ecosystems, including their non-living physical parts, (called abiotic components) are recognized intrinsic moral value. See, for example, Haydn Washington, Bron Taylor, Helen Kopnina, Paul Cryer, and

John J. Piccolo, "Why Ecocentrism is the Key Pathway To Sustainability," *The Ecological Citizen* 1.1 (2017): 35–41.

39. Peter Singer, *Animal Liberation: A New Ethics for Our Treatment of Animals* (New York: HarperCollins, 1975).

40. On the difference between biocentrism, anthropocentrism, ecocentrism and sentientism see also Jamieson, *Ethics and the Environment*, 145–9. On the more general issue of utilitarianism and the environment see Dale Jamieson, "When Utilitarians Should Be Virtue Theorists," *Utilitas* 19.2 (2007): 160–83.

41. See also "Ecosystem," in *Encyclopaedia Britannica* (last update on February 13, 2019). <https://www.britannica.com/science/ecosystem>.

42. See also Iris Marion Young, *Responsibility for Justice* (Oxford: Oxford University Press, 2011), 43–74.

43. Stephen M. Gardiner, "A Contract On Future Generations?," in *Intergenerational Justice*, ed. Axel Gosseries and Lukas H. Meyer (Oxford: Oxford University Press, 2009), 107.

44. Anil Markandya and Kirsten Halsnaes, "Developing Countries and Climate Change," in *The Economics of Climate Change*, ed. Anthony D. Owen and Nick Hanley (London: Routledge, 2014).

45. On the so called 'telic egalitarianism' see Derek Parfit, "Equality and Priority," *Ratio* 10.3 (1997): 202–21; Iwao Hirose, *Egalitarianism* (London: Routledge, 2014), 63–85.

46. David Heyd, "A Value or an Obligation? Rawls on Justice to Future Generations," in *Intergenerational Justice*, ed. Axel Gosseries and Lukas H. Meyer (Oxford: Oxford University Press, 2009), 167–89.

47. John Rawls, *Justice as Fairness: A Restatement* (Cambridge MA: Harvard University Press, 2001), 159.

48. Heyd, "A Value or an Obligation?," 187.