

No time like the present: *Eternalism* and our obligations to the future

Authors: Anson Fehross, Ian Lawson, Chris Degeling

Corresponding author: chris.degeling@sydney.edu.au

Abstract

Most people believe it is a moral wrong to formulate our current actions without regard for the well being of future generations. Yet despite the strength of our intuitions, philosophers have found it difficult to justify this position. The difficulty lies in finding a way to compare the harms and benefits our actions might have for alternate but not-yet-existing future persons and their populations – the so-called ‘non-identity problem’. In this paper the problem’s very foundations are reconsidered, especially its reliance upon a particular view of the nature of *time* known as *Presentism*. Rather than accept *a priori* the *Presentist* thesis that only the present is real, and the future is genuinely open, *Eternalist* theories of time hold that the past and future are equally as real as the present. To aid the exploration of the consequences of adopting the *Eternalist* thesis for our obligations to the future the possibility of the time-travelling Higgs boson is used as an example. The aim is to illustrate how subscription to an *Eternalist* understanding of time can sustain a person-affecting conception of morality in inter-generational ethics, and, thereby, provide grounds to ascribe moral responsibility for direct harm to future generations.

Keywords: Inter-generational ethics, philosophy of time, non-identity problem, person-affecting moral theory

*'Men make their own history, but they do not make it just as they please; they do not make it under circumstances chosen by themselves, but under circumstances directly encountered, given and transmitted from the past'. (The Eighteenth Brumaire of Louis Bonaparte. Karl Marx 1852)*¹

Introduction

Past analyses of our responsibilities to the generations to come have struggled to accord much status to not-yet-existing future people.² While our moral intuitions tell us that we should act benevolently towards our descendents, it is difficult to make a clear logical argument that this is the case.³ The problem is the incomparability of the 'goodness' and harmed conditions of alternate but non-existing future societies and individuals.⁴ The conundrum this creates has troubled the ethical analyses of fields as diverse as synthetic genomics, population health and environmental ethics. Yet our understanding of the temporal conditions that generate what have become known as the 'future person paradox' and the 'non-identity problem' are by no means ontologically secure – they are open to challenge. The successful demonstration of the existence of a sub atomic particle [Higgs Singlet] able to travel back through time would potentially transform forever how we choose to live and govern life in the present.⁵ If time travelling particles can be controlled, then it is possible that we will be able to receive packages of information from the future. All we would need to do is build a receiver and begin to look for a signal. While such scenarios populate the realms of science fiction, gaining some form of knowledge of the consequences of our actions for real existing future people is now a technological, physical, and epistemic possibility.

If the scenario described above actually occurred, it would immediately raise the question of what we should do with the information contained in messages from the future. What are our obligations to the individuals or societies that sent them - the very people living with the 'future' consequences of our actions? Do we need to protect the future such that we should always follow any transmitted directives, or are we free to continue act in what we perceive to be the best interest of presently existing people? The arrival and translation of a stream of coded Higgs Singlets from the future obviously would create issues about the quality and veracity of this new form of evidence. But assuming we were overwhelmed by a stream of future evidence

from what we presume are independent future sources, we might also begin to feel that this information has clear and present relevance to current decisions.

Almost certainly one of the first things that we would need to interrogate and likely change is our understanding of how time and ethics intersect. Receiving knowledge of the future would likely alter how we represent sequences of events, and have implications for how we regard and act towards future generations. To the authors' knowledge, current investigations of what we owe people of the future are based upon a *Presentist* assumption about the nature of time; that it flows in one direction from the past through the present to the future.⁶ Under the temporal conditions of Presentism, the future is pre-existent and indeterminate, and the identity and existence of future persons is contingent upon our current actions.⁷ While Presentism reflects our experience of time, it is not the only possible view. The alternative is Eternalism: the view that time does not flow, and the past and the future are as real as the present.⁸ Under these temporal conditions the people of the future are not pre-existent but existent, determinate, and, quite possibly, with the aid of a better understanding of our universe and the appropriate technology, real enough to send us a message. The future is no less real than the present or past; we just know less about it.⁹ That we know much less about the future simply reflects our inability to be in a position to describe it accurately.

To ascertain what the possibility that the world is tenseless means for us, and indeed what obligations this entails, in this essay the metaphysical implications of how information from the future might possibly alter our commonly held beliefs about the future and our attendant duties are explored. This provides a sounder position to judge what the implications of evidence of the future have for our ethical self-understanding, and how to balance the interests of present and future people in our decision making processes. First, however, a brief detour is required to address one of the more common justifications in favour of environmental conservation and banning genetic engineering: harm to future persons and the non-identity problem.

Harm to future persons and the non-identity problem.

Imagine a corporation decides to dump toxic waste into a semi-dormant volcano.¹⁰ The waste is safely insulated in heat-proof barrels that have been rated to last at least

a thousand years of extreme temperature. After that time, however, the seals will fail, and waste will pour out into the volcano (which, conveniently, is likely to erupt in a thousand and one years). Upon hearing the uproar over this case, a corporate spokesperson simply says, “Well, we haven’t *harmed* anyone.” The problem with the ready reply “Yes you have!” is that, at least according to traditional understandings of the term ‘future people’, this corporation *has not* harmed anyone. Future people are taken to mean exactly that: non-actual persons who *will* exist eventually. Dumping toxic waste, dropping a nuclear bomb, drinking heavily whilst trying to get pregnant, and so on, cannot harm anyone because a precondition of harming a person is that that person must actually exist to be harmed. This is sometimes described as the ‘person-affecting intuition’ where “what is bad must be *bad for someone*”.¹¹ It seems reasonable to assume that something that does not yet exist cannot, strictly speaking, be the kind of something that can be harmed. Indeed, it is questionable whether this concept can be rightly dubbed some *thing* at all.

The issues surrounding the non-identity problem run deeper still. Take the case of the evil corporation and the volcano-bound toxic waste. In a thousand and one years the toxic waste is spread evenly across the local neighbourhood, causing various maladies for all children born after its spread (cancer rates triple, say). If some are tempted to say that these children are harmed by this act they are committed to the position that it would have been better for the toxic waste to not have been put in that volcano in the first place. The problem is that *particular* people cannot be said to have been harmed by the initial heinous dump. There are two interrelated reasons for this. First, if one grants the existence of causal chains, each as antecedently determined as the last, the causal chain that lead to the eventual birth of person X is necessarily linked to the corporation’s activities. Any small perturbation in this causal chain leads to an entirely different person being born at a later date. As Tyler-Cowen puts it:

*“Today, when you stop at a traffic light, rather than plowing through the yellow, you likely affect the length of other commutes and thus change the timing of millions of future conceptions. Subsequent genetic identities will change as well. Come the next generation, these different identities lead to different marriage patterns and thus an entirely new set of individuals in the future”.*¹²

Therefore person X will be born, as a result of the evil corporation's toxic dumping ways, with a trebled risk of cancer. It can then be presumed that the alternate individual born under volcano protecting laws, Person Y, will have a better quality of life than the unfortunate Person X.

Intuitively this seems right, but it is not necessarily clearly the case that the evil corporation have harmed person X. This is because if they *didn't* dump the waste, person X would not have existed in the first place. This constitutes the non-identity problem. As person Y would have existed instead, it is hardly plausible to say that they are aiding or protecting Person X by causing Person Y to be born. All utilitarian arguments aside, the force of the non-identity problem is at least partially due to a very strong intuition: it is almost always better to be born than not born.¹³ To say that person X has been harmed by this chain of events is to say that it is better for them if they did not exist.

Another reason for halting at the notion of harming *particular* future persons is that they simply do not exist when the corporation performs the heinous acts. How then can what the corporation does at *t1* harm someone at *t2*? There simply are no individuals that are harmed, and further, those who *will* exist cannot be said to be harmed, as they are still better off than if they hadn't existed. Following Edward Page, it is possible to claim that those views which focus on harms to *particular* future people to be *individualistic*.¹⁴ Such a view can be formulated as follows:

For act X to be a harm, X must make some *person* Y worse off than they otherwise would have been.

As already seen, Person Y cannot be said to be worse off- in fact, if the act in question did not occur, Person Y would not have existed at all. As a result two options are available: reject the individualist intuition and replace it with an impersonal view (as Page and many others do),¹⁵ or else amend aspects of the individualist thesis.¹⁶ Each is addressed in what follows.

Impersonal, distant and future directed harm.

Impersonal approaches, noting the limitations of the individualist view of future-directed harm, propose that attention must be give to 'group-centred' views. For

example consider, as Page does, those persons who are endangered by current climate policy. They will have their social cohesion threatened by rising sea levels, dramatic changes in climate, and so on. What is the proper response?

For Page, the response is to shift the focus from the *individuals* that make up a given community to the group itself. In short, “the communities which future people will belong to are deserving of concern and respect *in their own right*”.¹⁷ This does not mean, however, that the harms are *felt* by the group, as the group is constituted by its individual members. The point here is that the wrongness of dumping toxic waste does not need to be traced to harms felt by particular people who could not have existed otherwise. All that is required for there to have been a tangible harm is that a given *community* is left worse off.

Presumably under the group-centred view, groups are social ontological structures that persist through time and are relatively immune to fluctuations in membership. Think here of a corporation that persists through time, even if the original board members are long dead, the company logo changes and so on. Even with these changes, the corporation, as an ontologically distinct thing, endures (or indeed perdures). Under this picture, future-directed harm looks something like the following:

For act X to be a harm, X must make some *group* Y worse off than they otherwise would have been.

Now let us return to the original example: that of dumping toxic waste. Under individualistic conceptions of harm, no particular town dweller can claim to be worse off, as without the initial dumping of waste they would not exist in the first place. For the group-centrist, on the other hand, it is possible to claim that a group is worse off, even though *no particular person was harmed*. The presumption is that the group is sufficiently coarse grained to withstand the flow-on effects of any given action. In other words, if Hitler was never born, it is possible that World War Two would not have occurred, but the *groups* involved in that conflict would still exist. Removing one person from a causal relation, intuitively at least, does not seem sufficient to endanger entire *groups*, although it may threaten the individual members of these groups.

Of course there are many open replies to this way of thinking. First, it does not seem obvious that groups can't be endangered by adding or subtracting a single member, depending on the individual in question. Secondly, as pointed out by Page, there is the possibility that acting now may change which groups exist in a given area. As a result, the same problem reappears: by dumping toxic waste the corporation do not leave any group worse off, as to *not* dump the waste would just mean that this group does not exist. But there is a third problem, which is not addressed by Schwartz, Page, Parfit, and many others alike. That is whether the temporal metaphysics utilised to understand our obligations to the future assumes simply too much. Let's look at the alternatives.

Message in a [Higgs] Boson.

In the analytic metaphysics of the twentieth century there have been two general clusters of theories about time, attempting to account for our various scientific and phenomenological insights. These have come to be labelled the A-theory and the B-theory, and they differ in how they characterise the past, present, and future.¹⁸

For the A-theorist, you, reading this paper right *now*, are in the objective Present. Last night's dinner is in the Past, and tomorrow's breakfast is in the Future. These statements are objective and absolute. Past, present, and future are ontological categories, and events are ordered on a timeline according to how far into the future or the past they are. As the (objective) present moment moves along the timeline, the categories the events belong to change. Tomorrow's breakfast will become present, and shortly after that, past.

This is generally characterised as the intuitive view of time, a theory founded largely on *what it is like* to experience time. While there are various A-theories that differ on minor details, most commonly the view is cashed out as Presentism. In addition to the flow of time and the objective temporal categories, Presentism asserts that a key difference between the present and the past and future is that the present moment is the only moment in which things exist. Objects in the future will exist, and those in the past did exist, but only those present *now* do.¹⁹ Though the Presentist, and the A-theorist more generally, are not necessarily committed to an open, indeterminate

future, this feature tends to be associated with these views. This is partly because, as mentioned, Presentism primarily seeks to provide reason for our experiences of time, and an open future seems to make sense of some key intuitions. For instance, we seem to be able to deliberate about future events in order to bring about different outcomes, but not about past ones. And perhaps relatedly, that there is no fact of the matter about future-tensed propositions – it is neither true nor false that there will be a sea battle tomorrow, until tomorrow happens.

In contrast, the B-theory holds that 'past', 'present', and 'future' are relations to an indexical. Events ordered on a timeline are ordered merely by relations – 'earlier than', 'later than', and 'simultaneous with'. All times are equally real, and none is ontologically privileged as the present is for A-theorists. Tense is simply a feature of our relation to what is in fact a tenseless reality.²⁰ In the words of J. J. C. Smart, the world is 'a four-dimensional continuum of space-time entities, such that out of relation to particular human beings or other language users there is no distinction of "past", "present" and "future."' ²¹ For this reason this perspective on the nature of time is also called *Eternalism*. As suggested by Smart, *Eternalism* entails that just as objects have three spatial dimensions (height, width and depth) they also have a fourth, temporal, dimension. Objects all have temporal *parts*, located at points along their trajectory through space-time.

Accordingly, and in direct opposition to *Presentism*, events that are in my future as I write this are nonetheless just as real as the ones happening around me. The future, like the past, is real and determinate. Note that this does not necessarily mean the Eternalist (four-dimensionalist) is committed to hard determinism. A sample of radium may decay at random tomorrow. But the fact is that it *did* (in some tenseless way) do so – this event is no less real than Marie and Pierre Curie's discovery of the element in 1898. Likewise you can deliberate on whether to get another cup of tea and, possibly, alter your actions through this deliberation. But your getting that cup (or not) is (tenselessly) a real event. The B-theorist has a real future, a determinate future, but not necessarily a *determined* future. What this means is that later events are set by reasonably well-defined causal relations, but the precise outcome of interactions is not certain. Finally, it is worth mentioning that while B-theory arguably does not cater for our phenomenology as well as Presentism, this conception

is generally seen to be motivated by consistency with much of our best physics, (even if not actively assumed by the theories in question).²²

As mentioned above, what Presentism does excellently is correspond to an intuitive view of time, as experienced by us every day. Something we do not knowingly experience is retrocausation. And yet we are being told that deep under Switzerland physicists may find evidence of a particle that travels backwards through time. The Higgs singlet would be an instance of a later event influencing an earlier one. Or for the Presentist, the future influencing the past. This seems to be a clear case of evidence necessitating a modification of our intuitive views. Two things are important to note.

Firstly, the Higgs singlet remains a postulate. Thus far there is no direct evidence of retrocausation. It must be noted however, that it is far from a unique postulate – General Relativity is replete with various methods of ‘cheating’ the speed of light to create a time machine.²³ It is not necessary here to give a historical overview of debates about the possibilities of the time travel. What is important to note is that the Higgs singlet is the most recent in a series of instances of the prediction of the possibility of retrocausation *by a theory we trust*. What is more, these predictions are internal to the theory. They are not metaphysical speculations not directly contradicted by our physics – the theories we adopt to describe our universe *do*, under certain circumstances, predict retrocausation.

The second thing to note about time travel is how it may alter our conception of time. David Lewis has offered a useful analogy to illustrate how to make sense of spatiotemporal relationships given the counter-intuitive possibility of time travel.²⁴ Time can be likened to a path. Relative to where you are standing at any given time, the path behind you is ‘earlier’ - you have already traversed that section. That which lies ahead is ‘later’. This neatly explains the phenomenological relationship we have with time: from *our* perspective there is a difference between past, present, and future – as we experience different moments we discover an unknown future. But externally, it is there all along.

Now consider the case of time travel. Lewis constructs the following scenario:

“Five miles down the line from where you are is a place where the time-line goes under a trestle; two miles further is a place where the line goes over a trestle; these places are one and the same. The trestle by which the line crosses over itself has two different locations along the line, five miles down from here and also seven”.

Paths can loop back on themselves. It is possible, by merely following a path, to arrive at an intersection you've already passed through from a different direction. What's important is that though *you* pass through the intersection twice, it only *exists* in one place. Remember that the path represents time. Now we have time travel. Lewis continues:

*“In the same way, an event in a time traveller’s life may have more than one location in his personal time. If he doubles back toward the past, but not too far, he may be able to talk to himself. The conversation involves two of his stages, separated in his personal time but simultaneous in external time. The location of the conversation in personal time should be the location of the stage involved in it. But there are two such stages; to share the locations of both, the conversation must be assigned two different locations in personal time”.*²⁵

It is possible for you, by moving (phenomenologically) always into the unknown future, to arrive at an event you have already experienced. But the event has only one temporal location in ‘external’ time. Your first experience of the event would include meeting an older version of yourself. Perhaps they told you which path to take. Viewed this way, the state of affairs that exists when a time travelling Higgs singlet arrives in the 'past' (call it t1), exists *because* it arrives there. Through the singlet, events at t1 are influenced by events at the time from which it was sent (t2), just as t2 is a result of t1 through other causal chains. And just as bodies influence one another over different times all around us, all the time.

Thought experiments aside what actual time travel would imply is that there are bodies existing 'now', in 2011, that have *already existed* in the 'future', say 2051. It will hopefully be apparent that one of the insights available from the possibilities of ‘backward’ time travel is that all times are ontologically equally real. What makes this seem a problematic situation is trying to add retrocausation to a basic Presentist view of time, resulting in contradictory beliefs.²⁶ These can be stated as follows:

- 1) Bodies influence one another, giving rise to the state of the universe at the next moment of time.
- 2) Our experience is the only evidence we have for ontology.
- 3) Time travel (and therefore retrocausation) is possible.

Proposition (1) is a general statement about causality that does not require detailed consideration given the purpose of this paper. Proposition (2) is based on a dangerous solipsism. The next moment of time is 'unexperienced' and unreal. We are up to a certain place in the temporal order, and beyond that nothing has been. Intuitive in everyday life, this assumption rarely needs challenging – what will happen next no one knows – and underlies the belief in an open future. And yet proposition (2) is directly contradicted by (3), that time travel is possible. If this is the case, then there are bodies that move from moment to moment in their personal time in a different order to the rest of us more temporally mundane objects. They have already experienced what to us is the future. If we are to have a unbiased approach to what is ontologically possible—and agree that eschewing solipsism is probably a good idea in ethics generally—we need to assume that there are things in the future we have no knowledge of that are nonetheless as real as we.²⁷

Back to the Future

Returning to the original question, how should we regard information from future people? Although perhaps not immediately apparent, the possibility of sending packets of information backwards through time has very real consequences for environmental ethics and bioethics. Specifically, if this possibility is ever actualised, it will mean that we must drastically revise our understanding of the moral status of 'future people', our tendency to subscribe to the person affecting view, and perhaps even begin to reconfigure current understandings and discourses surrounding relational autonomy.

So far, the focus has been on finding grounds to justifiably state that the toxic-waste dumping corporation can be held responsible for harming persons in the future, given that the particular individuals in question neither exist nor are 'harmed' in any

straightforward way. The problem here is that our intuitive understanding of future-directed, inter-generational harm breeds unintuitive results.

Enter time travel, to challenge our intuitive view of time, as broadly characterised by Presentism above. Subscription to Presentism creates the future persons paradox and the non-identity problem because it entails that future persons are not real and do not exist. They can be *caused* to exist, but until they actually exist (become present) they are merely possible people. Possible people may be of moral worth, but they simply *cannot* be worth as much as an actual person.

Arguably, good ethics requires good empirical evidence, and the very real possibility of sending information backwards or forwards through time presents a contrastive metaphysical outlook. If we *can* do as the scientists cautiously predict, then it seems as if future persons are as real as anyone at our present time. In which case, *future* people are not possible; they are *actual*.

To illustrate what this means, let us amend the story regarding the heinous corporation. Suppose just before the barrels are dumped into the semi-dormant volcano, an information scanner designed to pick up on backwards-travelling messages from the future receives a message: “Dumping the waste hurts us! Don’t do it!” What can the corporation reasonably say in this circumstance? It is worth noting that there is no guarantee of the veracity of the information we receive in this scenario. Future persons can lie as surely as anyone can lie now, so the corporation can reasonably claim that perhaps we are being rubes if we follow this information to the letter. Also, persons in the future may be mistaken about their lot in life. Perhaps the toxic waste confers them with a natural resistance to all viruses, which leads to better overall health than they would have otherwise. The corporation, and the rest of us, can justifiably treat this statement from the ‘future’ (or, if you prefer, a ‘later time’) as epistemically suspect, and treat all such messages with cautious scepticism. Yet any scepticism must be restricted to the message’s *content*- not its ontological status as a message from existent persons.

At the same time, this corporation cannot have recourse to the Parfitian response that they do not harm any particular individual. If we receive information from a

particular group of persons in the future, alerting us that our actions affect them, they are in a very real sense the *only people who could have been affected by the decision*.

Moral responsibility and information from the future

So then, what of moral responsibility? Commonsensical understanding dictates that we are responsible for our actions if we could do otherwise than we do, in fact, do. This seems to require an open future of the sort associated with Presentism. Brutus is responsible for betrayal because he could have refrained from betraying Caesar. Hence it would seem that if the Eternalist project is accurate, we could not do otherwise: the future exists. The corporation is then let off the hook- how can they be responsible, given that the timeline was already set? Well, yes and no. For the Presentist, the reason why the corporation is responsible is that they *cause* a particular state-of-affairs as they *bring about* the future. The future is *created* by actions in the present. Obviously, this account has two drawbacks: it rubs up against much of modern physics, and runs into the non-identity problem.

Yet even if the Presentist thesis is defeated, agency and ethics will still exist. In fact it is likely that moral responsibility can be maintained via familiar measures. The first is to simply deny that the stock phrase ‘could do otherwise’ has any real weight. Instead, the compatibilist criterion of reasons responsiveness is a ready replacement. According to this view, acting on the basis of reasons in a reliably causal manner is simply what moral responsibility is.²⁸ The corporation is responsible in exactly this way. If they went ahead, in full knowledge of the consequences, they would be responsible because dumping toxic waste is actually the *sort of thing they endorse*. Alternatively, following on from Heather Dyke’s analysis of how tenselessness can inform an understanding of moral realism, it is possible to ascribe responsibility to the corporation because moral motivations require a belief that time is tensed and has a causal flow, regardless of its true ontological status.²⁹ Even if time does not flow in the way we experience it the corporation must act on the basis of ‘tensed’ beliefs about what will happen as a consequence of their actions; otherwise they would likely go out of business. From a deontological perspective, holding these beliefs and intentions as a rational guide for actions *a priori* entails the acceptance of moral responsibility. Finally, there is another way the corporation can be held responsible for its actions without recourse to a tensed understanding of time. If the corporation

is identifiably that same kind of entity at points in time where the toxic waste has not been (t1) and has been (t2) dumped in the volcano, then at the set of time points (t2^x) they are morally answerable for their actions.³⁰ In each of these accounts, in no way does the rejection of *Presentism* lead the corporation to be less guilty or blameworthy.

This leaves the question of why would persons from the future send back information in full knowledge that their advice would be ignored? There are several responses available but the most cogent is that perhaps these future-dwellers could do no other themselves. They know that in the year 2090 persons in the past would receive a message from their own time, and just decide to get it over with. As strange as this may sound, it is certainly not irrational.³¹

Objections and conclusions

The keen-eyed environmental ethicist will have spied a kind of defeatism throughout these pages. There seems little point in holding the imagined corporation to account for their actions, as they were bound to receive this information and disregard it. After all, it's all there in the timeline. But this response is wrongheaded on two fronts. First, if the corporation is bound to act in this way, we are similarly bound in our reactions toward this corporation. We ourselves cannot do otherwise than hold the corporation morally responsible, given what we know about the situation. This is the only reasonable response to persons who dump toxic waste when there is sufficient reason to refrain from doing so. The corporation's actions exhibit what we look for in the morally reproachable institution: selfishness, disregard and greed. What other moral response would be warranted under the circumstances? All others (forgiveness, excuses, pity, etc.) are reproachable themselves.

Secondly, the environmental ethicist may take comfort in the reasonable supposition that, if persons had relatively sure evidence that persons in the future actually *exist* and are *harmed* by actions made in the present, wider society will both expect and demand modifications in our current policy. The message sent from the future would (or *should*) serve as a sufficient reason to regard future persons as morally equal as present persons, separated, as they are, by mere space-time location. Space-time location, under this understanding, is about as morally insignificant as latitudinal location is now.

If there is a general lesson from the preceding it would be as follows. First, we should not be too quick to draw conclusions about the nature of reality from how it is represented. As noted by Heather Dyke, “it may be that the only way we can represent temporal reality to ourselves is in an irreducibly tensed way, but is invalid to infer from this that reality is irreducibly tensed”.³² Second, semantics and theories of language aside, as there exists a very real possibility of receiving information from the future, we are not limited to the Presentist conception. Third, by moving to an Eternalist position of four-dimensionalism we change our inter-generational obligations without taking an impersonal view or redefining what we mean by harm. If future generations can be said to exist as surely as we do, acting in such a way that persons in the future are harmed is functionally equivalent to harming someone sitting next to you. The mere fact that future persons are temporally disconnected is no excuse. In this the argument presented does not sit beyond the boundaries of current knowledge to the extent that a metaphysical possibility and a physical possibility are conflated: thus far, the possibility of sending (and receiving) information through time has not been realised. Perhaps it never will be, but as long as the possibility is a live one, these ruminations stand and turn our standard theorising on its head. In regarding our obligations to future people, the central issue is no longer explaining how it can be said that we harm *particular* people of the future by our current actions. Instead, it must be accepted that we *do* harm these generations and their constitutive members.

NOTES:

¹ We would like to thank Catrin Donovan for her insightful comments and suggestions on earlier drafts of this paper, and Simon Hollington for similar inputs and contributions including his role in the ‘Allenhead Findings Project’ which kicked the whole venture off in the first place. See: <http://www.electronic.sunset.org/node/1813>

² See for example: Derek Parfit, "Future Generations: Further Problems," *Philosophy & Public Affairs* 11, no. 2 (1982), Lawrence Johnson, "Future Generations and Contemporary Ethics," *Environmental Values* 12 (2003), Ernest Partridge, "The Future - for Better or Worse," *Environmental Values* 11 (2002).

³ See: Thomas Schwartz, "Welfare Judgments and Future Generations," *Theory and Decision* 11, no. 2 (1979).; Alan Carter, "Can We Harm Future People?," *Environmental Values* 10 (2001).; Rahul Kumar, "Who Can Be Wronged?," *Philosophy & Public Affairs* 31, no. 2 (2003).; M.A. Roberts and D.T. Wasserman, "Harming Future Persons: Introduction," in *Harming Future Persons: Ethics, Genetics and the Nonidentity Problem*, ed. M.A. Roberts

and D.T. Wasserman (Springer, 2009).; and, Robert Huseby, "Person-Affecting Moral Theory, Non-Identity and Future People " *Environmental Values* 19 (2010).

- ⁴ Derek Parfit, *Reasons and Persons* (Oxford; Oxford University Press, 1986).
- ⁵ The Standard Model of physics predicts the existence of a Higgs Mechanism: a process by which other sub-atomic particles such as protons and electrons gain mass. The Higgs Boson is a hypothetical sub-atomic particle produced through these exchanges. It has recently been postulated that if the Large Hadron Collider succeeds in initiating the Higgs Mechanism to create and record the existence of Higgs Bosons, another type of particle known as the Higgs Singlet will simultaneously come into being. According to the theoretical framework under which these experiments are being undertaken then it is hypothetically possible that these particles are able to enter a fifth dimension and travel forward or backward in time. See: Chiu Man Ho and Thomas J. Weiler, "Causality-Violating Higgs Singlets at the Lhc," *High Energy Physics - Phenomenology* arXiv:1103.1373v1 [hep-ph] (2011).
- ⁶ Thomas Nagel has written perhaps the best-known account of some of the connections between time and ethics. In this he is mainly interested in how an individual's knowledge of their future selves has bearing on the content and intentions of their current actions. Aside from this Micheal Tooley has defended a tensed view of time and Derek Parfit does go part of the way towards considering the ethical significance of tenselessness in his account of Self-Interest theory and attitudes to time. Notably each of these discussions fails to explicate the full significance of B-theory to our understanding of our obligations to future generations. See: T. Nagel, *The Possibility of Altruism* (Princeton University Press, 1978) ; M. Tooley, *Time, Tense, and Causation* (Clarendon Press, 2000).; and Parfit, *Reasons and Persons.*, 149-186
- ⁷ For example Alan Carter interprets strict determinism to entail that there is only one ontologically possible future world, the one that comes to be. He then argues that for us to have a sense of moral responsibility to the generations to come, ethics must assume that there are different ontologically possible future worlds. Once again this is based on a theory of tensed time. Carter, "Can We Harm Future People?," 435
- ⁸ J.E. McTaggart, *The Nature of Existence, Vols. 1-2*, (Cambridge: Cambridge University Press, 1968).
- ⁹ D.H. Mellor, *Real Time II* (London Routledge, 1988).
- ¹⁰ With respect to Derek Parfit and Alan Carter's previous thought experiments involving a nuclear technician and nuclear waste dump respectively.
- ¹¹ Parfit, *Reasons and Persons.*, 363
- ¹² Tyler Cowen, "The Epistemic Problem Does Not Refute Consequentialism," *Utilitas* 18, no. 04 (2006)., 384
- ¹³ We say 'almost' as there do seem to be some medical conditions that render non-existence preferable to existence. Tay Sachs would be one prominent example
- ¹⁴ Edward Page, "Intergenerational Justice and Climate Change," *Political Studies* 47, no. 1 (1999).
- ¹⁵ See for example Partridge, "The Future - for Better or Worse.", Johnson, "Future Generations and Contemporary Ethics."; Kumar, "Who Can Be Wronged?."; and, Clark Wolf, "Do Future Persons Presently Have Alternate Possible Identities?," in *Harming*

Future Persons, ed. Melinda A. Roberts and David T. Wasserman, *International Library of Ethics, Law, and the New Medicine* (Springer Netherlands, 2009).

- ¹⁶ Robert Huseby also attempts to ground concern for future generations in an individualistic thesis by introducing a version of sufficientarianism to these moral considerations. See Huseby, "Person-Affecting Moral Theory, Non-Identity and Future People " .
- ¹⁷ Page, "Intergenerational Justice and Climate Change.", 64
- ¹⁸ For an overview see: M. E. McTaggart, " Time," in *Metaphysics: Contemporary Readings*, ed. Michael J. Loux (New York: Routledge, 2008).
- ¹⁹ For descriptions of the Presentist thesis and its implications see: John Bigelow, "Presentism and Properties," *Noûs* 30 (1996),; and Thomas M. Crisp, "Presentism and the Grounding Objection," *Noûs* 41, no. 1 (2007).
- ²⁰ H. Dyke, "What Moral Realism Can Learn from the Philosophy of Time " in *Time and Ethics: Essays at the Intersection*, ed. H. Dyke (Kluwer Academic Publishers, 2003).
- ²¹ See: J. C. Smart, " The Space-Time World " in *Metaphysics: Contemporary Readings*, ed. Michael J. Loux (New York: Routledge, 2008). Noting that the B-series and four-dimensionalism may be regarded as synonymous for the purposes of this paper, although we are sure that *someone* regards them as distinct
- ²² See: JB Barbour, *The End of Time: The Next Revolution in Physics* (Oxford: Oxford University Press, 2001); and, C. Rovelli, "Quantum Spacetime: What Do We Know?," in *Physics Meets Philosophy at the Planck Scale: Contemporary Theories in Quantum Gravity*, ed. C. Callender and N. Huggett (Cambridge University Press, 2001).
- ²³ For accounts of the possibilities of time travel see: Paul Davies, "How to Build a Time Machine," *Scientific American* 286, no. 3 (2002); and, J Earman and C Wüthrich, "Time Machines," in *Stanford Encyclopedia of Philosophy*, ed. E. N. Zalta (<<http://plato.stanford.edu/entries/time-machine/>>, 2010).
- ²⁴ David Lewis, "The Paradoxes of Time Travel," *American Philosophical Quarterly* 13, no. 2 (1976)., 147
- ²⁵ Ibid.
- ²⁶ These contradictions are often explored through what has become known as the Grandfather Paradox. The literature on the issue is extensive but conclusive. A common scenario is to try to untangle what happens when a depressed eugenicist travels back through time and attempts to murder his grandfather before his mother has been conceived? If successful, he is not born. Therefore he does not time travel, he does not commit the murder. He is born, he does time travel... Paradox!
- ²⁷ We remain agnostic on whether the possibility of time travel counts against the flow of time in general. Arguably this could only be the case if the flow of time *is* causation.
- ²⁸ This argument is well rehearsed in: Daniel C. Dennett, "I Could Not Have Done Otherwise-So What?," *The Journal of Philosophy* 81, no. 10 (1984).; and, Galen Strawson, "The Impossibility of Moral Responsibility," *Philosophical Studies* 75, no. 1 (1994).
- ²⁹ Dyke, "What Moral Realism Can Learn from the Philosophy of Time " .

³⁰ For a defence of this position see: L. Nathan Oaklander, "Personal Identity, Responsibility and Time," in *Time and Ethics: Essays at the Intersection*, ed. H. Dyke (Kluwer Academic Publishers, 2003).

³¹ David Lewis points toward similar strangeness in "The Paradoxes of Time Travel". A person travelling back in time may attempt to murder their grandfather, leading to the infamous paradox. Just before pulling the trigger, the gun jams, or the murderous (and somewhat confused) time-traveller slips on a banana peel. Why the attempt fails or succeeds is at once a fascinating and a misplaced question. This is surely stranger than just arbitrarily sending back a heart-felt plea to cease and desist notice to those who will fail to yield to ones advice. See Nicholas J. J. Smith, "Bananas Enough for Time Travel?," *The British Journal for the Philosophy of Science* 48, no. 3 (1997).

³¹ Dyke, "What Moral Realism Can Learn from the Philosophy of Time ", 23

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