Ethical Puzzles of Time Travel[1]

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From pop culture to science fiction to undergraduate teaching, one often comes across the idea that if time travel were possible, one could go back in time and kill Hitler, and thus save millions of lives. But little serious philosophical thought has been given to this claim, and to the background issues that surround it: if time travel were possible, what sorts of ethical puzzles, dilemmas, and obligations would time travel introduce? For example, would one be morally permitted or even morally obligated to go back in time and kill Hitler or remove him from power? Would less dramatic interventions, such as travelling back in time to prevent a single car accident, also be subject to moral duties and obligations? What moral risks does time travel introduce?

In this discussion I take a more careful look at these questions. I articulate several ethical puzzles of time travel and divide them into three different categories: permissibility puzzles, obligation puzzles, and conflicts between past and future selves. In each category, I suggest that ethical problems involving time travel are not as dissimilar to parallel "normal" ethical puzzles as one might think. The hope is that the questions raised and the parallels drawn will be useful for further metaphysical and ethical investigation.

Since the focus of this discussion will be ethical puzzles, I will discuss cases in which time travel is possible, including controversial "second time around" time travel which changes the past, as seen in Goddu (2003), van Inwagen (2010), Hudson and Wasserman (2010), van Inwagen (2010), and Bernstein (2017). I will also assume that we can at least conceive of such travel and changes to the past, and draw interesting ethical lessons from these scenarios. I will try to remain as neutral as possible on particular models of time travel, though metaphysical differences generate some ethically relevant differences between them. Models of "hypertime" time travel within which past reality is altered and then regenerated a second time around are ethically different than eternalist models of time travel within which a time traveler does not technically change the past. But as I will suggest, ethical puzzles of time travel are of interest regardless of one's

metaphysics of time travel.

Roadmap: in Section 1, I discuss the case for the moral permissibility of changing the past, and argue that apparent unique moral risks of time travel are not so different from normal moral risks. I show how a particular time travel case connects with the non-identity problem, and reveals an ambiguity in actualist responses to the non-identity problem. In Section 2, I discuss the case for and against moral obligations to change the past, and argue that apparent differences between time travel involving moral obligations and "normal" moral obligations are illusory. In Section 3, I introduce puzzles involving conflicts between present and future time slices of the same person, and argue that the puzzles are not so different from contemporary problems of peer disagreement, time bias, and the primacy of present consent.

1. The Moral Permissibility of Changing the Past

1.1 The Argument from Moral Risk

Intuitively, it seems morally permissible to remove a present-day dictator from power in order to save millions of lives. Thus it also seems morally permissible to send a time-traveler into the past to remove Hitler from power. Many lives could be saved, and much suffering prevented, by a single change to the past. Changing the past to dramatically alter the world for the better is, on the face of it, morally allowed.

But there are multiple grounds for holding that it is never morally permissible to change the past. One is what I will call the *Argument from Moral Risk.* Assuming that even small changes (including the time traveler's mere arrival in the past) can lead to big changes in the present day (for example, preventing the conception of a presently-existing person),[2] one line of thought holds that it is causally and morally risky for a time traveler to change the past at all. For example, some historians theorize that the casualties of World War II would have been even greater had Hitler been removed from power.[3] Though it seems clear that saving millions of lives is preferable to the suspected historical alternatives, we still do not know for certain what the historical alternatives would have been.[4] We have knowledge of how the past turned out, but lack knowledge about the possible effects of interventions into the past.

Thus one might take time travel to pose an unacceptable moral risk: because we don't know exactly what sorts of downstream alterations any change to the past would cause, it is too risky to change the past. Consider an example less dramatic than Hitler's assassination:

> (Loud Arrival) David, a quiet and unassuming time traveler, seeks to travel to the past just to look around, but not to change anything. But David's time machine arrives with a bang, causing Suzy to look towards the source of the loud noise. Had David's time machine not arrived, Suzy would have noticed handsome Billy sitting in the coffee shop, leading to their eventual marriage and conception of Jane, a presently-existing person.

Here, the mere arrival of David's time machine initiates a causal chain that results in presently-existing Jane's removal from existence. Any change to the past presumably incurs the risk of removing a number of presently-existing people.

Arguably, another way to remove an already-existing human from existence is by altering the circumstances of her conception. According to those who believe the *Time-Dependence Claim* (Parfit 1984, p. 351), if any particular person had not been conceived when they were in fact conceived, they would not have existed. The existence of each particular person is the result of the union of a particular sperm and egg. Altering the circumstances of a person's conception alters the particular sperm and/ or egg involved in the process, and thus alters the numerical identity of the person conceived.

Consider a time traveler like the one in Loud Arrival. As in the original case, let us imagine that Jane is a presently-existing person at the temporal location of the time-traveler's initial departure. But now suppose that the time traveler arrives with a bang, delaying the conception of the person who would have been Jane by a mere one second. (And suppose, further, that this delay causes no untoward effects, genetic or otherwise.) According to adherents of time-dependence, any change in the circumstances of the conception effectively removes Jane from existence, replacing her with a different person. Even if one does not outright endorse the Time Dependence Claim, there is certainly a possibility that altering the circumstances of a conception risks changing the

resulting person.

It might seem that these are unique causal and ethical risks posed by time travel: only in these situations can one remove a person and her future existence—a stretch of human existence that has "already" occurred-- from the temporal manifold. But the moral risks of time travel are not as unique as it first seems.

Lacking knowledge about how the future will evolve given changes to the past is not very different than lacking full knowledge about the future consequences of any "normal" intervention in the present day. We lack knowledge of how the past would have evolved given Hitler's early removal from power, just as we lack knowledge of how current geopolitical situations will evolve given removal of present-day dictators. Given the uncertainty in both cases, removing Hitler from power is not significantly morally different than removing a present-day dictator from power. Doing so would be morally permissible were time travel possible.

I suggest that most changes to the past are no more morally risky than normal actions in everyday life. Every time we leave the house or pass someone in traffic, we risk preventing a romantic meeting of two people who might later conceive another human. Such possible downstream effects are part of the messy causal stuff of everyday life. Just as we are not morally forbidden from leaving the house on the grounds that we might prevent a meeting between two people, we should not be morally forbidden from time travel simply because it is causally risky in this most basic sense.

One might worry that the fact that Jane "already" existed in the future poses a special moral obligation to ensure that Jane is conceived. According to this view, there is a moral difference between preventing a person's conception in the present day (by, say, making someone late for a date by cutting her off in traffic—a date that would have led to the conception of a new person had she been on time for the date), and time-travelling to prevent the initial conception of Jane, who already exists in the present day. The latter is akin to murder, the worry goes, whereas the former is not. For the time traveler is not only ending Jane's life (we can imagine that she would have lived a long life were it not for the time traveler), but removing Jane's stretch of existence from the temporal manifold altogether.

But removing Jane from the temporal manifold isn't *murdering* her, in the typical

sense of the term. The time traveler doesn't cause Jane physical or emotional pain; her loved ones do not grieve. Her loss is not felt by the world. The time traveler does not hole punch Jane out of existence, leaving her traces and influences intact. For the time traveler changes the world so that Jane never existed in the first place. For reasons of theoretical symmetry, if one holds that there are not duties to bring nonexistent people into existence, one should agree that there is no duty to ensure that Jane is conceived upon arrival in the past.

Consider a not-yet-conceived person Jim. If Billy and Suzy have a romantic evening, they will conceive Jim. But presumably, Billy and Suzy are not morally required to conceive Jim. (For a dissenting argument that there is a moral obligation to bring people into existence if they can have good lives, see Gardner (2016)). Similarly, the time traveler does not have a duty to ensure that Jane is conceived. From the temporal vantage point of the time traveler who has relocated to the past, her duty to Jane is no different than Billy and Suzy's duty to Jim. If one assumes that there is no obligation to conceive future persons, then one might also hold that there is no obligation to make sure an already-existing person "stays" conceived. Similarly, if there is no obligation to scope out all of the possible person-conceptions that one might prevent by leaving the house in the morning, one might hold that there is no obligation to scope out all of the possible person-conceptions that one might undo by travelling in time.[5]

One possible defense of the Argument from Moral Risk holds that there is a moral difference between the world in which Jane exists and Jane is removed. On this view, one does something morally wrong by making the world such that Jane never appeared, whether that is via whether that is via changing the circumstances of her conception or preventing it all together. This point extends beyond time travel cases: suppose that one could push a button and make it so that Jake never existed. Intuitively, pushing the button seems worse than not pushing the button, even if one is not technically doing harm to Jake (by causing him or his loved ones pain and suffering, for example). Similarly, the argument goes, it seems worse to make the world so that Jane never existed by travelling to the past and preventing her conception.

I do not have space to pursue this issue further, but it does reveal an interesting result: particular models of time travel have different consequences for ethical

evaluations of time travel cases. In particular, the existence and nature of hypertime bears on how permissible it is for a time traveler to change the past, since changing the past will have different existential import within time travel models. *Hypertime*, roughly speaking, is an extra temporal manifold against which the temporal manifold is measured. The idea is that the passage of time must be measured against something, and the most natural "something" is another dimension of time much like the basic one.

Hypertime provides a natural model for understanding changes to the past. Van Inwagen's (2010) model posits a growing block theory of time, measured against hypertime, according to which a time traveler to the past erases the portions of the block in between her temporal points of departure and arrival. Suppose that Meena regrets attending the Fyre Festival in 2017, so she "rewinds" the block back to her initial choice to attend the Fyre Festival and does not book the ticket after all. Then the block of reality re-progresses the second time around, onward from her different choice not to attend the festival. Here, Meena not only changes the past for herself, but changes it for everyone: reality will be different the second time around in time, even though the first reality already occurred in hypertime. As van Inwagen also notes, Meena would remove large swathes of people from existence simply by travelling backwards in time in this manner.

Applying this result to the question of moral status of removing someone from existence: if our time traveler ventures to the past and prevents Jane's initial conception, Jane's conception hyper-occurs the first time around but does not occur the second time around after the change to the past. Just as Meena was at Fyre Festival the first but not the second time around, Jane occurs the first time around in the block, but not the second time around after the time traveler's alteration of the past. Without hypertime, Jane's removal means that she no longer exists *simpliciter.* Intuitively, the former seems more benign than the latter.[6]

1.2 Time Travel and the Non-Identity Problem

A closely related moral risk involves not just removing someone from existence, but instead creating a person who is worse off in terms of well-being. Originating with Parfit (1984: 352-255), the *non-identity problem* arises when the existence of a person is

brought about (*ceteris paribus*, a good moral act), but bringing the person into being causes that person to have a feature or features that negatively affects their quality of life. When the relevant alternatives to bringing the negatively-featured person into existence are (i) not bringing anyone into existence at all, or (ii) bringing a different, better off, but *non-identical* person into existence, it is morally unclear why the latter is morally preferable to the former. The non-identity problem arises when making a choice that results in someone's conception but that negatively affects that person's long-term well-being.[7]

The moral permissibility of time travel connects with the non-identity problem in several ways. First, there is a question about the moral status of the time traveler "replacing" an already-existing person with one that is worse off in terms of well-being. From the vantage point of the time traveler in Loud Arrival, there is no future person, Jane, to which the time traveler is beholden. For Jane does not yet exist in the time traveler's present. Thus it seems that the time traveler commits some sort of harm, but not a harm directed towards a particular person.

We can easily vary Loud Arrival to introduce a version of the non-identity problem. Consider:

> (Conception-Causing Arrival) David's time machine arrives with a bang, causing Suzy to look towards the source of the loud noise. In looking towards the source of the noise, Suzy spots Billy, with whom she falls in love and conceives Jane, a child with a developmental impairment that results in constant physical pain. Had David's time machine not arrived loudly and with a distracting bang, Jane would not have been conceived.

Ethicists differ on the moral status of this sort of action. Here, David causes Jane's life with painful developmental impairment to occur by causally contributing to her conception. If David had not travelled in time, Jane would not have been conceived. The moral evaluation of David's act depends, in part, on what we take to be the contrast class of outcomes. Suppose that the relevant contrast class to Jane's existence is Jane's non-existence. One might hold that causing Jane's existence is morally preferable to her nonexistence. *Moral actualism*, the view that the moral status of an action is evaluated on the basis of its effects on only actual past, present and future people and situations, is one

motivation for this idea. (See Timmerman and Cohen (2016) for various formulations of actualism.) According to many actualists about the non-identity problem, the impaired person's existence is preferable to her nonexistence, since the morally relevant features of the situation are exhausted by her actual existence, rather than involving the well-being of her unactualized counterparts.

The possibility of time travel reveals an ambiguity in what constitutes "the actual world" for the moral actualist. In normal scenarios, evaluating whether a particular action obeys actualist doctrine involves examining its effect on past, present, and future people in the actual world. But in "second time around" time travel scenarios, it is unclear how to evaluate which world is the actual one, since "actual world" can be subject to further precisification. One view takes the actual world to be the world as it is before the time traveler's arrival. Another view takes the actual world to be the world as it is after the time traveler's arrival—that is, the world that includes Jane's existence, which is a causal result of the time traveler's arrival in the past. This is not necessarily a problem for actualism, but it does introduce an extra complication in actualist moral evaluation.

For friends of the Time Dependence Claim like Parfit, any change in origin changes the actual person to whom moral obligations might be owed. Call non-delayed Jane "Jane1", and delayed Jane "Jane2". According to the actualist, Jane2 is not identical to Jane1 because her circumstances of conception have changed. Presumably, to take Jane1 out of existence is to harm her. There are countless other similar harms that would occur in a time travel scenario-- numerous people harmed by being removed from existence in virtue of the circumstances of their creations being slightly altered. Yet it is counterintuitive to hold that the time traveler has really harmed countless people in this way. Without the theoretical resources to account for slight differences in origin, the actualist is left with a large theoretical cost.

The actualist is also left without the resources to explain differences between the original Loud Arrival case—the one that takes presently-existing Jane out of existence—and the actual world. If a time traveler makes it the case that Jane never existed, the friend of moral actualism will not be able to compare this world with the one in which Jane did exist, since there are no morally relevant non-actual bases of comparison. See Cyr and Tognazzini (forthcoming) for further argumentation about time travel and

actualism.

2. The Moral Obligation to Change the Past

If it turns out that changing the past is morally permissible, is changing the past ever morally *obligatory*? *Puzzles of obligation* involve apparent moral obligations introduced by the possibility of time travel. I suggest that the possibility of time travel could introduce rampant moral obligation to prevent suffering and harm. Suppose that the following moral principle explored by Singer (1972) and Unger (1996) is true:

> (Obligation) *Ceterus paribus*, if one can save a life at little cost to oneself, one should.

For the moment, set aside the rampant moral obligations to people in the present that the truth of such a principle would generate, and consider a time travel-involving variant:

> (Disease) Athena, who lives in 1880, will die of a disease that is easily treatable today with one dose of antibiotics. Dr. Smith knows that he could press a button on a time machine, travel back in time, deliver one antibiotic pill to Athena, and return home within ten minutes.

Given the ease with which Dr. Smith could save Athena's life, is such a trip morally obligatory?

I say: yes. If Dr. Smith knows about Athena's condition, and if the cost to him is low, he is morally obligated to make the trip and deliver the pill. So many lives could be easily saved; so many interventions could be performed; so much suffering could be prevented. Here is another case:

> (Accident) On your way to work, you strike and kill a child with your car. But, like many, you have an iTime, an easily usable personal time machine. You could activate the device and change the near past so that you do not strike the child.

Intuitively, you are morally obligated to activate the device and save the child: at very little cost to you, you can save the life of a child whose life you would have otherwise

ended.

The possibility of time travel would introduce rampant moral obligation to prevent easily preventable past deaths, and to right wrongs that initially resulted in death, suffering, and harm. This profligate moral obligation would change how ethical principles are applied. Given such a possibility, it is not the case that we would say "It is too bad that the innocent deaths occurred; we will try better next time." Rather, all the wrongs of the past have the possibility of being righted; all the past suffering can be prevented. Overriding moral obligations would extend to the past as well as the present and future.

This result extends to many tendrils of applied ethics. The ethics of reproduction and biotechnology would involve, to some extent, the *ex post facto* righting of putative wrongs—for example, preventing two people who conceive a baby that they don't want to have, or correcting genetic arrangements that lead to suffering and harm. The terrain of these problem spaces would change given the possibility of time travel. Rather than be concerned with preventing harm given non-ideal situations, the concern would be changing the harm that already occurred.

3. Conflicts between Past and Future Selves

Time travel introduces the possibility of conflicts in consent between concurrently existing past and future selves. Suppose that a time-travelling future version of you shows up in the present and insists on (present) you doing something you don't want to do—acquire a tattoo, for example, or quit your job. (And suppose that you are 100% certain that this time traveler is in fact a future version of you.) The future version of you plans to physically force you to get the tattoo if you do not consent. Do the wishes of present you override the wishes of future you?

Here, there is a conflict of consent between past and future selves: the preferences of present you conflict with the preferences of future you. Conflicts of consent between different synchronous temporal stages of the same person are very difficult to resolve: principles of personal autonomy do not apply, since both person-stages are you. The puzzle is whether the consent of one person-stage trumps the consent of another person-

stage, and if so, which one does.

There are several possible resolutions of the puzzle. First, one might judge that the primacy of consent lies with the future self rather than the present one. One motivation for this reading is that the future self might have information that the present self does not have. For example, the future self might know that the tattoo will lead to great pleasure and serve to initiate conversations that lead to friendships with like-minded people. If this is the case, then it seems wise to give the future slice primacy of consent.

However, there is a challenge to this principle in *auto-erasure*, suicide by eliminating one's past self. Is it permissible to travel back in time and remove yourself from existence entirely?

Consider the right to suicide under normal circumstances. Suppose that Joe is a fully rational agent not suffering from clinical depression or any other perspective-altering mental illness. And suppose, further, that Joe seeks to commit suicide. On some views like Benatar (2020), Joe's suicide is morally permissible. Some like Lamparello (2012) even argue that suicide is even a fundamental human right: the action invokes fundamental autonomy and control over one's own life and body.

Now consider a time-travelling variant of the situation:

> (Suicide) Future Joe seeks to kill himself. Future Joe travels back in time to remove his past self from existence.

This case uncovers a tension between a commitment to the moral permissibility of suicide and the moral permissibility of auto-erasure. For Joe-in-the-present-moment is entitled to remove himself from existence. And Joe-in-the-future is entitled to remove himself from existence. But Future Joe doesn't seem entitled to remove Past Joe from existence: the primacy of present consent seems to trump Future Joe's desire, no matter what Future Joe knows. Though Future Joe knows that the apocalypse is near and that Present Joe's life will be filled with suffering and struggle, it seems wrong for Future Joe to forcibly remove Present Joe from existence. Even in less dramatic cases, such as the case of the tattoo, hindsight knowledge possessed by the future time slice does not necessarily trump the desires of the presently-existing person stage. This line of thinking is an additional challenge to the primacy of future consent over present consent.

One might read both selves—the "present" self and the time-travelling self—as equally laying claim to being present, and thus to primacy of consent. The past feels like the present to the time-travelling self. In a sense, both are present once the time-travelling slice completes her journey.

If this resolution of the case is correct, then the preference of neither time slice trumps the other. We might view the case as a time-travelling variant on classic peer disagreement, as described in Christensen (2007): two "peers" disagree on a particular issue on which they are both equally epistemic competent and about which they have the same evidence. Here, the peer is oneself. As in epistemic peer disagreement, the logical space of options for the two time slices is: (i) to give equal weight to the peer, (ii) give no independent weight to the peer, (iii) give more weight to the peer. I leave this particular puzzle to experts on peer disagreement, largely because the practical problem it is not substantively different from normal epistemic instances of this problem. Again, we can note the strong parallels between an apparently bizarre time travel puzzle and a more normal philosophical problem.

Finally, one might hold that the present person stage has primacy of consent. There is independent motivation for this resolution. According to Dougherty (2014), present consent trumps past consent in cases of conflicting consent at different times. For example, suppose that you tell your friend on Tuesday that she must tattoo you on Thursday no matter what. (You want a tattoo, but you always get scared at the last minute, darnit.) But on Thursday, as the time for the tattoo draws near, you recant your consent, begging your friend not to tattoo you. Intuitively, the Thursday (present-time) consent trumps your past consent: no matter what you consented to in the past, what you say in the present time has moral primacy. Dougherty holds that this lesson generalizes: present consent seems to trump past projections of consent into the future, and extends *inter alia* to similar cases involving, for example, sexual consent.

It is natural to generalize Dougherty's lesson further: present consent trumps consent projected from the backwards-travelling time traveler. According to this view, time travelling scenarios involving conflicts between past and future selves are special instances of the priority of present consent: the consent of whoever is not the time traveler trumps the consent of the time traveler. However strange-seeming time-travelling

conflicts of consent are, they are parallel to Dougherty's less strange cases involving past and future consent—that is, instances of a more general problem of disagreements between past and future time slices of the same person. Again, the seemingly bizarre problem introduced by time travel is not so different from the more ordinary case. Dissimilarities further illuminate classic philosophical problems.

4. Conclusion

Time travel seems to introduce fanciful and unique ethical problems involving moral risk, moral obligation, and conflicts of consent. However, these problems can often be assimilated to more familiar problems in ethics and in metaphysics, shedding new light on the structure of problems in both areas. While time travel cases might seem impossibly theoretical, they are useful for elucidating the shape of ethical puzzles, illuminating their most morally relevant features, and opening up new avenues of investigation.

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[1] Thanks to Daniel Nolan, Raul Saucedo, and audiences at the University of Barcelona, the 2015 meeting of the Rocky Mountain Ethics Congress, and the 2016 meeting of the Australasian Association of Philosophy for feedback on this paper.

[2] This problem was explored in the film *Back to the Future*, in which the protagonist Marty McFly inadvertently threatens his own existence by interfering with his conception.

[3] This scenario has also been explored in science fiction. In Stephen Fry's *Making History* (1996), time travelers make the world such that Hitler never existed, only to cause the world to become worse in many other ways.

[4] See Nolan (2016) for a discussion of how to evaluate counterfactual historical possibilities.

[5] One might be concerned that such a result introduces moral chaos. If everyone is permitted to go back in time to right past wrongs, then the whole of reality would be chaotic and ever-changing, responding to countless minute causal differences brought about by multiple time travelers. But this is a practical problem rather than one about moral permissibility of individual time-travelling episodes.

[6] Here I do not discuss branching models of time travel, according to which multiple branches of reality co-occur. But here, too, there will be a moral difference between removing someone from time *simpliciter* and making it the case that the person exists on fewer branches.

[7] Here I do not assume that all disabilities effect well-being; I simply stipulate it in this particular case.

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Further Reading and Watching

Cyr, Taylor & Tognazzini, Neal (forthcoming). What Time Travel Teaches Us About Moral Responsibility. *Journal of Ethics and Social Philosophy*.

> Recent paper extending the above point about the relevance of time travel cases to moral actualism.

Faraci, D. Heroes and the Ethics of Time Travel: Does the Present Matter? In *Heroes and Philosophy,* edited by D. Johnson and W. Irwin, 140-154. Wiley.

> Paper examining the ethics of time travel through the lens of the show *Heroes*. Also addresses ethical differences between changing the past and changing the future.

Smith, Nicholas J. J. (2005). Why Would Time Travelers Try to Kill Their Younger Selves? The Monist 88 (3):388-395.

> Contains good discussion of autoinfanticide.

Misfits. 2009-2013. [Television series] Created by Howard Overman. UK: Clerkenwell Films.

> Good television series about troubled teenagers who gain superpowers, including the ability to travel through time. See especially season 3 episode 4, which features an attempt to go back in time and kill Hitler.