

On Lewis's Way Out

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Abstract: On the fiftieth anniversary of the publication of Lewis 1976, this paper reexamines ‘Lewis’s solution to the grandfather paradox’: both the philosophical move often designated using this phrase and the accuracy of this manner of designating that move.

Keywords: Time travel; Grandfather Paradox; changing the past.

1. The Grandfather Paradox(es)


We need to distinguish two different arguments against the possibility of backwards time travel. Both of them have been referred to in the literature as the “grandfather paradox”—and also by other names.

The first argument goes back at least as far as Gödel 1949:

by making a round trip on a rocket ship in a sufficiently wide curve, it is possible in these worlds to travel into any region of the past, present, and future, and back again, exactly as it is possible in other worlds to travel to distant parts of space. This state of affairs seems to imply an absurdity. For it enables one e.g., to travel into the near past of those places where he has himself lived. There he would find a person who would be himself

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at some earlier period of his life. Now he could do something to this person which, by his memory, he knows has not happened to him. This and similar contradictions, however, in order to prove the impossibility of the worlds under consideration, presuppose the actual feasibility of the journey into one's own past. (560–61)

The argument is a *reductio* of the possibility of backwards time travel:

Backwards time travel generates contradictions: if backwards time travel were to occur then contradictions would be made true. It is impossible for a contradiction to be true.

Therefore backwards time travel is impossible.

In Gödel's case, the contradiction is 'P and not P' where P says that a certain thing happens to the younger self of the time traveller: something that the older time traveller knows did not happen to his younger self (hence the 'not P' conjunct)—and yet goes ahead and makes happen (hence the 'P' conjunct). For example, P might be: the younger man is given a gold watch—or pinched on the arm—by an older man who looks a lot like him.

P might also be something more extreme: the younger man is murdered by the older man. Thus, Horwich 1987:

Many opponents of time travel would base their position on a well-known variant of Gödel's argument. They suppose that if time travel were possible, then people would be able to return to the past and murder their infant selves. But this form of suicide is impossible (for only those who fail will ever be in a position even to make the attempt). So it follows that time travel is impossible. (117)

Alternatively, the time traveller might generate a contradiction by doing something (that did not occur) not to her younger self but to an ancestor—for example, her grandfather:

Another set of objections consists in attempting to show that the logical possibility of time travel unavoidably generates contradictions. One much-used example is this: if you could time-travel, there would be nothing to stop you going back in time and killing

your paternal grandfather before your father was conceived. But, of course, if your grandfather had died before your father was conceived, your father wouldn't have existed, and neither would you, so you wouldn't be there to kill your grandfather. (Macbeath 1982, 411)

—or her great-grandfather (Stein 1970, 591, n.2) or mother (Dwyer 1975, 348).

This argument against time travel goes by many names. In reference to the second variant above, the terms 'autofanticide' (Horwich 1987), 'auto-infanticide' (Vihvelin 1996, Smith 1997), and 'retrosuicide' (Vranas 2009) have been used. In reference to the third variant, the term 'grandfather paradox' has been used (Deutsch and Lockwood 1994, Smith 1997, Smith 2017, Smith 2024). Riggs 1997 calls it the 'principal paradox' of time travel. I shall henceforth refer to it as the CTP argument or CTP reductio. The initials stand for 'Changing The Past'. The idea behind the name is that the idea behind the argument is that time travel leads inevitably to time travellers changing the past (doing things that did not in fact occur)—and this involves contradictions (the thing that the time traveller does both did and did not occur).

Note that the CTP argument does not turn on issues of *free will* or the *abilities* of the time traveller. To emphasise this point, Earman 1972 presents a version that does not involve human time travellers at all:

The paradoxes involving closed timelike curves are often stated in terms of agency, e.g., we are invited to consider what would happen if an observer could travel into his own past and shoot himself-at-an-earlier-time. But it is clear that the paradoxes do not hinge on human agency. Thus, consider a rocket ship which at some space-time point x can fire a probe which will travel into the past lobe of the null cone at x . Suppose that the rocket is programmed to fire the probe unless a safety switch is on and that the safety switch is turned on if and only if the 'return' of the probe is detected by a sensing device with which the rocket is equipped. Is the probe fired? We find that the answer is that it is fired if and only if it is not fired, which is a contradiction if standard logic holds. (231–32)

The second argument, by contrast, does turn on issues of free will or the abilities of the time traveller. This argument goes back at least as far as Lewis 1971:

To take a traditional example, called the *Grandfather Paradox*: Oscar has taken a dislike to his long-dead grandfather. He decides to enter his time machine, go back to the time of his grandfather's childhood, and kill his grandfather as a young boy. He goes back. Here's Oscar in the empty house across the street; here's Grandfather happily playing in the sandbox; Oscar's rifle is loaded and aimed; Oscar is an excellent shot and the distance is short; there's nothing and no one to stop Oscar from shooting; Oscar's heart is filled with hate—and (1) *Oscar cannot kill his grandfather*. For if he did, there'd be no Oscar's father, and no time traveling Oscar to come back and kill his grandfather. But (2) *Oscar can kill his grandfather*. For what's to stop him? He has all he needs: a good rifle, a good view of his target, determination to shoot, a strong and steady trigger finger, no one else around to stop him shooting. *Contradiction*. (39–40)

Note the difference from the CTP argument. In the CTP argument, a contradiction ensues only if and when the time traveller does something that did not happen (but the thought is that time travellers would do such things—so time travel does lead to contradictions and hence is impossible). In Lewis's argument, by contrast, there is a contradiction even if the time traveller does nothing that did not occur. The contradictory claims here do not concern what the time traveller effects or the objects of his actions (for example: the younger self is given a gold watch, and not given a gold watch). They concern the time traveller himself—his abilities: the time traveller both *can* make it the case that (say) his grandfather was murdered and *cannot* make it the case that his grandfather was murdered. Let the contradiction in the CTP argument be 'P and not P'. P describes something that did not in fact happen (e.g. the time traveller's younger self was pinched on the arm) but which the time traveller then proceeds to make happen (thus making a contradiction true). In the new argument, the contradiction is 'the time traveller can make it the case that P and the time traveller cannot make it the case that P', and

this contradiction is true *even if* the time traveller does *not* proceed to make it the case that P.

This second argument has also been referred to as the ‘grandfather paradox’: see for example the quote from Lewis above, Sider 1997 and Smith 2024. It has also been referred to by other names, for example the ‘can and cannot’ problem (Smith 2017, Smith 2024). Following the latter usage, I shall henceforth refer to it as the CCN argument—where the initials stand for ‘Can CanNot’.

2. Lewis’s Solution(s)

So the term ‘grandfather paradox’ has two different meanings: it can denote the CTP argument or the CCN argument. Likewise, the term ‘Lewis’s solution to the grandfather paradox’ has two different meanings.

The first meaning is straightforward. Lewis 1976 explicitly presents a solution to the CCN problem:

We have this seeming contradiction: “*Tim doesn’t, but can, because he has what it takes*” versus “*Tim doesn’t, and can’t, because it’s logically impossible to change the past.*” I reply that there is no contradiction. Both conclusions are true, and for the reasons given. They are compatible because “can” is equivocal. To say that something can happen means that its happening is compossible with certain facts. *Which* facts? That is determined, but sometimes not determined well enough, by context....He can and he can’t, but under different delineations of the relevant facts. You can reasonably choose the narrower delineation, and say that he can; or the wider delineation, and say that he can’t. But choose. What you mustn’t do is waver, say in the same breath that he both can and can’t, and then claim that this contradiction proves that time travel is impossible. (150–51)

This solution has been widely accepted (although not universally—see, for example, Vranas 2009) and has been referred to as Lewis’s solution to the grandfather paradox, for example, by Sider (1997, 143).

The second meaning is more vexed because while there is indeed a solution to the CTP argument that turns on words written by Lewis, Lewis was not—or so I shall argue—presenting this solution when he wrote those words. Indeed, he was not talking about the CTP argument at all—he was talking about the CCN argument—and he was not presenting a *solution* to that problem when he wrote those words: he was presenting and motivating the *problem* itself.

Here is what Lewis 1976 wrote:

You know, of course, roughly how the story of Tim must go on if it is to be consistent: he somehow fails. Since Tim didn't kill Grandfather in the "original" 1921, consistency demands that neither does he kill Grandfather in the "new" 1921. Why not? For some commonplace reason. Perhaps some noise distracts him at the last moment, perhaps he misses despite all his target practice, perhaps his nerve fails, perhaps he even feels a pang of unaccustomed mercy. (150)

Note in particular the passage "Why not? For some commonplace reason." This can indeed be read as a solution to the CTP reductio—but presenting that solution to that problem is not what Lewis was doing in his paper. Let me address these points in turn.

First, the CTP reductio turns on a tight link between time travel and contradictions: if time travel were to occur, contradictions would be made true. If this link is severed, the reductio is blocked. One way of severing it is to suppose that time travellers are accompanied by chaperones or time lords who prevent them from changing the past. Another way is to posit 'forces of logic' that—like physical force fields—prevent time travellers from doing things that did not happen. But both of these devices seem extremely far-fetched, and in any case, still allow the reductio to block all cases of time travel that do *not* involve such chaperones or forces. Lewis's words describe a better way of blocking the reductio: what stops time travellers changing the past are not exotic things such as time lords or logic forces, but everyday, commonplace occurrences. Contra the CTP reductio, it is *not* the case (the thought goes) that if backwards time travel were to occur then contradictions would be made true: commonplace occurrences would prevent time travellers from doing things that did not happen, and thus

prevent contradictions. Lewis has indeed been seen as proposing this solution to the CTP argument—for example, by the following authors:

In standard discussions of x-old's encounter with x-young (Lewis, Dwyer, Thom) x-old must fail (for example) to kill x-young, but there need be no particular reason for his failure. Something distracts him, he loses interest, the trigger is somehow not pulled. Which accident fends the contradiction off matters not at all. (Nerlich 1981, 237)¹

David Lewis presented an ingenious argument which is considered by many philosophers as providing the solution to the Principal Paradox. Lewis imagines a time traveller, named Tim, who attempts to shoot (and thereby kill) his grandfather at a time prior to the biological conception of Tim's own father. Tim wants very much to kill his grandfather but somehow he fails the attempt. Although Lewis's argument has great merit, it also has serious shortcomings! (Riggs 1997, 50–51)

David Lewis (1976) showed that the auto-infanticide objection cannot establish the *impossibility* of backward time travel....Some science fiction writers respond to the auto-infanticide objection by saying that backward time travel *is* possible, as long as time travellers are accompanied by chaperones who prevent them from changing the past. Such chaperones are *ad hoc* and unappealing additions to time travel scenarios, however—and also unnecessary. David Lewis argues that no strange devices are required to stop the time traveller killing his younger self; rather, the time traveller fails for some commonplace reason. 'Perhaps some noise distracts him at the last moment, perhaps he misses despite all his target practice, perhaps his nerve fails, perhaps he even feels a pang of unaccustomed mercy' (Lewis 1976, 150). Perhaps his gun jams; perhaps he slips on a banana peel; perhaps he has a cardiac arrest.

¹ Note that Nerlich attributes this solution to the CTP argument *jointly* to Lewis 1976, Dwyer 1978 and Thom 1975. In this connection note also Dwyer 1975 349: "There may be countless reasons why the assassination attempt fails but these reasons have nothing to do with guns not behaving as normal physical objects or with voluntary action not applying in the usual way."

Nothing more than such ordinary occurrences is required to stop the time traveller killing his younger self. Hence backward time travel does not imply the truth of contradictions, even in the absence of chaperones. Hence backward time travel is *not* impossible. (Smith 1997, 364–66)

What “logic-bouncers” prevent time travelers from changing the past? What velvet rope of consistency bars them from doing what they seem perfectly able to do? Many have accepted David Lewis's (1976) deflationary answer: nothing stops time travelers from committing paradoxical deeds (from, say, killing their grandfathers). Or as Sider (2002, 116) puts it, *no one thing stops them*: they fall victim to circumstance; they fail for “ordinary reasons”. (Slater 2005, 363)

In order to defend the possibility of time travel in the face of this argument, we need to show that time travel is not a sure route to doing the impossible. So, given that a time traveler has gone to the past and is facing Grandfather, what could stop him from killing Grandfather? Some science fiction authors resort to the idea of chaperones or time guardians who prevent time travelers from changing the past—or to mysterious forces of logic. But it is hard to take these ideas seriously—and more importantly, it is hard to make them work in detail when we remember that changing the past is impossible. Fortunately, there is a better response—also to be found in the science fiction literature, and introduced into the philosophical literature by Lewis (1976). What would stop the time traveler from doing the impossible? She would fail “for some commonplace reason,” as Lewis (1976, p. 150) puts it. Her gun might jam, a noise might distract her, she might slip on a banana peel, and so on. Nothing more than such ordinary occurrences is required to stop the time traveler from killing Grandfather. Hence, backwards time travel does not entail the occurrence of impossible events—and so the above objection is defused. (Smith 2017, 154–55)

Second, however, Lewis does not discuss the CTP argument at all in his 1976 paper. Rather, he presents the CCN argument. This argument centres on two contradictory claims: Tim can kill Grandfather; and Tim cannot kill

Grandfather. In order for the argument to have force, *both* claims must be plausible. Lewis's remarks about commonplace occurrences occur in the context of motivating the first claim: Tim can kill Grandfather. Note that if what stopped Tim were forces of logic, or chaperones, we might well be inclined to deny that, nevertheless, Tim *can* kill Grandfather. However, if what stops Tim is simply a commonplace mishap, then this claim still seems highly plausible. This point is more clear and explicit in Lewis 1971 (the posthumously published longer work from which Lewis 1976 was drawn):²

(2) *Oscar can kill his grandfather....*the reasons for (2) are also convincing! What's to stop Oscar? If Oscar were not a time traveler, there would be no case at all for saying he could not do the killing. If, a block down the road, another sniper is aiming at another child, and the situation is a perfect duplicate of the first except that in that situation the sniper is not a time traveler descended from the child (but imagine that he has been deceived into thinking that he is, so that his mental state is exactly like Oscar's) then we'd certainly think that the other sniper could kill the child he's aiming at. We'd have as much reason to say that as we *ever* have to say that anyone can do anything. And what relevant difference is there between the abilities of that other sniper and the abilities of Oscar? We could, of course, imagine that Oscar is attended by guardian spirits (or Forces) that somehow prevent him from doing anything wrong: if he started to pull the trigger he would find his finger paralyzed, or the bullet would be deflected, or he would undergo a mysterious change of heart. Then Oscar would indeed not be like the other sniper, and would not possess the abilities he seems to possess; and (2) would be straightforwardly false. (40)

² A footnote at the end of Lewis 1976 describes it thus: "The present paper summarizes a series of lectures of the same title, given as the Gavin David Young Lectures in Philosophy at the University of Adelaide in July, 1971." Lewis 1971 is described as follows by Janssen-Lauret and MacBride 2023 x: "The first manuscript consists of his Gavin David Young Lectures, entitled *The Paradoxes of Time Travel*. The lectures were delivered in July 1971 at the University of Adelaide."

Thus, Lewis's 'commonplace occurrences' remarks are not presented by him as a solution to the CTP argument. First, he was not discussing the CTP argument at all: he was discussing the CCN argument. Second, the remarks are not part of his solution: they occur in the context of motivating (not solving) the CCN argument by arguing for one of its two contradictory conjuncts.

The time travel literature is full of stories about objects or information 'coming from nowhere'—for example:

Suppose I steal a time machine from my local museum and use it to travel back in time. When I arrive at my destination, I donate the machine to the local museum—so it turns out that the machine I stole was in the museum only because I put it there. Where does the machine come from? Or consider the Borges story about the time traveller who takes back copies of works by a famous artist to discuss with the artist himself. The time traveller finds on his arrival a hopeless artist, who proceeds to become famous by copying the paintings given to him by the time traveller. Which paintings are copies, which originals? Where do the ideas for the paintings come from? (Smith 1997, 371, n.11)

Ironically, it seems that 'Lewis's solution to the grandfather paradox'—in the sense of the 'commonplace occurrences' solution to the CTP reductio—is another example of an idea that came from nowhere. Those who attribute this solution to Lewis see it in his words—they did not make it up themselves—and yet it is clear from the preceding discussion that it is not what Lewis himself had in mind when he wrote those words: he was talking about the CCN argument (and motivating, not solving, it).

3. A Better Solution to the CTP Argument

My point has not been that the commonplace occurrences solution to the CTP argument is a *chimera*. It is indeed a genuine solution to the problem. My point is rather that its *origins* are unusual in that it was not presented as such by the person to whom it is attributed—yet nor was it thought up by someone else.

In this section I turn from the question of the origins of this solution to the question of its merits. It has achieved the status of the ‘gold standard’ or ‘received’ solution to the CTP argument. In this section I’ll argue that there is however a much better solution to that problem.

One problem with the commonplace occurrences solution to the CTP argument (henceforth the COS) is that it engenders a new argument against backwards time travel: one according to which backwards time travel is not *impossible* but extremely *improbable* (see Horwich 1987). This is not a knock down objection to the COS, because—as I argue in Smith 1997—Horwich’s further problem is soluble.

There is however a deeper conceptual point to be made. The CTP reductio turns on the idea that backwards time travel leads to contradictions. A defence of the possibility of backwards time travel against this argument denies that if time travel were possible, contradictions would be engendered. At this point there is a natural tendency to ask any defender of time travel: *what stops* the time traveller doing something that did not happen (thereby making a contradiction true)? It seems, after all, to require so little. The time traveller need not do anything as terrible as murder anyone—or even find her younger self and shake her hand. She can do *anything* that did not happen: for example, step on a fallen leaf (that was not on that day bruised by any footstep). The COS takes this question seriously and offers an answer: commonplace occurrences! As Sider 2002 puts it:

We have admitted the possibility of time travel, though not the possibility of autoinfanticide. But these possible time travelers who do not kill their earlier selves: some have the desire as well as the means. What stops them? No one thing. Some have a sudden change of heart. Some fear awful forces they think would be unleashed by a violation of the laws of logic. Some attempt the deed but fail for various reasons: non-lethal wounds, slips on banana peels, and the like. (116)

Returning to my example of the fallen leaf: the time traveller slips when she tries to step on it; or a bird flies by and shrieks, distracting her; or a gust of wind moves the leaf out of her way; and so on. But for someone who took the original question seriously, this answer is liable to seem unsatisfying. Hence Horwich’s objection, and related objections about the *inexplicability*—as

opposed to the *impossibility* (CTP reductio) or *improbability* (Horwich's argument)—of time travel scenarios (see Smith 2017 and Smith 2024).

A better response is to point out that the question itself is mistaken.³ The question should not be answered at all: it should be dissolved—rather than solved—by pointing out that it rests on a confusion. The question ‘What stops X occurring?’ is sensible only when ‘X’ is a coherent description of a scenario. Contrast the case where you ask me why I did not *put my shoes in the cupboard and not on the floor*, with the case where you ask me why I did not *put my shoes in the cupboard and not in the cupboard*. In the former case, you give a coherent description of a possible scenario, and so it makes sense for me to say what stopped me from actualising this scenario: for example, I was too tired to be bothered putting my shoes away properly, so I just left them on the floor. In the latter case, there just *is no* coherent description of a possible scenario in play: *no* scenario can be correctly described as one in which my shoes are in the cupboard and not in the cupboard. So I should not proceed to answer the question: I was too tired; I slipped on a banana peel; I got distracted. I should point out to *you* that your question does not make sense. You are asking me why I did not actualise a scenario, your very description of which is incoherent. There *is no* possible scenario corresponding to your description, and so the question why I did not actualise ‘it’ is a mistaken one: rather than answer it, the clearest thing to do is to point out the confusion behind the question.

Exactly the same can and should be said about the question: what stops the time traveller crushing the leaf that was not in fact crushed (or changing the past in any other way)? The *description* of the scenario involves a contradiction: the leaf is uncrushed and also crushed by the time traveller (at the very same time, in the very same place). Thus *no* possible scenario satisfies the description. Hence, there is no legitimate question why such a scenario is not actualised: there is no there there to actualise. *Whatever* might happen will not be ‘that’ and hence there is no sensible question as to what *stops* ‘that’ from occurring. Not only do we not need an *exotic* explanation—time lords or logic forces—we do not need *any* explanation. The question as to what stops the time traveller actualising ‘that’ scenario is no better than the question of why he does not put his shoes in the

³ Here I sketch this response; for a complete presentation, see Smith 2017.

cupboard and not in the cupboard. We should not answer it at all: not by appealing to chaperones or forces of logic, or commonplace occurrences. We should reject the question and say to the questioner: before you ask me why X does not occur, make sure that your description ‘X’ is coherent. For if your description involves an internal contradiction, it describes *no* scenario at all; and if no possible scenario satisfies your incoherent description, then there just *is no* ‘that’ to ask about—and hence no question what stops ‘that’ occurring.

4. Conclusion

It is widely held that the gold standard solution to the CTP argument against backwards time travel is ‘Lewis’s solution.’ I have argued that this solution to this problem should not be regarded as having been presented by Lewis 1976 in his remarks about ‘some commonplace reason,’ because when he made those remarks, he was not in the business of solving the CTP argument—he was setting up (not solving) a different argument against backwards time travel; and should not be regarded as the gold standard, because a better solution is available.

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