

Grandfathers, Branching Time and Free Will

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A. Is time travel possible?

I think so:

- We can certainly imagine what time travel would be like.
 - (Though, not everything we can imagine is possible.)
- Current physical theories are compatible with the possibility of time travel.
 - (Though not everything compatible with current physical theories is possible.)

Others disagree: Some people believe that there are *philosophical* reasons to believe time travel is *not* possible.

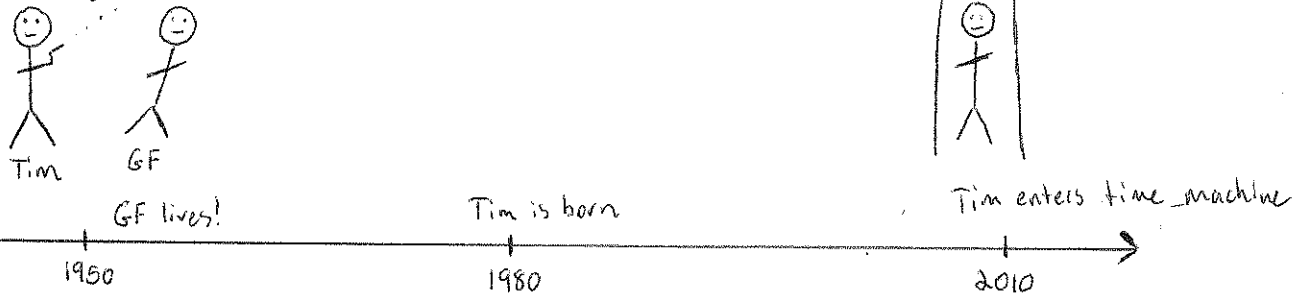
Grandfather Argument against the Possibility of Time Travel:

- (P1) If time travel is possible, then Tim can kill his grandfather in 1950.
- (P2) If time travel is possible, then Tim cannot kill his grandfather in 1950.
- (C1) So, if time travel is possible, then Tim both can and cannot kill his grandfather in 1950.
- (P3) But, it is not the case that Tim both can and cannot kill his grandfather in 1950.
- (C2) So, time travel is not possible.

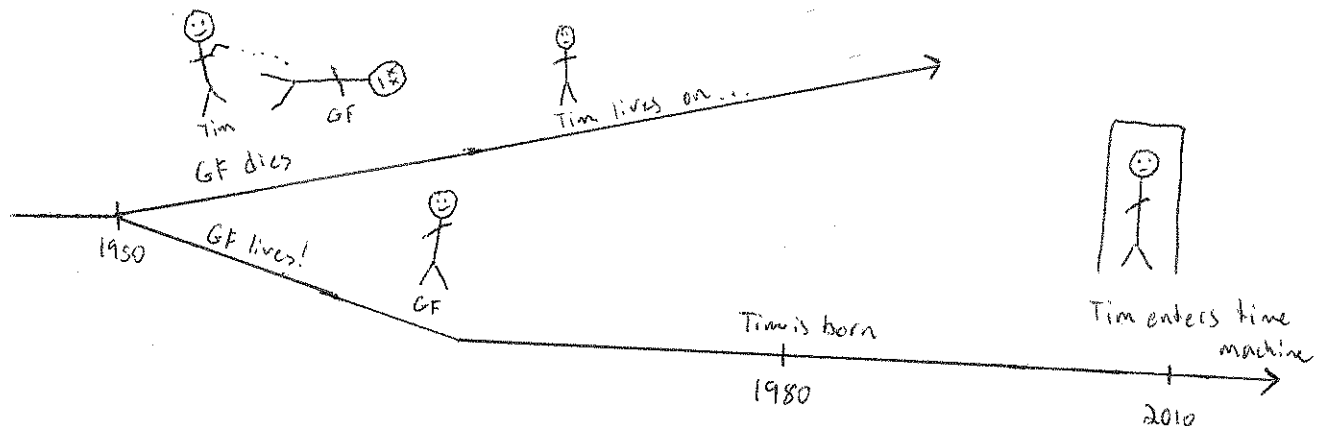
Since I think time travel is possible, I must disagree with this argument. But, where does it go wrong? Which premise is mistaken?

B. Brief Interlude: Two Views of Time

Non-Branching Time: Necessarily, there is a single non-branching time line and time-indexed facts are always true.



Branching Time: Necessarily, there are multiple time lines branching off of one another and time-indexed facts are different between branches.



C. Responses to the Argument:

I think that (P1) is true and (P2) is mistaken.

View 1:

- (i) Time is non-branching.
- (ii) A person can do whatever's consistent with his/her raw physical abilities and consistent with the circumstances he/she happens to be in.

Tim can kill his grandfather because he has the raw physical ability to pull the trigger while pointing the gun at his grandfather and the circumstance he is in is one where he is in fact pointing the gun at his grandfather.

Problem: People can sometimes do the impossible. That may be poetic, but it seems false.

View 2:

- (i) Time is branching.
- (ii) A person can do whatever he does do on one of the future branches of time.

Tim can kill his grandfather because there is a branch of time on which he does kill his grandfather. That doesn't lead to paradox, though, because Tim was born on a different temporal branch (one where his Grandfather is not killed).

Problem: Some people think that traveling to a different "temporal" branch isn't really time travel. You're not traveling back to your own past; you're traveling back to some other past.

D. Time Travel and Free Will

Suppose Tim decides to let his grandfather live. We tend to think that Tim acted freely when he refrained from killing his grandfather. But, we also tend to think that someone acts freely only when he/she has options available. Does Tim really have options available? Again, this might depend on your view of time travel.

According to View 1: Time is non-branching. Tim has options in a weak sense. Tim can kill his grandfather (it's consistent with his abilities and circumstances) and he can refrain from killing his grandfather (that's also consistent with his abilities and circumstances). But, in a stronger sense, Tim doesn't have options. Even though Tim can kill his grandfather, doing so is impossible. Tim can kill his grandfather, but (in a strong sense) that option just isn't available to him.

According to View 2: Time is branching. Moreover, Tim has options in a strong sense. Not only is it true that Tim can kill his grandfather and Tim can refrain from killing his grandfather, but both of these things are genuinely possible.

Questions: Does free will really require options? If so, does it require weak options or strong options?