

Time Travel

Is time travel possible? Maybe. But, there are several paradoxes associated with it:

1. Being in Two Places at Once: Imagine that you could time travel into the past. Maybe you travel back to the year when you were ten. Perhaps you even shake hands with yourself. But, then, there appear to be TWO distinct people shaking hands. Yet, we want to say that you are both numerically one and the same individual.

How can this be? Nothing can be in two places at once!

Reply: Surely you at least think that one PART of you can be in one place while another PART of you is somewhere else. For instance, my left hand is here, and my right hand is there. Well, this is essentially David Lewis's answer to the question above—only, in addition to believing (as we all do) that we have distinct SPATIAL parts, he adds that we ALSO have distinct TEMPORAL parts. So, when you time travel back to when you were ten, and see yourself across the room, you're not wholly in two places at once. Rather, the ten-year-old temporal PART of you ("time-slice" of you) is on one side of the room, while the adult temporal PART of you is on the other side of the room. (*In short, Lewis endorses 4-Dimensionalism, a view we will examine in detail later.*)

2. Both Later Than and Earlier Than: Imagine that you are born in 2000, live for forty years, and then step into a time machine in the year 2040. You pop out in the year 1000, and live to the age of 80, when you die in the year 1040.

It seems that your childhood occurred both earlier than AND later than your elderly years. How do we make sense of this? Well, there are really two senses of time here:

- **Personal Time:** The subjective, personal timeline that one experiences.
- **External Time:** The objective, external timeline, ordered by earlier and later times.

Your 10th birthday was earlier than your 70th birthday according to your PERSONAL time, but it was LATER than your 70th birthday according to OBJECTIVE time.

Of course, this may cause problems for personal identity, since it would mean that persons can have "gappy" existences. For instance, in the example above, the second half of your life occurs from 1000-1040, while the first half of your life occurs from 2000-2040. But, what connects these two life-segments together? What "binds" them together so that they are unified as one and the same person?

To see why this might be a problem, contrast with this story:

Counterfeit Time Traveler: You are born in 2000 and you die in 2040. As it turns out, long ago, in the year 1000, a demon had brought someone into existence—someone who had the appearance of being 40 years old. In fact, the person that the demon creates looks EXACTLY LIKE YOU DO in 2040 at the moment of your death. This person even has all of your memories from the moment of your death. Back in the year 1000, they were deemed a lunatic, always running around screaming about things called “iphones” and “cars” and whatever. They died in 1040, having the appearance of an 80-year-old.

Is the person in the year 1000 a time traveler? Does it make sense to say that YOU have time traveled into the past? Lewis claims that it does not. But, then, how is this any different from a case of GENUINE time traveling?

(Note that Lewis believes that the answer has to do with a difference in how the various time slices stand in relation to one another CAUSALLY. We'll discuss cases like this one in much more detail later in the semester when we study personal identity.)

3. Causal Loops: Imagine this story:

Inventing the Time Machine: When you are 20 years old, someone visits you. ‘I am YOU from the future!’ they say. ‘When I was 20, an older version of myself visited me, and handed me the blueprints for a time machine. I spent the next 20 years building it. Moments ago, I decided to step into that machine and visit my 20-year-old self so that I could hand you the blueprints to that machine. And you must build it, so that in 20 years you can go back in time and do the same.’ You (the teenager) accept the blueprints, build the machine, and when you are 40 years old, you travel back in time to hand the blueprints to your younger self.

Now ask: Who invented the time machine? It does not seem that ANYONE invented it. No one sat around trying to figure out how to build it; no one designed the blueprints; etc. It is as if the blueprints just sort of appear out of thin air! There is just an endless causal “loop” of you receiving the blueprints at 20, and then traveling back in time at 40 to hand them to your 20-year-old self. But, WHERE DID THEY COME FROM?

Lewis thinks that, while strange, such loops are possible. There is simply NO EXPLANATION for the existence of the blueprints. They just... ARE. Most of us will find this counter-intuitive. For this seems to violate what is called the **Principle of Sufficient Reason**, which states that everything must have a cause or explanation for its existence. If that is right, then perhaps time travel (or at least causal loops) is not possible after all.

4. The Grandfather Paradox: Imagine this story:

Killing Grandpa: You have invented a time machine. You are traveling back in time when you realize that you are presently at a time when your grandfather was just a child. You've always hated your grandfather, and so you decide to kill him. You buy a rifle and corner him in his room at night. You aim the rifle at the sleeping child, and pull the trigger.

What happens? Does your grandfather die? Does the gun jam?

If you were to somehow manage to kill him, does this negate your own existence? What happens to you? Do you "poof" out of existence, into a cloud of smoke? But, then, if your existence is erased, then you never existed to kill your grandpa... In which case, your existence was NOT erased (since he then lived to go on to conceive your mother, or father, who in turn conceived you)! This is known as [The Grandfather Paradox](#) (or see Stephen Hawking's version [here](#).)

Lewis says that something must happen to prevent you from killing your grandpa.

The past is unchangeable. The past is FIXED. What's done is done. He believes that the only coherent picture of time travel is that, if your grandfather did not die in, e.g., 1960, then it will ALWAYS be the case that he did not die in 1960. If you someday end up visiting the ancient Egyptian pyramids as they were being built, then you were ALWAYS present during their construction.

Side Note: If it seems like you both could and could not kill your own grandpa on Lewis's view, he reminds us of the following two senses of could/can:

- (1) I can speak Finnish (in that, I have the ability to learn and speak it).
- (2) I cannot speak Finnish (in that I have not learned the language).

Similarly, you both can and cannot kill your own grandpa in these two senses:

- (1) You can kill your grandpa (in that, you have the required abilities to do so).
- (2) You cannot kill your grandpa (in that it is incompatible with what happened).

Lewis's discovery seems very odd. Consider: We can imagine sending back MILLIONS of time travelers to kill your grandpa. If Lewis is right (that the past cannot be changed), every single one of them is destined to fail. But, how can this be?

Branching Timelines: Lewis's view may seem counter-intuitive to some. For one, it seems to remove the possibility of free will (at least, if one time travels into the past). There's a sort of fatalism involved in time travel stories.

There are lots of movies and stories where someone goes back and changes something in the past, only to arrive back in the present and find that everything is different. On Lewis's view, this is a mistaken way of thinking about time travel.

But, what if the space-time manifold branches? That is, what if, at the beginning of the Grandpa story, you are on a branch where your grandpa LIVED (and where you did NOT ever appear in 1960); but, your traveling back and killing your grandpa (or SOONER, rather: Your very act of appearing in 1960) causes there to come into existence a "branch"; a NEW past where things are changed?



You time travel into the past (represented by the red line), and as soon as you arrive, you cause a parallel universe to begin to exist—one that BRANCHES or DIVERGES from the main timeline because of the difference you've introduced (you never appeared in the past on the black timeline, but you DO appear in the past on the BLUE timeline). Could time travel work like this?

Reply: Whether or not this is how "time travel" works, Lewis's assessment of this view is correct: First, this does NOT prove that you can change the past. For, it will ALWAYS be the case that your grandpa lived to a ripe old age on the black line, while it will also ALWAYS be the case that your grandpa was killed as a child on the blue line. Second, this is not time travel! It's more like parallel universe travel!