

24.118 – Paradox and Infinity

Problem Set 1: Time Travel

How this problem set will be graded:

- Assessment will be based on the *reasons* you give in support of your answers, rather than the answers themselves. (Keep in mind that even if it is unclear whether your answer is correct, it can be clear whether or not the reasons you have given in support of your answer are good ones. It is only the latter that will be taken into account.)
- *No answer may consist of more than 150 words.* Longer answers will not be given credit.

These two constraints are often in competition: it may sometimes seem to you that you can't argue for your answer properly in 150 words or less. Learning to deal with this problem is a skill you will acquire with practice. The ability to distill what is essential about a point in a few words requires clear thinking, and it is clear thinking I am after.

Problems:

1. What is the difference between traveling in time and traveling between different possible worlds?
2. Let *determinism* be the view that given full information about the world at a time, it is in principle possible to make a perfect prediction about how the world will be at any future time. Is time travel compatible with determinism?
3. Assume that for a person to enjoy *free will* in a given situation is for it to be logically possible that she do otherwise in that same situation. Is determinism compatible with free will?
4. Bruno travels back in time to kill his grandfather, to a time before his grandfather had any children. Will he succeed? (Assume no funny business: no rising up from the dead, no frozen sperm, no replicated DNA, etc.)
 - If you think the answer is 'yes' (given a reasonable way of spelling out the details), explain how paradox is averted.
 - If you think the answer is 'no' (given a reasonable way of spelling out the details), explain *why* Bruno does not succeed.
5. *Extra Credit:* Bruno travels back in time to kill his grandfather, to a time before his grandfather had any children. In fact, he does not succeed. (He loses his nerve at the last minute.) Is it nonetheless true that Bruno *might* have succeeded?

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