

# Time and Time Travel

Sara Bernstein  
MW 12:30-1:45, DeBartolo 336

Does time exist? If so, what is required for its existence? Is the present metaphysically privileged in some way, or is the present just like the past and the future? Are pastness, presentness, and futurity objective properties of reality or mere human projections? Is time like space? Does time actually “pass”? Does time have an intrinsic direction? Does the direction of causation match the direction of time? What does time have to be like in order for time travel to be possible? Is it possible to go back in time and kill a version of your past self? Is it possible to build an entire house in the present composed of a single brick from the future? What must a time machine be like in order to function correctly? This course will explore these and other issues relating to time and time travel through metaphysics and science fiction.

Assessment:

- 30% class participation\*
- 30% paper, due October 24
- 40% cumulative final exam

There will be a few extra credit opportunities.

## Schedule

August 24: **Beginner's Guide to Time Travel**

August 29: **Analogies between Space and Time**

- “Spatial and Temporal Analogies and the Concept of Identity”, Richard Taylor
- “26 April 1905” and “14 May 1905” in *Einstein's Dreams*

August 31: **Introduction to Theories of Time**

- “Presentism, Eternalism, and Growing Block”, Kristie Miller

September 5: **Eternalism**

- *Four Dimensionalism* (excerpt), Ted Sider
- *Slaughterhouse Five* (excerpt), Kurt Vonnegut
- “22 June 1905” in *Einstein's Dreams*

September 7: **Presentism**

- “The Privileged Present” (sections 1-3), Dean Zimmerman

September 12: **Growing Block**

- “Goodbye Growing Block”, Trenton Merricks
- “10 May 1905” in *Einstein's Dreams*

Recommended but optional movie: *The Langoliers* (1995)

September 14: (Guest Lecturer: Professor Daniel Nolan): **Endurantism/ Perdurantism**

- Reading TBA

September 19: **The Rate of Time's Passage**

- "How Fast Does Time Pass?", Ned Markosian
- "16 April 1905" in *Einstein's Dreams*

Recommended but optional movie: *Interstellar* (2014)

September 21: **Introduction to Time Travel**

- "The Paradoxes of Time Travel", David Lewis
- "24 April 1905", *Einstein's Dreams*

Recommended but optional movie: *Back to the Future* (1985)

September 26: **Models of Time Travel**

- "Time Travel and the Movable Present", Sara Bernstein
- Optional: "Changing the Past", Peter van Inwagen

Recommended but optional TV: *Doctor Who and the Invasion of Dinosaurs* (1974)

September 28: **Time Travel and Causal Loops**

- *Travels in Four Dimensions* (excerpt), Robin LePoidevin
- Short story: "A Little Something for Us Tempunauts", Philip K. Dick

Recommended but optional movie: *Twelve Monkeys* (1996)

October 3: **Time Travel and Causal Loops, Continued**

- "No End in Sight", Richard Hanley
- Fiction excerpt: *Harry Potter and the Prisoner of Azkaban*, J.K. Rowling

Recommended but optional TV: *Doctor Who, Blink* (2007)

October 5: **Time Travel and Coincidence**

- "The Coincidences of Time Travel", Phil Dowe
- Short story: "Minority Report", Philip K. Dick

October 10: **Spacetime Wormholes and Closed Time-Like Curves**

- "Time Travel: Double Your Fun", Frank Arntzenius
- *From Eternity to Here* (excerpt), Sean Carroll

October 12: **Time Travel Devices and Methods**

- *Time Machines*, Paul Nahin, pp. 13-30

Recommended but optional movie: *The Time Machine* (1960)

October 24: **Time Travel and Objects** (Paper due)

- "A Mereological Challenge for Endurantism", Nikk Effingham

October 26: **Practical Problems of Time Travel**

- "Nowhere Man: Time Travel and Spatial Location", Sara Bernstein
- "29 May 1905," in *Einstein's Dreams*

October 31: **Eternal Recurrence**

- "14 April 1905" in *Einstein's Dreams*
- Short story: "Doubled and Redoubled", Malcolm Jameson

Optional but recommended movie: *Groundhog Day* (1993)

November 2: **Relativity**

- "The Argument Against the Ordinary View from Special Relativity" in *Metaphysics*, Alyssa Ney
- "20 June 1905" in *Einstein's Dreams*

November 7: **The Arrow of Time**

- "Time in Thermodynamics," (page 1-32), Jill North
- "3 May 1905", and "11 May 1905" in *Einstein's Dreams*

November 9: **Branching Time**

- "Travelling in Branching Time" (sections 1-2), Manolo Martinez
- "An Unwelcome Consequence of the Multiverse Thesis", Nikk Effingham

Recommended but optional movie: *Primer* (2004)

November 14: **Branching and Personal Identity**

- "Fission may Kill You (But Not for the Reasons You Think)", Heather Demarest

November 16: **Are Time Travelers Free?**

- "Time Travelers are not Free", Michael Rea
- "The Hundred Light-Year Diary", Greg Egan

November 21: **Ethics of Time Travel**

- "Ethical Puzzles of Time Travel", Sara Bernstein

Recommended but optional TV: *Misfits*, Season Three, Episode Four

November 28: **Temporal Experience**

- "A Puzzle About Temporal Experience", Carla Merino-Rajme

November 30: **Time Travel and Death**

- "Eternalism and Death's Badness", Ben Bradley

## December 5: **Time Travel and Death, Part II**

- "The Metaphysics of Mortals: Death, Immortality, and Personal Time", Cody Gilmore
- "Time Travelers Never Die", Jack McDevitt

## December 7: **Review.**

A few notes concerning...

### Plagiarism

Plagiarism is representing another person's work as one's own. Outside works must be clearly cited or placed in quotes. Any cheating will be handled according to the university's policy on academic dishonesty. Please see the Honor Code for more information.

### Extensions

Everyone is permitted one 24-hour paper extension. Extensions must be requested three days in advance.

### Extra Credit

There will be several extra credit assignments involving outside reading and movies related to the topics discussed in class.

Extra credit will be due at the midpoint of the course (to be announced), and at the end of the course. Up to five percentage points may be earned on the extra credit.

### \*Class Participation

Philosophical skill is best acquired by *doing philosophy* rather than passively learning about it. Active participation in class, which includes asking questions, coming up with cool and/ or silly examples, asking for clarification on confusing concepts, and/ or presenting an informed opinion about the reading, is central to learning to do philosophy. Talking once a week in class will be enough to do well in class participation.

### Syllabus Changes

It is possible that topics will be added, removed, or changed on the syllabus. If this happens, it will be announced in class and over email.

### Ways to Reach Sara, or her Indistinguishable Robot Clone

Email: sbernste@nd.edu

Office Hours: 202 Malloy Hall, Monday 11am-12pm, Wednesday 11am-12pm, or by appointment.