

## **Metaphysics of Time and Time Travel**

Professor: Sara Bernstein (sara.bernstein@duke.edu)

Special Guest: Peter Van Inwagen

Mondays 1:30-4pm West Duke 204

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? This seminar will explore these and other issues relating to time and time travel through advanced metaphysics and science fiction.

### **Course Requirements:**

For undergraduate students:

- weekly well-formed questions (30%)
- one 8-10 page term paper (40%)
- class participation (30%)

For graduate students:

- weekly well-formed questions (30%)
- one in-class presentation on a course reading (10%)
- one presentation on your own term paper and term paper (40%)
- class participation (20%)

### **Schedule**

Wednesday, January 11: Introduction to Metaphysics of Time and Time Travel

- Phil Dowe, “The Case for Time Travel”

Monday, January 16: No class (MLK Day)

January 23: The A and B Theories of Time

- J.M.E. McTaggart, "The Unreality of Time"
- J.J.C. Smart, "The Tenseless Theory of Time"

January 30: Presentism

- Dean Zimmerman, "The Privileged Present"
- Ted Sider, "Presentism and Relativity" from *Four Dimensionalism*

February 6: Eternalism and Moving Spotlight

- A.N. Prior, "Thank Goodness That's Over"
- D.H. Mellor, "Time and Space" (from *Real Time II*)
- Fiction Excerpt: Kurt Vonnegut, *Slaughterhouse Five*

February 13: Growing Block and the Open Future

- Trenton Merricks, "Goodbye Growing Block"
- Elizabeth Barnes and Ross Cameron, "The Open Future: Bivalence, Determinism, and Ontology"
- Short Story: Geoffrey Landis, "Ripples in the Dirac Sea"

February 20: The Directions of Time and Causation

- David Lewis, "Counterfactual Dependence and Time's Arrow"
- Huw Price, "The Flow of Time"

Optional: Jonathan Bennett, "Counterfactuals and Temporal Direction"

February 27: Relativism and Spacetime

- Dean Zimmerman, "Presentism and the Spacetime Manifold" (pp. 1-62)
- Brad Skow, "Relativity and the Moving Spotlight"

March 5: No class (Spring Break)

March 12: Time and Persistence

- Nikk Effingham, "A Mereological Challenge to Endurantism"
- Steven Hales and Tim Johnson, "Endurantism, Perdurantism, and Special Relativity"

#### March 19: The Passage of Time (Special Visitor: Ned Markosian)

- Ned Markosian, "How Fast does Time Pass?"
- Peter van Inwagen, "Hudson, Markosian, Wasserman, and Whitcomb on the Rate at which Time Passes: A Reply"

#### March 26: Time Travel: Within Different Theories of Time

- Simon Keller and Michael Nelson, "Presentists Should Believe in Time Travel"
- Ted Sider, "Traveling in A and B Time"
- Short story: Greg Egan, "The Hundred Light-Year Diary"

#### April 2: Time Travel: Paradoxes

- David Lewis, "Paradoxes of Time Travel"
- Peter van Inwagen, "Changing the Past"
- Short Story: Bill Pronzini, "On the Nature of Time"

#### April 9: Time Travel: Possibility

- Kadri Vihvelin, "What Time Travelers Cannot Do"
- John Carroll, "Context, Conditionals, Fatalism, Time Travel, and Freedom"
- Optional Movie: *Primer*

#### April 16: Time Travel: Causal Loops

- R. Hanley, "No End in Sight"
- Brad Monton, "Time Travel Without Causal Loops"
- Short Story: Philip K. Dick, "A Little Something For Us Tempunauts"

#### April 23: Review, Student Presentations