Philosophy of Space and Time

Chris Smeenk Dodd 325, M 3-6
· smeenk@humnet.ucla.edu, OH: Wednesday 1-3

Evaluation: Participation, short responses, and research paper due at the end of the quarter. Brief description of the paper topic and / or outline, along with a bibliography, by November 30. Short responses: brief comments on reading assignments, due weekly at 5:00 p.m. on Wednesday before class (full credit for posting five responses over the course of the quarter).

Course Website & Readings: The course website is at `http://sakai.ucla.edu`; assigned readings, supplementary readings, updated schedules, etc. will be posted there. Readings will also be available in the copy room. Although I didn't place any orders at the bookstore, you should probably buy a copy of Earman's *World Enough and Spacetime*.

Topics

- Introduction: Space, Time and Motion in Classical Mechanics
  - Earman, *World Enough and Spacetime*, Chapters 2-3 (selections)
  - Belot, "Geometry and Motion," *BJPS* **51** (2000): 561-595 .
- The Classical Absolute-Relational Debate
  - Newton: *Principia*, Scholium to the Definitions, and *De Gravitatione* (selections)
  - Leibniz: *Specimen Dynamicum*, selections from correspondence with Huygens, Clarke
  - Rynasciewicz, "By Their Properties, Causes and Effects: Newton's Scholium on Time, Space, Place and Motion," *Studies in History and Philosophy of Science* **26** (1995): "Part I: The Text," 133-153. "Part II: The Context," 295-321.
  - Stein, "Newtonian Spacetime," reprinted in *The* Annus Mirabilis *of Sir Isaac Newton*, ed. by Palter, pp. 258-84.
  - Earman, *WEST*, Chapters 1, 6.
- Relationalism Rehabilitated
  - Belot, "Rehabilitating Relationalism," *International Studies in Philosophy of Science* **13**: 35-52.
  - Pooley and Brown, "Relationalism Rehabilitated I: Classical Mechanics" *BJPS* **53**: 183-204.
  - Huggett, "Regularity Account of Relational Spacetime" *Mind* **115**: 41-73.
  - Mark Wilson, "There's a Hole and a Bucket, Dear Leibniz," *Midwest Studies in Philosophy* **18**: 202-241.
- Incongruent Counterparts
  - Kant, "Concerning the Ultimate Origins..."
  - Pooley, "Handedness, parity violation, and the reality of space" in *Symmetries in Physics: Philosophical Reflections* (2003).

  - Huggett, "Mirror symmetry: what is it for a relational space to be orientable?" in *Symmetries in Physics: Philosophical Reflections* (2003).
  - Nerlich, *The Shape of Space* (1994), selections.

- Relativistic Spacetime
  - Malament, "Classical General Relativity," in *Handbook for the Philosophy of Physics,* edited by Earman and Butterfield.
  - Geroch, *General Relativity from A to B* (selections).
  - di Salle, *Understanding Space-Time*, Chapter 4.

- Hole Argument and Background Independence
  - Earman and Norton, "What price spacetime substantivalism? The hole story," *BJPS* **38** (1987): 515-525.
  - Butterfield, "The Hole Truth," *BJPS* **40** (1989): 1-28.
  - Maudlin, "Substances and Spacetime: What Aristotle would have said to Einstein," *Philosophy of Science* **21** (1990): 531-561.
  - Recent debates on background independence

- Reconsidering the Absolute - Relational Debate
  - Rynasiewicz, "Absolute Versus Relational Space-Time: An Outmoded Debate?," *Journal of Philosophy* **93** (1996): 279-306.
  - Hoefer, "Absolute Versus Relational Spacetime: For Better Or Worse, the Debate Goes on,"*BJPS* **49** (1998): 451-467.

- "Constructive" / neoLorentzian Approach to Special Relativity
  - Harvey Brown, *Physical Relativity: Space-time Structure from a Dynamical Perspective* (selections).

- Conventionality of Simultaneity and Geometry
  - Reichenbach, *Philosophy of Space and Time* (selections).
  - Malament, "Causal Theories of Time and the Conventionality of Simultaniety," *Noûs* **11** (1977): 293-300.
  - Janis, "Conventionality of Simultaneity," Stanford Encyclopedia.
  - Nerlich, *The Shape of Space* (1994), selections.

- Other Possible topics
  - Singularities and causal structure in general relativity
  - Time's arrow
  - Relativistic Cosmology