

Space - Time - Matter, Enlightenment Style

1. Introduction: Kant's *Metaphysical Foundations of Natural Science* and Its Context (Week 1)

- *Topics:*

- (a) Context, Structure, and Purpose of Kant's work
- (b) Contemporary debates regarding foundations of Newtonian science, matter theory
- (c) What is a science? What is the proper taxonomy of sciences?

- *Readings:*

- (a) Friedman's Introduction to the Cambridge edition of Kant's *Metaphysical Foundations*
- (b) "Metaphysics and Exact Science in the Evolution of Kant's Thought" from Michael Friedman's *Kant and the Exact Sciences*
- (c) Friedman's "Matter and Motion in the *Metaphysical Foundations* and the First *Critique*" in Watkins, ed. *Kant and the Sciences*

2. Phoronomy and Phenomenology Sections of Kant's *Metaphysical Foundations* (Weeks 2-3)

- *Topics:*

- (a) Review of earlier debates regarding relativity of motion, space and time
- (b) Kant's position on space and time in the transcendental aesthetic and earlier works
- (c) What is Phoronomy?: Construction of motion as a quantity; continuity

- *Primary Readings:*

- (a) Newton: *Scholium* on space and time (*Principia*), selections from *De Gravitatione*
- (b) Leibniz: On Copernicanism and the Relativity of Motion, *Specimen Dynamicum*, *De Ipsa Natura* (§13), *A New System of Nature* and Note on Foucher's objection, selections from correspondence with Huygens, Clarke
- (c) Kant: "Concerning the Ultimate Foundation..." (1768), Transcendental Aesthetic, Phenomenology and Phoronomy Sections of the *Metaphysical Foundations*

- *Background Readings:*

- (a) Michael Friedman *Kant's Construction of Nature*, Chapter 1.
- (b) Earman's "Kant, Incongruous Counterparts, and the Nature of Space and Space-Time."

3. Dynamics Section of the *Metaphysical Foundations* (Weeks 4-6)

- *Topics:*

- (a) Metaphysical-Dynamical view of matter versus Mathematical-Mechanical view of matter
- (b) Matter as continuous (later Kant) versus matter as an aggregate of point-masses (Boscovich; early Kant)
- (c) Continuity and Impenetrability
- *Primary Readings:*
 - (a) Kant's *Physical Monadology*.
 - (b) Leibniz: *Specimen Dynamicum, De Ipsa Natura, A New System of Nature*; selections from Leibniz-Arnould correspondence
 - (c) Part I of Boscovich's *A Theory of Natural Philosophy*.
 - (d) Selections from Euler's *Letters to a German Princess*.
- *Background Readings:*
 - (a) Friedman, Chapter 2.
 - (b) "Action at a Distance" (Chapter VII) and "Euler's Hydrodynamics" from Mary Hesse's *Forces and Fields* (e.g. Chapter 7)
 - (c) Daniel Warren's "Kant's Dynamics" from Eric Watkins, ed. *Kant and the Sciences*
 - (d) P.M. Harman *Metaphysics and Natural Philosophy* up to page 80.
 - (e) "Development of a Controversial Idea", "Atomism versus Conservation", and "Conservation in Hard-Body Impact by Insensible Degrees" from Wilson Scott's *The Conflict Between Atomism and Conservation Theory 1644-1860*
 - (f) Mark Wilson "Back to 'Back to Kant'."

4. Mechanics in the *Metaphysical Foundations* (Week 7-8)

- *Topics:*
 - (a) Kant's Laws of Motion and (versus?) Newton's Laws of Motion
 - (b) The Vis Viva Controversy
- *Primary Readings:*
 - (a) Leibniz, "Brief Demonstration of a Notable Error...", *Discourse on Metaphysics* (§17-21), "On Power and the Laws of Corporeal Nature," "On Body and Force, Against the Cartesians"
 - (b) Kant's "True Estimation of Living Forces"
 - (c) Mechanics Section of the *Metaphysical Foundations*
- *Background Readings:*
 - (a) Eric Watkins "Kant's Justification of the Laws of Mechanics" from Eric Watkins, ed.

- (b) Gerd Buchdahl *Metaphysics and the Philosophy of Science*, Chapter VIII, Section 9.
- (c) Friedman, Chapter 3.
- (d) David Papineau, “The *Vis Viva* Controversy” from *Oxford Readings on Leibniz*.

5. Opus Postumum (Weeks 9-10)

- *Topics:*
 - (a) What is the alleged gap in the Critical Project?
 - (b) What is Kant trying to do in the *Opus Postumum* that he didn't do in the *Metaphysical Foundations*?
- *Primary Readings:*
 - (a) Kant's *Opus Postumum* (selections).
- *Background Readings:*
 - (a) Friedman, *Kant and the Exact Sciences*, Part 2.
 - (b) Eckart Förster, *Kant's Final Synthesis*.