

730 Philosophy 425 Sect 01 Philosophy of Science

Instructor: Sidney Felder, e-mail: sf30@panix.com

Rutgers The State University of New Jersey, Spring 2018, Tu & Th 4:10-5:50

Weeks 1, 2) Some Views of the Character of Science:

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| T. H. Huxley | The Method of Scientific Investigation |
| Ernst Mach | The Economical Nature of Physics |
| C.S. Peirce | The Fixation of Belief; How to Make Our Ideas Clear |

Weeks 2, 3, 4, 5, 6) Evidence and Hypothesis:

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| David Hume | <i>An Enquiry Concerning Human Understanding</i> (Sections IV-VII) |
| Nelson Goodman | The New Riddle of Induction (in <i>Fact, Fiction and Forecast</i>) |
| Karl Popper | Science: Conjectures and Refutations |
| Carl Hempel | Studies in the Logic of Confirmation |
| Hermann Weyl | <i>Philosophy of Mathematics and Natural Science</i> (Chapter 1) |
| Pierre Duhem | Physical Theory and Experiment (in <i>The Aim and Structure of Physical Theory</i>) |
| Henri Poincaré | Space and Geometry (in <i>Science and Hypothesis</i>) |
| Arthur Eddington | What is Geometry? (in <i>Space, Time and Gravitation</i>) |
| Albert Einstein | Geometry and Experience |

Weeks 7, 8, 9) Observation, Theory, and Reality

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| Hilary Putnam | What Theories are Not |
| Bertrand Russell | Similarity of Relations (in <i>Introduction to Mathematical Philosophy</i>) |
| — | <i>The Analysis of Matter</i> (chapters XIX, XXIII, and XXIV) |
| L. Wittgenstein | <i>Tractatus Logico-Philosophicus</i> (5.133-5.156, 6.3-6.372) |
| Moritz Schlick | Positivism and Realism |

Weeks 9, 10, 11, 12, 13) Generalizations, Laws, and Probabilities

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| Ernest Nagel | <i>The Structure of Science</i> (Chapter 4) |
| Henri Poincaré | Chance (in <i>Science and Method</i>) |
| J. M. Keynes | <i>A Treatise on Probability</i> (Chapters XXIV, XXV, XXVI) |
| Frank Ramsey | Law and Causality |
| David Lewis | Counterfactual Dependence and Time's Arrow |
| Bertrand Russell | On the Notion of Cause |
| Kurt Gödel | A Remark about the Relationship between Relativity Theory and Idealistic Philosophy |

Weeks 13, 14) Explanation and The Unity of Science

Jerry Fodor Special Sciences (or: The Disunity of Science as a Working Hypothesis)

David Albert Physics and Chance (in *After Physics*)

There will be a take-home exam, to be submitted either in class or (if e-mailed) either in PDF or text format. Final grade will be determined by quality of both written work and class participation.

Note: The university has directed that all syllabi make note of the existence of The Rutgers Self-Reporting Absence Website (<https://sims.rutgers.edu/ssra>), as well as of the request that it be utilized by students to indicate the date(s) and reason for their absence from class.