

Schedule of Lectures for “The Structure and Semantics of Scientific Theories”

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<http://strangebeautiful.com/lmu/2015-summer-sems-theors.html>

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Tuesdays, 12:00–14:00 C.T.

Ludwigstr. 31, 021

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<http://strangebeautiful.com/lmu/2015-summer-sems-theors.html>

1 Weeks 1–2: Introduction and Historical Background (Apr. 14–21)

1.1 Week 1: Introduction (Apr. 14)

Suggested Reading

1. Suppe (1974), “The Search for Philosophic Understanding of Scientific Theories”
2. Suppe (2000), “Understanding Scientific Theories: An Assessment of Developments, 1969–1998”

1.2 Week 2: Russell, Ramsey and the Roots of Structuralism (Apr. 21)

Required Reading

1. Russell (1927), *The Analysis of Matter*: chs. XVIII–XXIV (pp. 178–256)

Suggested Reading

1. Demopoulos and Friedman (1985), “Bertrand Russell’s *The Analysis of Matter*: Its Historical Context and Contemporary Interest”
2. Demopoulos and Friedman (1989), “The Concept of Structure in Russell’s *The Analysis of Matter*”
3. Fraassen (2008), *Scientific Representation: Paradoxes of Perspective*: ch. 9
4. Newman (1928), “Mr. Russell’s Causal Theory of Perception”
5. Ramsey (1931a), “Facts and Propositions”
6. Ramsey (1931c), “Theories”

2 Weeks 3–6: The Logical Empiricists, the “Received View”, and Its Discontents (Apr. 28–May 19)

2.1 Week 3: Carnap I (Apr. 28)

Required Reading

1. Carnap (1956a), “Empiricism, Semantics and Ontology”

2. Carnap (1966), *An Introduction to the Philosophy of Science: Philosophical Foundations of Physics*: part v, chs. 23–26 (pp. 225–256)

Suggested Reading

1. Carnap (1959), *The Logical Syntax of Language*: Part v
2. Coffa (2008), *The Semantic Tradition Kant to Carnap: To the Vienna Station*
3. Demopoulos (2013b), “On Extending ‘Empiricism, Semantics and Ontology’ to the Realism-Instrumentalism Controversy”
4. Demopoulos (2013c), “On the Rational Reconstruction of Our Theoretical Knowledge”
5. Demopoulos (2013d), “Three Views of Theoretical Knowledge”
6. Friedman (2007), “Coordination, Constitution, and Convention: The Evolution of the A Priori in Logical Empiricism”
7. Lutz (2014b), “Empirical Adequacy in the Received View”
8. Mormann (2007), “The Structure of Scientific Theories in Logical Empiricism”
9. Quine (1951), “On Carnap’s Views on Ontology”
10. Ramsey (1931c), “Theories”
11. Reichenbach (1936), “Logistic Empiricism in Germany and the Present State of its Problems”

2.2 Week 4: Carnap II (May 05)

Required Reading

1. Carnap (1956b), “The Methodological Character of Theoretical Concepts”

Suggested Reading

1. Carnap (1936), “Testability and Meaning”
2. Demopoulos (2013c), “On the Rational Reconstruction of Our Theoretical Knowledge”
3. Demopoulos (2013d), “Three Views of Theoretical Knowledge”
4. Friedman (2011a), “Carnap on Theoretical Terms: Structuralism without Metaphysics”
5. Hempel (2001a), “The Meaning of Theoretical Terms: A Critique of the Standard Empiricist Construal”
6. Lewis (1970), “How to Define Theoretical Terms”
7. Lutz (2014a), “Carnap on Empirical Significance”
8. Ramsey (1931c), “Theories”

2.3 Week 5: Hempel and Modifications to the Received View (May 12)

Required Reading

1. Hempel (2001c), “On the Structure of Scientific Theories”
2. Hempel (2001b), “On the ‘Standard Conception’ of Scientific Theories”

Suggested Reading

1. Demopoulos (2013c), “On the Rational Reconstruction of Our Theoretical Knowledge”
2. Demopoulos (2013d), “Three Views of Theoretical Knowledge”
3. Hempel (1965), “The Theoretician’s Dilemma: A Study in the Logic of Theory Construction”
4. Hempel (2001a), “The Meaning of Theoretical Terms: A Critique of the Standard Empiricist Construal”
5. Lutz (2014b), “Empirical Adequacy in the Received View”
6. Mormann (2007), “The Structure of Scientific Theories in Logical Empiricism”
7. Nagel (1979a), “The Cognitive Status of Theories”
8. Nagel (1979b), “Experimental Laws and Theories”

2.4 Week 6: Discontents (May 19)

Required Reading

1. Putnam (1979), “What Theories Are Not”
2. Stein (1992), “Was Carnap Entirely Wrong, After All?”

Suggested Reading

1. Feigl (1970), “The ‘Orthodox’ View of Theories: Remarks in Defense as Well as Critique”
2. Lutz (2012), “On a Straw Man in the Philosophy of Science: A Defense of the Received View”
3. Lutz (2014c), “What’s Right with a Syntactic Approach to Theories and Models?”
4. Putnam (1983e), “‘Two Dogmas’ Revisited”
5. Quine (1980c), “Two Dogmas of Empiricism”
6. Quine (1960), “Carnap and Logical Truth”

3 Week 7: Der Pfingstdienstag, No Lecture (May 26)

4 Weeks 8–11: The Semantic View (Jun. 02–23)

4.1 Week 8: Tarskian Semantics (Jun. 02)

Required Reading

1. Tarski (1956), “The Concept of Truth in Formalized Languages”: introduction, §§1–3, 6 (pp. 152–208, 265–268)

Suggested Reading

1. Hodges (1997), *A Shorter Model Theory*
2. Quine (1980b), “Notes on the Theory of Reference”
3. Suppes (1957), *Introduction to Logic*
4. Suppes (1969), *Studies in the Methodology and Foundations of Science: Selected Papers from 1951 to 1969*
5. Suppes (1993), *Models and Methods in the Philosophy of Science: Selected Essays*
6. Suppes (1988), “Philosophical Implications of Tarski’s Work”
7. Tarski (1954), “Contributions to the Theory of Models. I”

4.2 Week 9: Suppes (Jun. 09—My Birthday!)

Required Reading

1. [Suppes \(1960\)](#), “A Comparison of the Meaning and Uses of Models in Mathematics and the Empirical Sciences”
2. [Suppes \(1962\)](#), “Models of Data”

Suggested Reading

1. [Putnam \(1983b\)](#), “Models and Reality”
2. [Suppes \(1969\)](#), *Studies in the Methodology and Foundations of Science: Selected Papers from 1951 to 1969*
3. [Suppes \(1993\)](#), *Models and Methods in the Philosophy of Science: Selected Essays*
4. [Suppes \(2002\)](#), *Representation and Invariance of Scientific Structures*

4.3 Week 10: van Fraassen (Jun. 16)

Required Reading

1. [Fraassen \(1980\)](#), *The Scientific Image*: ch. 3, pp. 41–69

Suggested Reading

1. [Churchland and Hooker \(1985\)](#), *Images of Science: Essays on Realism and Empiricism, with a Reply from Bas C. van Fraassen*
2. [Fraassen \(2008\)](#), *Scientific Representation: Paradoxes of Perspective*
3. [Monton \(2007\)](#), *Images of Empiricism: Essays on Science and Stances, with a Reply from Bas C. van Fraassen*

4.4 Week 11: Halvorson’s Critique of the Semantic View (Jun. 23)

Required Reading

1. [Fraassen \(2014\)](#), “One or Two Gentle Remarks about Hans Halvorson’s Critique of the Semantic View”
2. [Glymour \(2013\)](#), “Theoretical Equivalence and the Semantic View of Theories”
3. [Halvorson \(2012\)](#), “What Scientific Theories Could Not Be”
4. [Halvorson \(2013\)](#), “The Semantic View, If Plausible, Is Syntactic”

Suggested Reading

1. [Frigg \(2006\)](#), “Scientific Representation and the Semantic View of Theories”
2. [Lutz \(2012\)](#), “On a Straw Man in the Philosophy of Science: A Defense of the Received View”
3. [Lutz \(2014c\)](#), “What’s Right with a Syntactic Approach to Theories and Models?”
4. [Putnam \(1975a\)](#), “Explanation and Reference”
5. [Putnam \(1975b\)](#), “How Not to Talk about Meaning”
6. [Putnam \(1975c\)](#), “Is Semantics Possible?”
7. [Putnam \(1983a\)](#), “Introduction: An Overview of the Problem”
8. [Putnam \(1983d\)](#), “Reference and Truth”
9. [Thomson-Jones \(2006\)](#), “Models and the Semantic View”

5 Weeks 12–16: Contemporary Approaches (Jun. 30–Jul. 28)

5.1 Week 12: Neo-Structuralism (Jun. 30)

Required Reading

1. da Costa and French (2005), *Science and Partial Truth: A Unitary Approach to Models and Scientific Reasoning*: chs. 1–4, pp. 8–83

Suggested Reading

1. Brading and Landry (2006), “Scientific Structuralism: Presentation and Representation”
2. Brading and Landry (2004), “A Minimal Construal of Scientific Structuralism”
3. Bueno, French, and Ladyman (2012), “Models and Structures: Phenomenological and Partial”
4. da Costa and French (2005), *Science and Partial Truth: A Unitary Approach to Models and Scientific Reasoning*: chs. 5–9
5. Fraassen (2006), “Representation: The Problem for Structuralism”
6. Fraassen (2007), “Scientific Structuralism: Structuralism(s) About Science: Some Common Problems”
7. Fraassen (2008), *Scientific Representation: Paradoxes of Perspective*: ch. 11
8. Frigg (2002), “Models and Representation: Why Structures Are Not Enough”
9. Suárez and Cartwright (2008), “Theories: Tools versus Models”

5.2 Week 13: Neo-Kantianism I (Jul. 07)

Required Reading

1. Friedman (2001), *The Dynamics of Reason*: Part One (pp. 3–70); Part Two, §§1–2 (pp. 71–92)

Suggested Reading

1. DiSalle (2002), “Reconsidering Kant, Friedman, Logical Positivism, and the Exact Sciences”
2. Domski and Dickson (2010), *Discourse on a New Method: Reinvigorating the Marriage of History and Philosophy of Science*
3. Fraassen (2008), *Scientific Representation*: ch. 5, pp. 115–140
4. Friedman (2011b), “Extending the Dynamics of Reason”
5. Friedman (2012), “Reconsidering the Dynamics of Reason: Response to Ferrari, Mormann, Nordmann, and Uebel”

5.3 Week 14: Neo-Kantianism II (Jul. 14)

Required Reading

1. Massimi (2008b), “Why There Are No Ready-Made Phenomena: What Philosophers of Science Should Learn from Kant”

2. Woodward (1989), “Data and Phenomena”

Suggested Reading

1. Bogen and Woodward (1988), “Saving the Phenomena”
2. Massimi (2011), “From Data to Phenomena: A Kantian Stance”
3. McAllister (2011), “What Do Patterns in Empirical Data Tell Us about the Structure of the World?”
4. Morrison (2000), *Unifying Scientific Theories: Physical Concepts and Mathematical Structures*
5. Morrison (2008), “Reduction, Unity, and the Nature of Science: Kant’s Legacy?”
6. Teller (2010), “‘Saving the Phenomena’ Today”
7. Woodward (2000), “Data, Phenomena, and Reliability”
8. Woodward (2010), “Data, Phenomena, Signal, and Noise”
9. Woodward (2011), “Data and Phenomena: A Restatement and Defense”

5.4 Week 15: Stein’s Neo-Carnapianism (Jul. 21)

Required Reading

1. Stein (1994), “Some Reflections on the Structure of Our Knowledge in Physics”
2. Stein (1992), “Was Carnap Entirely Wrong, after All?": pp. 298–291 (from “Now, I have remarked that” on p. 289, to “in terms of the pragmatics of a Carnapian framework.” on p. 291)

Suggested Reading

1. Fraassen (1980), *The Scientific Image*, chs. 3–4
2. Fraassen (2008), *Scientific Representation*: chs. 6–7, pp. 141–190
3. Lakatos (1970), “Falsification and the Methodology of Scientific Research Programmes”
4. Stein (2004), “The Enterprise of Understanding and the Enterprise of Knowledge”

5.5 Week 16: Representational Propriety as a Basis for Semantics (Jul. 28)

Required Reading

1. Curiel (2014), “On the Propriety of Physical Theories as a Basis for Their Semantics”

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- Demopoulos, W. (2013c). On the rational reconstruction of our theoretical knowledge. See [Demopoulos \(2013a\)](#), Chapter 6, pp. 108–139.
- Demopoulos, W. (2013d). Three views of theoretical knowledge. See [Demopoulos \(2013a\)](#), Chapter 7, pp. 140–168.
- Demopoulos, W. and M. Friedman (1985). Bertrand Russell’s *The Analysis of Matter*: Its historical context and contemporary interest. *Philosophy of Science* 52(4), 621–639.
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- Halvorson, H. (2013, July). The semantic view, if plausible, is syntactic. *Philosophy of Science* 80(3), 475–478.
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