

Philosophy 6395: New Approaches to Representation

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Tentative Syllabus

Summary:

Cognitive scientists typically attempt to explain cognition by attributing representations—that is, states characterized primarily in terms of what they are about, such as beliefs, desires, concepts, memories, maps, transitive orderings, metarepresentations, and many others. The coherence of these practices thus depends upon our ability to determine the content of a representation in a manner acceptably rigorous and objective for scientific purposes. Though there was great optimism in the 1980s and early 1990s that informational or teleosemantic theories of representational content (especially those of Dretske, Fodor, and Millikan) would be able to perform this task, this optimism collapsed in the mid 1990s for a variety of reasons.

Today, however, cognitive scientists continue to routinely deploy representations in their explanations, and it is not clear that any of the objections posed to representational theories in the 1990s really provide decisive reason to think that informational theories must fail. Seemingly sealing their fate, skeptics such as Ramsey, Chemero, Hutto, and Myin have argued that the apparent appeals to representations in cognitive science are superficial and best eliminated to avoid confusion.

At the same time that many philosophers rehearse the old fable that disjunction problems sunk naturalistic approaches to intentionality, some researchers have continued plugging away, opening up new conceptual possibilities. For one, there has been conceptual progress in understanding the representational vehicles in connectionist networks (primarily due to the work of Nicholas Shea and Chris Eliasmith). For another, a variety of researchers have suggested that progress in connectionist modeling in cognitive neuroscience (due to empirical researchers like Gluck & Myers and McClelland & O'Reilly) can allow us to reconceive of the problem. And finally, philosophers like Rescorla and Camp have suggested that map-based representations might overcome some of the problems faced by earlier views that presumed representations would be symbols in a language of thought. Due to these new developments, success now seems closer than ever, and a new generation of informational theories—offered by thinkers such as Usher, Rupert, Neander, Eliasmith, Ryder, Scarantino, and Nanay—has sprung up recently that, by questioning one or another of the assumptions shared by the earlier views, claim to have overcome their limitations.

In this course, we will review the state of the art up to the crest of this new wave, focusing especially on the role of representations in cognitive explanations and on the merits of the new wave of theories.

"As far as is now known, much learning cannot be accounted for except in representationalist terms. If one allows representation into one's account of learning, the notion of learning will be worthless for reduction of representation. If one is to avoid this difficulty by appealing to some intermediate conception of learning, between classical associationist and representationalist conceptions, one must spell out the relevant conception. Dretske does not do so."

-Burge, *Origins of Objectivity*

Grading:

30% Weekly online commentaries & participation

20% Paper 1 – Due week 12

10% Peer Reviews – Due week 14

40% Final Paper – Due Dec 17th

Commentaries: Each class period, two students will be assigned to write a critical commentary on the day's readings. The students will briefly summarize the arguments of the readings and offer some substantive critical remarks (roughly 3-5 pages). The commentary will be posted online on a course blog, and all other students in the class will be expected to respond to their commentary. The goal is to bootstrap in-class discussion by outlining major issues and disagreements before coming to the classroom. Students will be expected to do two such commentaries and respond to the commentaries of others at least once a week.

Papers and reviews: Students will submit one complete shorter paper (10-12 pages) by Week 12. They will then receive peer reviews from and perform peer reviews for two other students (as well as comments from me) and revise their papers in light of their comments. A final paper taking into account these comments (15-20 pages) will then be due at the end of the course.

Schedule of Topics and Readings

Part I: The Heyday

Week 1 – Aug 26

Dretske I

- 1981 – *Knowledge and the Flow of Information*, Ch1-3, 6-9

Week 2 – Sep 2

Dretske II

- 1986 – “Misrepresentation”
- 1988 – *Explaining Behavior*, Ch 4, 5

Week 3 – Sep 9

Fodor

- 1987 – “Meaning and the World Order”
- 1994 – *The Elm and the Expert*, Ch 1-2

Week 4 – Sep 16

Millikan

- Papineau 1984 – “Representation and Explanation”
- 1989 – “Biosemantics”
- 1990 – “Truth Rules, Hoverflies, and the Kripke-Wittgenstein Paradox”

Week 5 – Sep 23

Anti-Representationalism

- Chemero 2000 – “Anti-representationalism and the Dynamical Stance”
- Hutto and Myin, *Radicalizing Enactivism: Basic Minds Without Content* Ch1, 4
- Ramsey 2004, *Representations Reconsidered*, Ch 4-5

Part II: Reconceiving the Problem

Week 6 – Sep 30

“Structural” representations (feat. Alex Morgan)

- Morgan 2014 – “Representations gone Mental”
- Isaac 2013 – “Objective similarity and mental representation”
- Shagrir 2012 – “Structural representations and the Brain”
- Egan 2014 – “How to think about mental content”

Week 7 – Oct 7

Normativity of Content?

- Boghossian 2003 – “The Normativity of Content”
- Gluer & Wikforss 2009 – “Against Content Normativity”
- Franks 1995 – “On Explanation in the Cognitive Sciences: Competence, Idealization, and the Failure of the Classical cascade”
- Allen 1995 – “A New Idea about Intentional Causation: It Isn’t What You Think”

Week 8 – Oct 14

Alternative reframings

- Burge 2010 – *Origins of Objectivity* Ch8
- Greenberg 2005 – “A New Map of Theories of Mental Content”
- Neander 2009 – “Content for Cognitive Science”
- Allen 1999 – “Animal Concepts Revisited: The use of self-monitoring as an empirical approach”

Part III: New Proposals

Week 9 – Oct 21

Informational Tweaks

- Prinz 2001 – “The Duality of Content”
- Usher 2001 – “A Statistical Referential Theory of Content”
- Rupert 1999 – “The Best Test Theory of Extension”
- Scarantino 2015 – “Information as probabilistic Difference-Maker”

Week 10 – Oct 28

Connectionist and Neural Approaches

- Gluck & Myers 2001 – *Gateway to Memory* Ch3
- Shea 2007 – “Content and its Vehicles in Connectionist Systems”
- Shea 2007 – “Consumers Need Information: Supplementing Teleosemantics with an Input Condition”
- Eliasmith 2005 – “Neurosemantics and Categories”

Week 11 – Nov 4

Neuroscience and Error-Correction Learning

- Gluck & Myers Ch4, 5, 6
- Clark 2013 – “Whatever Next? Predictive Brains, Situated Agents, and the Future of Cognitive Science”

Week 12 – Nov 11

Map-based approaches

- Camp 2007 – “Thinking with Maps”
- Rescorla 2009a – “Predication and Cartographic Representation”
- Rescorla 2009b – “Cognitive Maps and the Language of Thought”

Week 13 – Nov 18

Dickie

- *Fixing Reference*, Ch 1, 2, 4

Week 14 – Nov 25 (THANKSGIVING)

Teleosemantics all over again

- Nanay 2013 – “Success Semantics: The Sequel”
- Ryder 2004 – “SINBAD Neurosemantics”
- Cao 2012 – “A Teleosemantic Approach to Information in the Brain”
- Artiga 2013 – “Reliable Misrepresentation and Teleosemantics”

Week 15 – Dec 2

Future dynamical chaos

- Spencer, Austin, and Schutte 2012 — “Contributions of Dynamic Systems Theory to Cognitive Development”
- Beer & Williams 2015 – “Information Processing and Dynamics in Minimally Cognitive Agents”
- Laje & Buonomano 2013 – “Robust Timing and Motor Patterns by Taming Chaos in Recurrent Neural Networks”

Final papers due: Thu Dec 17

Guide to replies:

In each class we'll have some members of the class contribute a short reading response paper. I will rotate the schedule of reading response papers, so that every class two students (typically) will submit a paper. These papers will usually involve setting out and evaluating one of the arguments in the reading for that class day. You will post this paper to the class bulletin board. [NOTE: I set a deadline time so that everybody knows when the papers will be up.] Everybody will be responsible for reading the reading response papers before the class meeting and posting a reply to one of the papers, or even a reply to one of the replies.

Finally, Cameron's tips for improving grad student writing:

1. Thou shalt not engage in philosophical autobiography; tell us not what you think, feel, or believe, but rather what you can prove.
2. Thou shalt not add any discursions that are not directly relevant to your core argument.
3. Thou shalt rigorously avoid use/mention confusions.
4. Thou shalt not introduce more than one core idea per paragraph.
5. Thou shalt not engage in the practice of argument by italics, which is loathsome and displeasing to reason.
6. Thou shalt be as charitable to thy target as possible, and shall not put words in thy target's mouths without textual or argumentative support.
7. Thou shalt not have thy argument turn on unexplicated appeals to "in virtue of". (I realize that this rules out large swaths of metaphysics, but it's my class and I insist on it nevertheless.)