Proseminar in Developmental Psychology

Time: Friday: 12:00 to 2:45

Room: 10th floor seminar room (opposite elevators)

William James Hall: 33 Kirkland Street, Cambridge

Instructors: Carey, Spelke, Snedeker, Ullman and McLoughlin

Description, Mechanics and Goals

The Developmental Proseminar is complementary to the CBB Proseminar and to the Social Proseminar. Taking two of these classes, and sitting the exams in them, satisfies FAS's requirement for qualifying exams in PhD programs, and more importantly, each of these Proseminars has been designed as survey courses that cover the current state of the art in cognitive and psychological science. Of the three Proseminars, the Developmental Proseminar might most accurately be called the Cognitive Science Proseminar. It focuses most on theoretical issues concerning representational content and format (in perception, language, and non-linguistic cognition), and how representational content and format together support mental computation. Of course, it also focuses on the *acquisition* of representational and computational resources—over evolutionary, historical and primarily ontogenetic time frames. One goal of the Proseminar is to explore why philosophers have always known that without an understanding of the origin of the mind we cannot understand the mind, and how progress in understanding the origins of representational/computational systems contributes to understanding the human (and animal) mind and of human nature itself.

Each class will consist of a case study that illustrates how we make empirical progress on some foundational theoretical issue, either about mental representations/computations or about the origins of representational capacities, motivational systems, or psychopathology. Note, the first class is substantive and requires some advance preparation (see below).

Readings: Will be posted on the webpage at least a week prior to each meeting.

Each class will involve presentations by students; different instructors organize these differently, and will explain how to approach the readings and presentations when the readings are posted. For at least ½ of the classes, some readings are optional, and these will be presented to the class by students. We expect that you will have completed the readings designated "for all" before class and be prepared to discuss them. In addition, you will have chosen 1 "optional" reading, also coming prepared to discuss it. At least once during the semester you will present an optional reading to the class (10 minutes max). Many of the readings are dense and some are difficult. Thus, you may have questions about the material, as well as issues that you wish to discuss in more detail. Questions are very important—if you have them, all students will. We strongly suggest that you make notes for yourself, so you can ensure that your questions are answered, and so you are processing the material deeply enough to be prepared for the exams and to participate in class discussion.

Response Papers: Each week, before class, please write a 1 page (single spaced) response paper based on the readings for that week (response papers begin 9/10). The response paper should draw on the material for the week but go beyond it in some way. It is not necessary, and typically not useful, to discuss each of the readings. Some common types of response papers include: comparing two theories, proposing a new experiment to test a theory, exploring the connections between one reading and work in another area of psychology, trying to reconcile two findings which appear to contradict each other, and discussing the potential applications of an experimental finding to a theoretical issue. The response papers will be graded by the professor who is teaching that section. They count for 30% of your grade, but more importantly, ensure that people come to class ready to contribute to the discussion. Please get them to the instructor by **Thursday evening**, before 8PM, so the instructor can read them before class to have a feeling for what issues people want to discuss and may need help understanding.

Exams: There will be two exams, which together satisfy part of Harvard's PhD Qualifying Exam requirement for students in the Psychology Department. The exams are open book take home exams, but as there is only ½ hour per question, there is little time to consult notes, readings, and the like. That is, these exams must be studied for before, and if a question is failed, it must be redone, with a maximum grade of B+. An overall grade of B+ is required to pass this course (i.e., the qualifying exams). Exam 1 will take place between 10/9 (Saturday) and 10/12 (Tuesday) at a time arranged in advance by each student sitting the exam—your choice, beginning between 9 AM and 1 PM any one of these four days. Exam 1 will cover the material for the first 6 classes (through 10/8.) Exam 2 will take place between during reading period in December, between Dec 6 (Monday) and Dec 9 (Thursday), covering the remaining 6 classes. *Each exam will count for 35% of your grade.* The exams will be distributed over email, at a time chosen by you, and you will be asked to return them to Professor Carey within the time limit. The questions will be graded by the professors who taught the material.

Students taking the class for credit who do not need it to satisfy the Qualifying Exam may nonetheless sit the exams if they wish (and not do a paper). Otherwise, they may opt to write a paper that will count for 70% of the grade.

Students may audit the class, for no credit, but they must commit to coming to all the classes, doing all the readings, and doing the response papers and class presentations. They need not sit the exams or write a paper.

Schedule

9/3. **Introductory Class.** This will be a substantive meeting, but with no readings and no response paper. Come prepared to **brainstorm**: 1) why does cognitive science needs the theoretical constructs; *mental representation* and *mental computation?* 2) What are the relations between representations and computations? 3) What does "representation" mean? 4) What is a "mental representation." 5). What phenomena constrain a theory of the nature of mental representations? 6). What does "innate" mean in the phrase "innate representation?"

9/10. Case study: **Theories of Concepts.** Theoretical Issues: Mental Representations, and Mental Computations.
Instructor : Carey

9/17. Case study: **Depth Perception.** Theoretical Issues: The nativist/empiricist debate.

Instructor: Carey

9/24. Case study: **Object Representation/Contact Causality.** Theoretical Issues: Core Cognition: Innate Representations with Abstract, Conceptual Content
Instructor: Spelke

10/1. Case study: **Spatial Representations/Navigation**. Theoretic issues: Modularity, Innate Representations with Abstract Conceptual Content. Beyond Core Cognition. Combining controlled rearing studies with cognitive neuroscience.
Instructor: Spelke

10/8 . Case study: **The Mental Lexicon; Word Learning.** Theoretical Issues: The Language of Thought; relations between conceptual representations and linguistic ones. Syntactic bootstrapping
Instructor: Snedeker

10/9 – 10/12. First Exam within these dates

10/15 Case study: **Natural Language Syntax.** Theoretical Issues: Structured representations that support infinitely many thoughts. How does syntax emerge in the evolution of language, and how do children master the syntax of the natural language(s) they are exposed to?
Instructor: Snedeker

10/22. Case study: **Number.** Theoretical Issues: Innate representations with Abstract, conceptual content. Conceptual discontinuities that result in increases of expressive power. Fodor's challenge to the cognitive science: show how conceptual development is *possible.* Quinian bootstrapping.
Instructor: Carey

10/29. Case study: **Modal Logic.** Theoretical Issues: Representations of abstract logical functions, human uniqueness.
Instructor: Carey

11/5 Case studies: **Intuitive physics, agency representations.** Theoretical issues: the role of computational modeling in constraining theories of conceptual development, and how understanding cognitive development can inform computational theories of learning.
Instructor: Ullman

11/12. **TBD: Either Jesse on phonological representations; Carey on conceptual change, or Carey on Developmental Cognitive Neuroscience**

11/19 Case study: **TBD.** Theoretical issues: Understanding the etiology of psychopathology.

Instructor: McLaughlin

11/25 No Class, Thanksgiving

Dec 6 -Dec 9. Second Exam within these dates.