Seminar in
Concept Representation and Learning
Psychology 747, Section 4389 - Fall 1995
Room 113 Psychology
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Course Description
Without concepts, thought itself would be impossible. Concepts serve critical roles in organizing our thoughts, perception, communication, prediction, and inference. This seminar will explore issues in concept learning and representation. Topics in philosophy, computer science, and developmental psychology will be covered, but the preponderance of the material will be from cognitive psychology. Among other topics, we will discuss prototype, exemplar, and “theory” theories of conceptual representation, the interconnectedness and modularity of concepts, computational models of concept acquisition, and how concepts are changed and created. For a full set of topics covered, consult the references below.

The three principle obligations of seminar participants will be to lead one of the fourteen class discussions, read the weekly assignment, and to actively participate in all class discussions. To facilitate the last two obligations, participants are required to prepare a one-page written reaction to the weekly readings. Late reaction pages will not be accepted (the point of the reaction page is to have participants think about the issues involved before the seminar). Participants will hand their reaction pages in to me at the end of a day’s discussion. Given the occasionally overwhelming pressures on students, participants are exempted from preparing reaction pages for three seminars of their choice. Reaction pages will be coarsely graded (unacceptable, acceptable, and outstanding) and will receive brief comments.

Leading a seminar
The purpose of the seminar leader is two-fold - to review the fundamental points of the readings, and to generate and direct active discussion. You should prepare about 25 minutes of instructional monologue. Overhead transparencies and handouts are encouraged. You may assume that everybody has read the material, but you should not assume that everybody has read it thoroughly. Do not attempt to cover all of the articles in detail. Rather, select a handful of points that seem to be of fundamental importance. Consider time to be a precious resource; do not waste it on digressions.

Reaction pages
The purpose of the weekly reaction page requirement is for seminar participants to develop particular perspectives on their readings. As E. M. Forester said, “How can I know what I think until I see what I say [write]?” The act of writing forces thoughts to be more precise and organized than they would otherwise be. The assignment is purposefully open-ended. Appropriate topics for reaction pages may be suggested, but most often, you will be left to
select for yourself an interesting topic that relates to the readings in some way.

Once again, space should be considered a scarce resource. You should try to refine your thoughts such that they can be concisely expressed on a single page (I will, however, accept multi-page reactions). The most successful reaction pages focus on a single topic. Resist the temptation to write a few sentences each on four topics.

What are appropriate topics for reaction pages? You may develop an experiment that is inspired by one of the readings. Describe the experiment briefly, explain how it bears on relevant theories, and make predictions on the results. You may disagree with a particular claim. Explain why the claim is wrong, and why it is important that it is wrong. You may agree with a claim. Describe extensions to the claim, possible applications, or future directions for research. You may have nothing to say about a particular article. If so, explain why the article is not relevant to fundamental issues of concept learning or representation. Discuss the assumptions of the article, and why you find them inappropriate.

Weekly readings

Papers are listed in the order you should read them

Week 1: Introductions, overview of readings, class policies.

Week 2: Reviews of categorization research

Week 3: Prototype theories of concepts

Week 4: Exemplar models of concepts

Week 5: Holistic processing and nonanalytic categorization


Week 6: “Theory” theories of concepts

Week 7: Symbol Grounding and Categorization

Week 8: Modularity and interrelations between concepts

Week 9: Decomposing concepts

Week 10: Natural kinds and artifacts

Week 11: Connectionist Approaches to Category Construction

Week 12: Creating New Representations for Concepts

Week 13: Conceptual change and development

Week 14: Abstract Concepts and Metaphors