



Boston University, Department of Psychology

PS 525 Cognitive Science

Time: MW 10-11:30

Place: Psychology Dept Basement 41

website: courseinfo.bu.edu/courses/03sprcasps525_a1

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Course Description. Cognitive scientists share a commitment to developing theories of human cognition which can integrate findings from diverse fields (psychology, philosophy, linguistics, computer science, neuroscience). Interdisciplinary research methodology, including connectionist modeling, will be reviewed and applied to questions on human decision making, consciousness, creativity, development, social behavior and psychopathology.

Prerequisites. Any one of the following courses: Cognitive Psychology (PS 336), Physiological Psychology (PS 231) Neuropsychology (PS 338), Minds and Machines (PH 265), Mind, Brain and Self (PH 266), Philosophy of Cognitive Science (PH 468), Artificial Intelligence. Prerequisites waived for graduate students. All students should have an understanding of basic statistical concepts (e.g., background in statistics to the level of MA 116 or PS 211). Auditors and visitors welcome.

Overview of class. This will be a student-led class. During the first two weeks, class members will discuss possible topics, and come to consensus about readings and topics. Students will join forces with one other classmate to lead the class for one week. Topics can be drawn from the 4 recommended books, below, and from the topic list (see attached document).

Topics should be chosen to maximize interdisciplinary themes or those relevant to the “grand philosophical questions” which cognitive scientists began to ask in the second half of the 20th century (see section on choosing topics below).

Course Requirements

- Lead class discussion for one week (with one other classmate)
- Weekly postings to courseinfo site or 8-10 page paper (due Friday May 2)
- Two tests, mid-term and final (short-essay questions suggested by students)

When choosing a topic, consider classic philosophical questions, and also contemporary interdisciplinary issues.

Classic philosophical questions. What is consciousness? What forces shape human behavior? How does human intelligence differ from nonhuman (animal, computer) intelligence? What is the computational architecture of the human mind? Are there common information processing characteristics across multiple levels of inquiry (neuron, individual action, society?) What fields and subfields take the “cognitive” adjective and what does perspective does “cognitive” add (e.g., cognitive ethology, cognitive sociology, cognitive linguistics, cognitive anthropology).

Contemporary interdisciplinary questions

- What is the evolutionary or adaptive basis for this behavior?
- What is its developmental time course? How do developmental factors influence the shape of this behavior or ability?
- What are the information processing or computational characteristics of this behavior?
- What is the brain basis or physiological underpinnings of the behavior?
- Is this behavior best described by multiple levels (micro/macro)?
- Does this behavior have an abnormal or pathological counterpart?
- Is this topic addressed by multiple disciplines? (Psychology, artificial intelligence, linguistics, neuroscience, philosophy, anthropology, sociology)

- What were the important historical questions about this topic, and how have the questions changed?

Note about topic choice: A possible topic could focus more on one of these question than on the others, e.g., the topic “evolutionary psychiatry” focuses mostly pm the first question.)

Recommended Course Books (at BU Bookstore)

Churchland, P.S. (2002). *Brain-wise: Studies in Neurophilosophy*. Contains chapters on consciousness, mental representation, and religion and the brain. \$25.00

Bellugi, U. (2001). *Journey from cognition to brain to gene: Perspectives from Williams Syndrome*. This book illustrates how to build bridges between genes, brain and mind, by intensive study of a complex neurodevelopmental disorder. \$25.00

Elster, J. (1999). *Strong feelings: Emotion, addiction, and human behavior*. The author uses the realm of emotion and addiction to describe connections between neurobiology, culture, and personal choice. \$16.95

Kimura, D. (1999). *Sex and Cognition*. Integrates neural, hormonal and social bases for sex differences in behavior, especially differences in cognition.

More on Course Requirements

Web postings

Post to the courseinfo website one of the following:

- Summary or comment on one of the assigned articles.
- Response to one of the discussion questions
- Pointers (with discussion) to relevant website or activity which concerns the week’s topic.

Leading class discussion

Students volunteer to lead class discussion for one week. Suggest: two class members work together to choose assessable readings, discussion topics, and activities. Either: you will both be in charge, for the Monday and Wednesday meetings, or you may each take charge of one day.

What distribution of articles to pick

When choosing readings for one week, students should aim for 4 articles/chapters. Choose articles that most of the students in the class will benefit from.

Possible distribution of articles

- one historical reading. A historical reading doesn’t not have to be from the 19th century. I am using this term to make a distinction between an older perspective, which was influential, but which stands as precursor to a
- two contemporary readings, from contrasting disciplines or perspectives
- 1 additional article
- You can also suggest supplemental articles. Supplemental articles can be introductions, or advanced reading for people with a special interest in this topic.

Presenters should brainstorm with each other and Prof. Harris to find some hands-on applications or activity to do in class for one of the two days. Examples: experiments students can participate in or primary materials to review and analyze. Another idea is to organize a debate or to assign students to act out the roles of leading theorists in a subfield.

What are your responsibilities are for leading class discussion?

- By the third week of class (Monday Feb 3). Choose your topic, propose readings and presentation date. Present to the class the topic, your justification, and justification of the readings. (Readings can

be modified if necessary later.)

- The week before your presentation date. Prepare and distribute your discussion questions. Meet with Prof. Harris to discuss ideas for the two days.
- During your presentation week. Bring relevant materials to class: outline, powerpoint presentation, primary materials for classmates to analyze, etc. After each class, the two leaders meet with Prof Harris briefly (10 minutes) to go over how the class meeting went.

Detailed schedule for organizing your leading of class discussion

For each week of class, we can label Current Leaders the two class members who are leading discussion for the Monday and Wednesday of that week, and Next Leaders, the class members who are leading discussion for the following week.

- For Monday's class, Current Leaders should read web-postings and integrate them into the discussion. End discussion at 11:15 on Mon and Wed (5 minutes before official end of class) to allow class members a chance to talk with each other or Prof Harris about any issues. Also, the "Next Leaders" will present their discussion questions and any update on readings. Next Leaders will also post immediately this information to the courseinfo site for people who missed class.
- Monday 11:20 Current Leaders: who has just lead the class: meet with Prof Harris to debrief. How did it go, were people engaged, what worked, what didn't? Review and if necessary modify plan for Wednesday class.
- Monday 11:30 Next Leaders: meet with Prof Harris to review your discussion questions and your plan for activities and structure of the two class days.
- Wednesday 11:20 Current Leaders: Final debriefing, draw conclusions about the two days.
- Wednesday 11:30 Next Leaders: Discuss with Prof. Harris Last-minute modifications of plans for the next week.
- Week after you presented: Post to the courseinfo website short questions which Prof. Harris will choose from for two tests. To construct your questions, think: what material or insights from these two class days would you hope students got at the end of the class hour? What would you hope they would retain by the end of the semester? A year later? Five years later?

First Day of Class

Divide into groups of 3. Introduce yourself, your background (your major or graduate school program), and state if there is already an area within cognitive science that is your main interest.

The goal of the group meeting: To begin to hone in on the topics for which you would like to lead discussion, and to identify the topics which are of interest to the class as a whole.

In your groups, go over each topic. Whoever is knowledgeable about a topic can start by discussing any of the following:

- why does this topic intrigue you
- what do you already know about it (books read about it, material learned in other classes)
- is this topic sufficiently new (not already well covered by other courses)
- what would you like to learn more
- how does learning about this topic fit in with education or career goals
- how could you convince others in the class to include this topic?

Nominate a spokesperson to present your discussion results to the class: three topics you want included, one that could be omitted.