PHIL 103: Philosophical Aspects of Cognitive Science

Course Syllabus — Rice University, Spring 2018

Time & Location:	Tu & Th 9:25-10.40am, HRG 129
Instructor:	Alex Morgan
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Office Hours:	Th 11:00am-12:00pm, or by appt.
Office Location:	Humanities 214

Course Description

In seeking to understand the nature of the mind, thinkers throughout history have used metaphors inspired by the technology of their time. Plato likened memory to the process of stamping an image onto a wax tablet. Freud's theory of the unconscious evokes steam engines and hydraulic mechanisms. In our own age, scientists have attempted to understand the mind by comparing it to a computer. Indeed, the idea that the mind is a kind of biological computer is often said to be one of the foundational assumptions of the modern science of the mind, cognitive science. In the early years of cognitive science, this idea was taken to support the view that the mind is like the 'software' of the brain, and can be studied without paying much attention to the messy details of how the brain works. But these days, neuroscience is at the forefront of cognitive science, and many think that contemporary cognitive science essentially *just is* cognitive neuroscience. Still, the view that cognition is computation remains widespread. In this course we will critically engage with this view and explore the conceptual foundations of contemporary cognitive neuroscience. What does it mean to say that the brain is a biological computer? How could neurons encode and process information? Could neural computation really explain conscious perception, emotion, thought, or our ability to understand one another? This course will help you think carefully and critically about these and related questions, and will introduce you to some cutting-edge research in the mind & brain sciences. In doing so, it will prepare you for subsequent courses in philosophy, cognitive science, and neuroscience.

Responsibilities & Expectations

Participation

This course will require your active participation. You will be expected to participate in class discussions and group activities, and the extent to which you do so will contribute significantly to your overall grade (see below). To participate effectively you will need to have done the readings and completed your weekly assignments. Please always bring the week's readings and your assignments to

class so you can discuss them with your classmates. Attendance is mandatory, but will not be explicitly recorded. Numerous absences will be noted, and will result in a reduction of your participation grade.

Communication & Electronic Devices

Please be considerate when using electronic devices in class. Make sure to silence your phone before class. You are encouraged to bring a laptop to class, but please only use it for class-related activities.

Disabilities

If you have a disability that may affect your academic performance, please let me know and make sure the relevant documentation is on file with Disability Support Services (Allen Center, Room 111 / adarice@rice.edu), so we can ensure you have the accommodations you need.

Academic Integrity

I trust you to avoid all forms of dishonest academic conduct in this course, such as plagiarism or cheating. Academic dishonesty is not only unfair to your fellow students, it is a serious academic offense and will be treated as such in the course. If you're unsure whether a specific practice counts as plagiarism or some other form of academic dishonesty, please err on the side of caution and consult me before you engage in it. You might also take a look at the Rice Honor Council handbook (http://honor.rice.edu/honor-system-handbook/).

Resources

The textbook for the course is 'Making up the Mind' by Chris Frith (Blackwell, 2007). Please obtain a copy as soon as possible from the campus bookstore or wherever else books are sold. Supplementary readings will be made available in PDF format from the Canvas site for the course. Another important resource is the PBS series 'The Brain', hosted by David Eagleman, who used to be a professor of neuroscience at Rice. The series can be viewed on PBS if you have a subscription, or can be purchased relatively inexpensively from places like iTunes. It can also viewed for free (with advertising) here: http://ihavenotv.com/series/the-brain-with-david-eagleman. The material assigned for a given week is listed in the schedule at the end of the syllabus.

Another important resource is the Canvas site. This will provide access to the readings, lecture slides, assignment instructions, and other important material. I will also use Canvas to make regular announcements about the course, so please make sure that you can access the Canvas site and that your notification settings are correct.

Assignments

Participation & Group Activities (15%)

Much of the class time will be devoted to discussion and group activities. You'll be graded on the basis of how regularly and actively you participate in these activities. To contribute actively to class activities you must come to class with copies of the readings and your journal entry for the week (see below), either as printouts or in electronic form.

Paper Reviews (20%)

You'll be expected to review and annotate ten of the additional (PDF) readings, one from each of ten different weeks. This process will involve reading the paper electronically, highlighting what you take to be the main points, adding inline comments addressing certain points about the paper that you think could be improved, then saving the annotated paper and uploading the PDF to Canvas. You should approach this project by pretending that you are reviewing the paper for a friend or colleague, and offering critical but constructive feedback about how he or she might improve the paper. To get into this mindset, feel free to address the author directly using the word 'you'. Imagine you're in a conversation with him or her. Your comments should focus on what you take to be the most substantive and important points, i.e. the points that are most directly related to the author's central goals and claims. Avoid commenting on superficial grammatical or stylistic errors, and instead focus on things like whether the author has provided evidence for his or her claims, whether s/he has adequately explained any unfamiliar concepts or terminology, whether s/he makes any claims that are especially unclear or confusing, and so forth. Finally, you should enter a comment at the top of the paper that brief summarizes the paper, by filling in the following schema: "The purpose of this paper is to... The main way in which this paper could be improved is by...".

Journal (20%)

For ten out of the fifteen weeks of the semester, you'll be expected to write a journal entry that discusses one of the ideas mentioned in the clip from *The Brain* that is assigned for that week. You should identify a point of contact between that idea and an idea mentioned in one of the readings or in class discussions. For example, maybe one week the host of *The Brain* discusses a specific point about how perception works that is also echoed in the textbook chapter assigned for that week. Or maybe he makes a point that seems to be contradicted by something that was said in class. In any case, the point you identify should be specific and concrete. Avoid vague generalities. In your journal entry, you should first explain the point you've chosen to discuss, and explain how it featured in both the TV show and the reading material or class discussion. You should then address *one* of the following three sets of questions:

1. Do you think the specific point at issue is true or false? Why?

2. Assuming this point led you to change your beliefs about how the mind or brain works, why? What was the specific reason that led you to change your mind?
3. Why did you find this point especially puzzling or confusing? What kind of information would help resolve your confusion? How might you obtain that information?

Indicate the number of the question you're addressing at the top of your journal entry. Your overall grade will be based partly on how many different kinds of questions you engage with over the semester; each individual journal entry should address a single question, but overall you should try to address a balance of all three question types. Your journal entries will also be evaluated on the basis of how much engagement and initiative they demonstrate. For example, if the point you're discussing involves concepts or experimental results that you're unfamiliar with, you'll gain more points if you proactively research those ideas and describe your research in your journal entry rather than simply describing your lack of understanding.

Your journal entries should be at least one page (double-spaced) long, and preferably no more than two. You must submit your journal entries to the Canvas discussion board by midnight on Mondays to receive credit. You should also bring your journal entries along to class and be prepared to discuss them. I encourage you to keep all your journal entries together in a single document, so you can easily survey your journal entries and get a sense of what you've learned and how your thoughts have developed over the semester.

Papers & Peer Reviews (45%)

You'll be expected to write three short (4-5 page) papers. These papers will undergo a peer review process whereby you'll first submit a draft of your paper, then receive comments on your draft from your fellow students, then improve your draft on the basis of the feedback you receive. Further details and due dates will be provided in a separate handout.

Grading

Your total % grade for the course will be assigned a letter grade according to the following scale:

A+	A	A−	B+	B	B−	C+	C	C−	D+	D	D−	F
≥95	≥93	≥90	≥87	≥83	≥80	≥77	≥73	≥70	≥67	≥63	≥60	<60

Schedule

The schedule for the course will follow the structure of the textbook, as shown below. This schedule is liable to change depending on our interests and how quickly we move through the material. Any deviations will be announced via Canvas.

Part I: Seeing Through the Brain's Illusions

Week 1 (1/9):

- Textbook: Prologue, 'Real Scientists Don't Study the Mind'.
- Fodor, J. (1999). Let your brain alone. London Review of Books, 20(19), 68-69.

Week 2 (1/16):

- Textbook: Ch.1, 'Clues from a Damaged Brain'.
- Piccinini, G. (2009). First-person data, publicity, and self-measurement. Philosophers' Imprint, 9(9), 1-16.
- Mudrik, L. and Maoz, U. (2014). 'Me & my brain': Exposing neuroscience's closet dualism, Journal of Cognitive Neuroscience, 27(2): 211-221.
- Watch: The Brain, Ep. 1 (1/2).

Week 3 (1/23):

- Textbook: Ch.2, 'What a Normal Brain Tells Us About the World'.
- Eagleman, D. (2001). Visual illusions and neurobiology, Nature Reviews Neuroscience, 2(12): 920-926.
- Watch: The Brain, Ep. 1 (2/2).

Week 4 (1/30):

- Textbook: Ch.3, 'What the Brain Tells Us About Our Bodies' (pp.61-73).
- Hubbard, E. and Ramachandran, V. (2005). Neurocognitive mechanisms of synesthesia, Neuron, 48(3): 509-520.
- Watch: The Brain, Ep. 2 (1/2).

Week 5 (2/6):

- Textbook: Ch.3, 'What the Brain Tells Us About Our Bodies' (pp.74-82).
- Libet, B. (1999). Do we have free will?, Journal of consciousness studies, 6(8-9), 47-57.
- Schurger, A. et al. (2016). Neural antecedents of spontaneous voluntary movement: A new perspective, Science, 20(2), 77-79.
- Watch: The Brain, Ep. 2 (2/2).

Part II: How the Brain Does It

Week 6 (2/13):

- Textbook: Ch.4, 'Getting Ahead by Prediction' (pp.83-99).
- Vignemont, D. (2011). Embodiment, ownership and disownership, Consciousness and Cognition, 20(1): 82-93.
- Ehrsson, H. (2007). The experimental induction of out-of-body experiences, Science, 317(5841): 1048--1048.
- Watch: The Brain, Ep. 3 (1/2).

Week 7 (2/20):

- Textbook: Ch.4, 'Getting Ahead by Prediction' (pp.100-110).
- Lansner, A. (2009). Associative memory models: From the cell-assembly theory to biophysically detailed cortex simulations, Trends in Neurosciences, 32(3): 178-186.
- Eliasmith, C. and Trujillo, O. (2014). The use and abuse of large-scale brain models, Current Opinion in Neurobiology, 25: 1-6.
- Watch: The Brain, Ep. 3 (2/2).

Week 8 (2/27):

- Textbook: Ch.5, 'Our Perception of the World Is a Fantasy...' (pp.111-124).
- Blakemore, S. et al. (2000). Why can't you tickle yourself?, Neuroreport, 11(11): 11-16.
- Montague, P. et al. (2004). Computational roles for dopamine in behavioural control, Nature, 431: 760-767.
- Watch: The Brain, Ep. 4 (1/2).

Week 9 (3/6):

- Textbook: Ch.5, 'Our Perception of the World Is a Fantasy...' (pp.125-138).
- Orlandi, N. (forthcoming). Predictive perceptual systems, Synthese.
- Watch: The Brain, Ep. 4 (2/2).

Week 10 (3/13): *Spring Break*

- Watch: The Brain, Ep. 5 (1/2).

Week 11 (3/20):

- Textbook, Ch.6: 'How Brains Model Minds' (pp.139-150).
- Gallese, V. (2007). Before and below 'theory of mind': Embodied simulation and the neural correlates of social cognition, Philosophical Transactions of the Royal Society B: Biological Sciences, 362(1480): 659-669.
- Singer, T., & Lamm, C. (2009). The social neuroscience of empathy, Annals of the New York Academy of Sciences, 1156(1), 81-96.

- Watch: The Brain, Ep. 5 (2/2).

Week 12 (3/27):

- Textbook: Ch.6, 'How Brains Model Minds' (pp.151-160).
- Campbell, J. (1999). Schizophrenia, the space of reasons, and thinking as a motor process, The Monist, 82(4): 609-625.
- Bayne, T. and Pacherie, E. (2007). Narrators and comparators: The architecture of agentive self-awareness, Synthese, 159(3): 475-491.
- Watch: The Brain, Ep. 6 (1/2).

Part III: Culture and the Brain

Week 13 (4/3):

- Textbook: Ch.7, 'Sharing Minds: How the Brain Creates Culture' (pp.163-173)'.
- Clark, A. (2006). Material symbols, Philosophical Psychology, 19(3): 291-307.
- Watch: The Brain, Ep. 6 (2/2).

Week 14 (4/10):

- Textbook: Ch.7, 'Sharing Minds: How the Brain Creates Culture' (pp.173-183)'.sc
- Schneider, S. (2008). Future minds: Transhumanism, cognitive enhancement and the nature of persons. In V. Ravitsky et al. (Eds.), The Penn Center Guide to Bioethics. New York: Springer (pp.99-110).

Week 15 (4/17):

- Textbook: Epilogue, 'Me and My Brain'.
- Chalmers, D. (1995). The puzzle of conscious experience, Scientific American, 273(6), 80-86.
- Kiverstein, J. (2007). Could a robot have a subjective point of view?, Journal of Consciousness Studies, 14(7): 127-139.