Thought & Perception | Philosophy and Cognitive Science

Spring 2018

Course #: AS.150.476 (Phil); AS.200.316 (PBS, Undergrad); AS.200.616 (PBS, Grad)

Meeting Time & Place: Thursday, 1:30pm-3:50pm, Hodson 311

Instructors: Chaz Firestone
Assistant Professor
Psychological & Brain Sciences
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Office Hours: Weds 1-2pm

Steven Gross
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Philosophy
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Gilman 272
Office Hours: Thurs 12-1pm

Course Description

This year’s topic: Philosophical, foundational, and methodological issues connected to Bayesian approaches in cognitive science. Bayesian probability theory and Bayesian decision theory aim to lay out how ideal reasoners update their beliefs in the light of new evidence and make decisions based on those beliefs. But what about such apparently non-ideal agents such as ourselves? The past few decades have witnessed a rising tide of Bayesian work on perception, higher cognition, neural coding, etc. This trend has been accompanied by vigorous debate concerning the aims and claims of these approaches. Some see the prospect of a grand unified theory of the mind/brain; others demur. We’ll examine these debates and what one can learn from them more generally about approaches to modeling the mind and the nature of rationality.

Welcome!

Welcome to Thought & Perception (aka, Philosophy and Cognitive Science). We’ve designed this class to focus on topics that we genuinely care about, topics where neither of us yet knows everything we’d like to know, and topics that are of current interest and at the center of debate in our fields. We hope to learn from this class, and we fully expect it to play a role in our current thinking and personal research plans.

So where do you fit in? We don’t want mere ‘spectators’ in this class. Given the broad and cross-disciplinary nature of the subject matter, we think that we will learn more by surrounding ourselves with students from different backgrounds and different levels of experience — students like you. So, our hope is that this class ends up feeling like a really good lab meeting. Ideally, by the end of the semester some of us may walk away with ideas for new writing projects or experiments.

To get there, we need to work hard and rigorously. Some of the readings will be challenging; there might be a lot at times (especially since we only meet once a week); and all of our reading will come from primary sources. So be prepared to work hard, and set aside the time to get the reading done. While the material is challenging, we have no reason to make the course itself challenging. This is a small and very advanced seminar — as far as we’re concerned this means that just doing the reading, showing up, and participating thoughtfully should earn you a good grade. But given the limited space, and the personal motivation we have for teaching the class, if you don’t do the reading, and you talk (or
don’t talk) about reading you didn’t do, we’ll be especially annoyed, and your grade will reflect that. Attendance at every session is required.

Undergraduate Requirements & Grading

A. Participation & a weekly discussion board post (40% total)

Participation will determine a very significant portion of your grade. Participation mainly means: useful contributions to class discussion, required weekly discussion board posts, and leading discussion for at least one session with a presentation on one of the readings. But significant interactions at office hours can contribute as well.

Each week, every student in the class is required to make a “post” to a discussion board that will be set up on Blackboard; your post must appear by Wednesday at 7:00pm (i.e. the evening before class). You’re required as well to read your fellow students’ posts before class, so that we can discuss them in person. These posts should be brief (~50 words is sufficient, though you are free to write more), and should raise a question or try out a point about that week’s reading. These are not meant to be polished pieces of writing, but they shouldn’t be overly informal either. For example, the following would not be appropriate: “hey dudes, what’s this guy talking about – catch ya later. #philosopherswtf 😕”. However, the following would do just fine: “On p. 10, Jones argues that XYZ. But this doesn’t seem consistent with her claim on p. 13 that ABC. Is there a way to understand Jones’ position that eliminates this apparent tension?” We will not assign grades to posts, but instead will take the general quality of your effort into account in deciding participation grades at the end of term. If we find your posts wanting early on, we’ll let you know and pass on advice on how to improve them.

B. A short commentary (10% total)

The first writing assignment in the course is a short ‘Commentary’ piece in the style of Behavioral and Brain Sciences. BBS is a journal that publishes very long, theoretical articles. In addition, it solicits commentaries from other researchers, and those commentaries are published (with a response from the authors) along with the target article. You will see at least one example a BBS paper in class, since they make for great seminar readings and so are on our syllabus. You must write a 3-page commentary on one of the readings from the first four weeks of class.

Due: Friday, February 23, by the stroke of midnight.

C. Two major essays (50% total)

The largest portion of your grade will be determined by two longer and more substantive essays, each of about 1,500-2,000 words (6-8 pages) and each worth 25%. One essay should be ‘theoretical’, and one should be ‘empirical’. Each essay can be on any topic of your choosing, related broadly to the concerns of the class.

The ‘theoretical’ essay should not include experimental proposals in any detail. Instead, it should attempt to make a theoretical or philosophical contribution to the subject area. It should be written in a style exemplified by the philosophy papers we read, or as an ‘Opinion’ piece for a journal such as Trends in Cognitive Sciences.

The ‘empirical’ essay must focus on empirical issues, either by reviewing an experimental literature in detail (i.e. addressing the methods, analyses, and data in that literature), or proposing a new set of experiments to answer a question.
**Timeline for handing in essays**
You may choose to write these two essays in either order you prefer. Each essay will involve a process of proposing a topic, submitting an abstract/summary of the essay, submitting a rough draft, conferencing with one of us about your draft, and then submitting a final manuscript. Prof. Gross will work with you on and then grade all the theoretical papers, and Prof. Firestone will work with you on and then grade all the empirical papers. The following calendar identifies all the relevant deadlines and procedures for submitting your essays. Remember, you may do them in either order.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Due Date</th>
<th>Contribution to Final Grade</th>
</tr>
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<tbody>
<tr>
<td><strong>Paper 1:</strong> Propose a topic by email (this email can be just a few sentences)</td>
<td>2 March 2018</td>
<td>0</td>
</tr>
<tr>
<td>Submit a 1-page abstract / summary (email)</td>
<td>9 March 2018</td>
<td>0</td>
</tr>
<tr>
<td>Submit a rough draft (email)</td>
<td>16 March 2018</td>
<td>5%, graded pass/fail for completing this requirement and the two above.</td>
</tr>
<tr>
<td>One-on-one conference with either Firestone or Gross</td>
<td>To be scheduled</td>
<td>0</td>
</tr>
<tr>
<td><strong>Final draft paper 1 (submit by email)</strong></td>
<td>30 March 2018</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Paper 2:</strong> Propose a topic by email (this email can be just a few sentences)</td>
<td>6 April 2018</td>
<td>0</td>
</tr>
<tr>
<td>Submit a 1-page abstract / summary</td>
<td>13 April 2018</td>
<td>0</td>
</tr>
<tr>
<td>Submit a rough draft</td>
<td>20 April 2018</td>
<td>5%, graded pass/fail for completing this requirement and the two above.</td>
</tr>
<tr>
<td>One-on-one conference with either Firestone or Gross</td>
<td>To be scheduled</td>
<td>0</td>
</tr>
<tr>
<td><strong>Final draft paper 2</strong></td>
<td>4 May 2018</td>
<td>20%</td>
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Overall grading breakdown: 40% Participation (including board posts)  
10% Short commentary paper  
25% Long paper 1  
25% Long paper 2  
100% total

Graduate Requirements & Grading  
One seminar-length paper—topic to be determined in consultation with the instructors—and participation, including posts.

Webpage  
There is a Blackboard page for this course. The syllabus and other course documents (for example, any powerpoint slides or hand-outs) will be posted there. The discussion board for posts is also there. To get to the course Blackboard page, go to http://blackboard.jhu.edu.

Policy on Electronica  
- Laptop use is not allowed in class (excepting accommodations). They must be stowed away out of sight, unless you are using your laptop to give a presentation.
  - In the past, this course has allowed laptop use, but we received complaints from students about other students who surfed the net, answered emails, etc. during class. We realize that the vast majority of students would never do that. But students found the few who did to be highly distracting and disrespectful.
  - Also, evidence has been building up that students who take notes on laptops tend not to learn material as well as those who take notes by hand. Distraction of course is the major factor. (Several studies have even found a significant difference between laptop note-takers with wifi off and other sources of distraction removed vs. those who take notes by hand. The explanation is uncertain, but one hypothesis is that the former tend to try to create a word-for-word record, whereas the latter tend to try to create a conceptual record—e.g., turning the lecture into an outline.)

- Phones must remain out of sight with the ringer off.
  - Do not text or check to see who called. If you have trouble avoiding temptation, put your phone in your knapsack or somewhere else where it won’t distract you.
  - Phone norms might differ across individuals. We’re letting you know ours: don’t take it out when we’re talking to you (in class, office hours, etc.).

Policy on Lateness  
Late papers are assessed a one-third-grade penalty per day (a B+ will become a B, a B will become a B-, etc.). In extreme circumstances (e.g., death of a family member), a student may request, prior to the due date, an extension.
Reading Schedule

All readings are either available via the web (in some cases, through the library’s e-subscriptions) or will be made electronically available to you by us. It’s possible we’ll change some readings in light of the direction of class discussion, students’ interests, etc. Any changes will be announced in class.

2/1. Introduction to the course and to Bayesian modeling in the mind-brain sciences


2/8. Perception


2/15. Higher-level Cognition


2/22. Development


3/1. Universal Bayesianism

- Orlandi, N. & Lee, G. (forthcoming). How radical is predictive processing?

3/8. Critiques from Psychology

3/15. Critiques from Philosophy
• Mandelbaum, E. (manuscript). Troubles with Bayesianism: An introduction to the psychological immune system.

3/22. NO CLASS (Spring Break!)

3/29. Levels of explanation, rational analysis, psychological reality
• Icard, T., forthcoming. Bayes, bounds, and rational analysis. Philosophy of Science.

4/5. Sampling

4/12. Empirical critiques: ‘anti-Bayesian’ phenomena as case-study
• Peters, M. A. K., Ma, W. J., & Shams, L. (2016). The size-weight illusion is not anti-Bayesian after all: A unifying Bayesian account. PeerJ, 4, e2124. [and supplementary material which raises objection to previous]
4/19. Empirical critiques continued
- Perhaps something by Firestone & Gross!

4/26. Yet more on empirical critiques

Extra resources that might be helpful or give context (not required reading)
- Gallistel and King, Memory and the Computational Brain, chap. 2, 2009
- TICS, 10.7, 2006 (special issue)
- In general, the open-access Stanford Encyclopedia of Philosophy is a top-notch resource for anything philosophical.