

The Psychobiology of Consciousness (PSY 252)

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Overview

For me, the most fascinating question in science is how it can be possible that we have subjective experiences of a qualitative nature. How can molecules and chemicals – physical tissue – produce phenomenal experiences like a mood, an emotion, a color, a sound? Is consciousness special to humans, to nervous systems, or is it in some way built into the fabric of the cosmos?

Our focus will be to see how psychobiologists and neuroscientists have approached this question. We will begin by discussing philosophy, and we will acknowledge that the issue is open as well to input from such diverse fields as physics, anthropology, and computer science, but we will spend most of our time reviewing the contribution of our discipline to these questions.

Internet Resources

The internet will be a valuable resource for this course. First, you may find many of the articles on electronic reserve at the course website on the library page. Second, the course has its own website which gives additional resources. Finally, the class has its own forum (bulletin board), which will be required for some assignments and will allow us to discuss articles prior to class.

E-reserves: <http://simeon.library.reed.edu/get/reserves.html>
Course website: <http://academic.reed.edu/psychology/courses/stjohn/cons>
Course forum: <http://reedcons.conforums3.com>

Evaluation

A. Message Board Assignments

1. Register on the forum with a user name that identifies you **by F, 1/28**.
2. Pick a favorite paper from the “**Zombies**” class and post on the message board a short essay (~3 paragraphs) that explains why that particular article represents best your position. **T, 2/1, before class.**
3. Write a short essay on one of the “**Thought Experiments**” from the first class and explain why you think it is particularly relevant or thought-provoking. Alternatively, create your own thought experiment and walk us through it. Feel free to comment additionally on others’. **T, 2/8.**
4. By **F, 3/11**, make a post (1-2 paragraphs) in the forum dedicated to “**What /s It Like To Be A Bat?**” Based on everything we’ve discussed up to that point, defend one of the three options stipulated in the Forum Rules.
5. **Facilitator Duties** – Three people will be selected to be a “facilitator” for each class meeting. One of the facilitators should start a new thread on the main forum with the title for that class session, and all facilitators should post discussion points and questions for the upcoming class. Facilitators should also help me monitor the thread and answer questions related to the article prior to class.
6. **General Contributions** – In addition to formal assignments, all of you should take an active role both in class discussions and on the web forum.
7. **Book Report** – You will be providing a preview of your report to the class on one of the books on consciousness. See below for further details.

B. Book Report

There are probably 3 dozen books published in the last 15 years by philosophers, physicists, psychologists, and neuroscientists dealing with the scientific study of consciousness. It would be useful to read these, but we obviously can't read every one. However, as a class, we should be able to read 8-9 titles, with 2-4 people reading a book. The books will be reported on: 1) in an oral presentations – a discussion facilitated by the readers, 2) on the message board especially in the two weeks prior to the oral presentations, and 3) in an individually-written 5-8 page critique, due **Tuesday, April 5**.

C. Course Critique

Another of the unusual assignments I'm requesting will be a course critique, due **Thursday, April 28**. One of the goals I have for us this year is to have us all plan how the course will be the next time it is taught. That's right – you guys are guinea pigs. I want more here than a routine course evaluation, I want you all as co-teachers: having read through a lot of stuff, which topics worked? Which didn't? Which papers were good? Confusing? What things did you expect us to cover that we didn't? What book reviewed during the year should be compulsory? Did the message board serve us well? What assignments were useful? Which were a waste of time? When were you most engaged? When were you on auto-pilot? Does the format work? Is it even worth teaching again?

I would be grateful if you kept checking the message board over the next summer and semester. I may post a thread on the course critiques to see how much agreement/disagreement there is on certain issues raised.

Timeline

Citations for readings are noted with this symbol: ☞. Consult the end of the syllabus for the full reference. Refer to the class title in message board postings. Readings are available via the library website for the course. On 1/27 only, two chapters from Jaegwon Kim's Philosophy of Mind are available on Library Reserve.

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| Philosophy | T 1/25 | Thought Experiments. We will walk through some experiments that will exemplify some of the issues that underlie the "mind-body" problem. |
| | R 1/27 | Overview: Phil of Mind. Basic terminology in the Philosophy of Mind. Possible guest lecture by Edward Cushman. ☞ Recommended: Chapter 2 and Chapter 7 of Kim's Philosophy of Mind (copies are on library reserve.) (1; 2) |
| | T 2/1 | Zombies! To me, the best way to define the subject under study is by imagining its absence. The Zombie Earth thought experiment is one of the more discussed. ☞ (3-7) |
| | R 2/3 | Defining Consciousness. Based on our previous discussions and the assigned articles, we will propose a definition for the thing we are studying. ☞ (8-10) |
| | T 2/8 | The Way Forward? We will discuss proposals for how to make headway on brain relationships to consciousness. ☞ (11-13) |

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| Weird, Wild Stuff | R 2/10 | Quantum Mechanics. Some people seem to think that the answer to anything weird lies in quantum mechanics. What do you think? ☞ (14-17) |
| Neuropsychology | T 2/15 | Blindsight. Some have thought the Holy Grail of consciousness is the study of the blind who can see. ☞ (18-21) |
| | R 2/17 | Conscious and Unconscious Vision. And then there are the sighted who are blind! ☞ (22-26) |
| | T 2/22 | Synesthesia. And then there are those who can see sound. ☞ (27-31) |
| | R 2/24 | Hallucinations and Dreams. Sometimes we have conscious experiences in the absence of definitive exteroceptive input. ☞ (32-37) |
| Alien Consciousness | T 3/1 | Visual Capture. We tend to think of consciousness tied to what's "in there" – what brain areas are active. But maybe it is tied to what's "out there" – what's out in the real world. ☞ (38-40) |
| | R 3/3 | Neural Plasticity & Sensory Substitution. Alterations in the brain – can they cause alterations in consciousness? ☞ (41-43) |
| | T 3/8 | Neural Plasticity & Sensory Alteration. Conscious perception of a visual scene may return to normal even if the visual signal is altered dramatically by goggles. A philosophical debate summarizes and elaborates on the this effect and the two previous classes. ☞ (44-48) |
| | R 3/10 | What <i>is</i> it like to be a bat? The title of a famous, pessimistic philosophical article on how we can never know what it is like to be in someone (or something) else's head. But I think we may in fact know exactly what it is like to be a bat. ☞ (49-51) |
| Visual Imagery | T 3/22 | Qualia without stimulation. Visual (and other sensory) imagery presents a case where we have a conscious perception without physical stimulation. ☞ (52-54) |
| Binding Problem | R 3/24 | Feature binding and attention. One of the hallmarks of consciousness is that it is "unified". One of the hallmarks of brain function is that it is distributed. Is this a problem? ☞ (55-57) |
| | T 3/29 | Feature binding and synchrony. A favorite hypothesis is that features of a stimulus are "bound" by rhythmic firing in neurons. ☞ (58-60) |
| | R 3/31 | A problem with the binding problem? Some have questioned whether the binding problem is really a problem, or at least whether synchrony offers any kind of solution. We will also examine a debate into |

whether primary visual cortex is a sensible location to look for feature binding.

☞ (61-65)

Ambiguous Stimuli

T 4/5 **Ambiguous figures.** Multistable figures (like the Necker cube) and binocular rivalry provide situations where the conscious percept can change without any change in the physical stimulus.

☞ (66-69)

R 4/7 **Invisible Stimuli.** Subthreshold stimuli, or other special forms of stimulation, can be registered unconsciously by the visual system – but not consciously.

☞ (70; 71)

T 4/12 **TBD.** Steve will be out of town, possible guest lecture.

R 4/14 **TBD.** Steve will be out of town, possible guest lecture.

Books

T 4/19 **Book Report I.** We will hear 4 book reviews.

R 4/21 **Book Report II.** We will hear 4 book reviews.

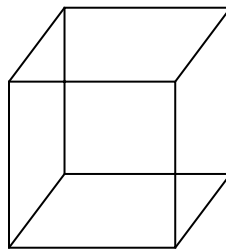
Free Will

T 4/26 **The Libet Paradigm.** Benjamin Libet showed that our intention to move comes well after our brain begins to prepare a movement. He does, however, claim a role for free will.

☞ (72; 73)

R 4/28 **You, Me, and It.** Contemporary experiments on willed action.

☞ (74-76)



Readings

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