PSYC305: Consciousness
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Course format, time and location: November 21-25 2011 (times and room to be announced separately)

Course description:
This course analyses the concept of consciousness and asks whether an account of it can be integrated with our understanding of the rest of the world. Of particular focus is whether the subjective nature of consciousness renders it unsuitable as a subject of scientific investigation. Various empirical (behavioural, neurophysiological) approaches to understanding consciousness are considered and evaluated. The course will be taught from a philosophical perspective, emphasizing conceptual analysis of, and argument-based justification of, positions in the debates concerning consciousness.

Course details:

Seminars: Each student is expected to:
• Attend (and participate in!) all seminars, taking notes where appropriate
• Read all the core reading for the day in advance of the seminar
• Be prepared to answer the "questions for consideration" (if any) and/or “questions from the text” if called on (note that there may be overlap in the two sets of questions)
• Bring to the seminar copies of the core reading and the questions

Assessment:
This part of the semester will be assessed by a two-hour exam, consisting of multiple choice, short answer, and essay questions.

Text:
The main text for this course is Consciousness: An Introduction (second edition) by Susan Blackmore, referred to as CAI in the course outline below. The first edition is an acceptable replacement, but some of the chapters have been moved around, so make sure you use the chapter title, not the number, when substituting.
Further reading: Some good suggestions are provided in the text. Others may be suggested by the tutor during the course, and can be provided upon request. Some general resources are listed at the end of this document.

Course schedule (each session is roughly two hours long, with short breaks every 50 minutes):

- **Monday, November 21st**: The Problem of Consciousness
  - Session 1: *Introduction; What’s the Problem?*
  - Session 2: *Zombies, bats and Mary: Can there be a science of consciousness?*
- **Tuesday, November 22nd**: The World
  - Session 3: *The Grand Illusion and the Cartesian Theatre*
  - Session 4: *Timing and Cartesian Materialism*
- **Wednesday, November 23rd**: The Brain
  - Session 5: *The neural correlates of consciousness*
  - Session 6: *Neuropathology and the unity of consciousness*
- **Thursday, November 24th**: Biological and non-biological constraints
  - Session 7: *The evolution and function of consciousness*
  - Session 8: *Machine consciousness*
- **Friday, November 25th**:
  - Session 9: Exam (no break)
Session 1:
Introduction; What’s the Problem?

Core Reading:
- CAI, Introduction
- CAI, Chapter 1. What’s the problem?

Questions for Consideration:
1. What is the principal aim of cognitive science? What distinctive means does it use to achieve this aim?
2. What particular characteristics of mind make it difficult to see how it could be part of the natural (physical) world?
3. For each of the following views concerning the relation between mind and the physical world explain what the view is (e.g., how does it differ from the others?), and what its strengths and weaknesses are:
   • Dualism:
     o Interactionism
     o Parallelism
     o Epiphenomenalism
   • Monism:
     o Behaviourism
     o Identity Theory
     o Machine functionalism
     o Eliminativism
     o Idealism/Phenomenalism (extra credit)
     o Neutral monism (extra credit)

Questions from the text:
1. Describe the mind-body problem. Name some traditional solutions to it.
2. What was Descartes' solution to the mind-body problem?
3. Why did behaviourism flourish and why did it ultimately fail?
4. What does the term 'intentionality' mean?
5. Describe the mysterious gap in as many different ways as you can.
6. Who described the 'hard problem' and what is it?
7. Are you a dualist or a monist?
Session 2:
Zombies, bats and Mary: Can there be a science of consciousness?

Core Reading:
- CAI, Chapter 2: What is it like to be…?
- CAI, Chapter 3: Conscious or unconscious?

Questions from the text:
- Chapter 2
  1. Who asked ‘What is it like to be a bat?’ and why?
  2. What is it like to be a …. ? Make up some questions of your own and consider how you would answer them.
  3. What is a quale? Give some examples.
  4. Give two opposing answers to the question ‘What does Mary learn when she comes out of her black and white room?’
  5. What is the philosopher’s zombie? List as many people as you can who believe that (a) a zombie could exist (b) a zombie could not exist. What do you think?
  6. Give at least three reasons for arguing that there is no hard problem.
  7. Do you think the Hard Problem is a real problem that needs solving? If so, how would you set about solving it?
Session 3:
The Grand Illusion and the Cartesian Theatre

Core Reading:
- CAI, Chapter 4: The theatre of the mind
- CAI, Chapter 6: The grand illusion

Questions from the text:

• Chapter 4
  1. In what ways does being conscious feel like being in a theatre?
  2. How do theories of attention use theatre imagery?
  3. Who coined the term ‘Cartesian Theatre’ (CT) and what is meant by it?
  4. What is wrong with the idea of the CT?
  5. How does Baars use the theatre metaphor in his theory? Is it a CT?
  6. Name three theories that avoid theatre imagery altogether.
  7. Explain, in your own words, Dennett’s theory of multiple drafts.
  8. Do you think the metaphor of the theatre is helpful or unhelpful for studying consciousness?

• Chapter 6
  1. What is meant by the phrase 'grand illusion'?
  2. Give two alternative explanations for the apparent filling-in of the blind spot.
  3. List some kinds of display that are, and are not, filled in across a scotoma.
  4. Why did Dennett imagine a room papered all over with identical portraits of Marilyn Monroe?
  5. Describe two or more methods for demonstrating change blindness.
  6. What implications does change blindness have for theories of vision?
  7. How might change blindness affect us in daily life?
  8. What is inattentional blindness? Give some examples.
  9. Why are magicians' tricks relevant to consciousness?
  10. Describe in your own words how you think vision works. If you are consciously seeing a book, a cup of coffee, or your friend's face, what do you think it is that makes this visual experience conscious?
Session 4:  
*Timing and Cartesian Materialism*

**Core Reading:**
- *CAI*, Chapter 3: Conscious or unconscious?
- *CAI*, Chapter 5: Attention and timing

**Questions from the text:**
- Chapter 3
  1. What potential problems are there with the idea that consciousness has causal efficacy?
  2. What evidence suggests a dissociation between visuomotor control and visual perception?
  3. Does the experiment by Castiello et al prove that consciousness comes too late to play a role in fast reaching movements?
  4. How do dualist theories explain the interaction between consciousness and the brain?
  5. What is functionalism and can it explain phenomenal consciousness?
  6. Describe the two main kinds of representational theory of consciousness.
  7. What functions does consciousness have according to Global Workspace Theory?
  8. Do you believe that consciousness has any causal power?
- Chapter 5
  1. Name three kinds of involuntary attention.
  2. What did James mean by the ‘cause theory’ and the ‘effect theory’ of attention?
  3. What is the evidence that half a second of neural activity is required for ‘neuronal adequacy’?
  4. What is ‘subjective antedating? And how does it work?
  5. What is the 'attentional blink' and how can it be demonstrated?
  6. Describe three phenomena that seem to show anomalies in time.
  7. According to Dennett, what is the difference between Orwellian and Stalinesque revisions?
  8. Do you believe that consciousness lags behind the events of the physical world?
Core Reading:
- *CAI*, Chapter 10: The neural correlates of consciousness

Questions from the text:
- Chapter 10
  1. What is a(n) NCC?
  2. What does it mean to say that a correlation is not a cause? Think up some examples in which people have wrongly assumed cause from correlation (they are widespread in the media).
  3. Describe two theories which relate the effects of anaesthetics to consciousness.
  4. Why does perceptual rivalry provide a useful paradigm for studying the NCC? Describe two experiments using this technique.
  5. What are the neural correlates of pain? Describe two theories that try to explain why pain hurts.
  6. List several methods for observing brain function and describe their advantages and disadvantages
  7. What does Ramachandran mean by claiming to have amputated a phantom limb?
  8. Do you think that studying the NCCs is the right way forward for the science of consciousness?
Session 6:
Neuropathology and the unity of consciousness

Core Reading:
- *CAI*, Chapter 11: The unity of consciousness
- *CAI*, Chapter 12: Damaged brains

Questions from the text:
• Chapter 11
  1. What is meant by “the unity of consciousness”? Why is it a problem?
  2. Describe the binding problem(s).
  3. What is the relationship between binding and attention?
  4. Describe two theories of binding by neural synchrony.
  5. Explain Zeki’s theory of microconsciousnesses.
  6. How does Edelman and Tononi’s theory account for unity and diversity?
  7. What is synaesthesia, and how can it be tested?
  8. Do you think the unity of consciousness is an illusion?

• Chapter 12
  1. What is amnesic syndrome? Which kinds of memory are lost and which are retained?
  2. Describe two or more amnesic patients. What do their cases tell us about consciousness?
  3. What is Anton’s syndrome and how might it be explained?
  4. Describe some experiments that reveal the nature of the deficits in hemifield neglect.
  5. What is blindsight? How is it caused, and how can it be detected?
  6. Compare the arguments that have used blindsight to support the possibility of zombies with those that use blindsight to undermine it.
  7. What is sensory substitution and why might it be relevant to consciousness?
  8. Do you think that Block's distinction between Access Consciousness and Phenomenal Consciousness is valid, or not?
Session 7:
The evolution and function of consciousness

Core Reading:
- *CAI*, Chapter 13: The evolution of consciousness
- *CAI*, Chapter 14: The function of consciousness

Questions from the text:
- Chapter 13
  1. What was the “argument from design” supposed to prove? Why is it false?
  2. In your own words, explain how natural selection works. List three or more phrases that describe the process.
  3. Describe some theories in which consciousness directs evolution. What is wrong with them?
  4. What is a selfish replicator?
  5. Describe some differences between sociobiology and evolutionary psychology.
  6. If you believe in the possibility of zombies, what is the function of consciousness?
  7. How does a functionalist set about explaining the evolution of consciousness?
  8. Do you personally believe that consciousness evolved by natural selection?

- Chapter 14
  1. Suggest some turning points in evolution which might have marked the appearance of consciousness.
  2. Describe Humphrey’s “Just-so story” in your own words.
  3. Compare Humphrey's and Mithen's theories of how consciousness evolved.
  4. On what grounds does Barlow criticise Humphrey’s theory? What other criticisms can you think of?
  5. Describe two or three theories in which consciousness has no biological function.
  6. Think of as many ways as possible in which Darwinian processes may be involved in the evolution of mind.
  7. What are memes? Compare two theories that make use of memes in understanding consciousness.
  8. Do you believe consciousness has a function? If so what is it?
Session 8:  
_Machine consciousness_

**Core Reading:**
- _CAI_, Chapter 16: Minds and machines
- _CAI_, Chapter 17: Could a machine be conscious?
- _CAI_, Chapter 18: How to build a conscious machine

**Questions from the text:**

- **Chapter 16**
  1. List some landmarks in the history of intelligent machines.
  2. Describe Turing's original machine. What is a universal Turing machine?
  3. What is GOFAI and what principles is it based on?
  4. What is the difference between Strong and Weak AI?
  5. Describe how a simple ANN works. How does this differ from traditional computing?
  6. Give an example of emergent intelligent action in a simple animal and a simple machine.
  7. Describe the Turing Test. If a machine passed the unrestricted Turing test, what would you conclude about the machine?
  8. Are you happy to think of yourself as a machine? If so, how does this affect the way you live? If not, why not?

- **Chapter 17**
  1. List the main arguments against the possibility of conscious machines.
  2. What problems would you face in designing a test for whether a machine is conscious?
  3. In what ways is biology thought to be important for consciousness?
  4. What things do people claim machines could never do?
  5. What things do you think machines could never do?
  6. Describe the Chinese Room thought experiment. What is it supposed to show?
  7. Summarise Penrose and Hameroff's theory. Does it help to explain consciousness?
  8. Do you think the question "Could a machine have phenomenal consciousness?" is meaningful or not? (you might like to return to this question after studying Chapter 18 as well.)

- **Chapter 18**
  1. People are generally bad at judging whether machines or other creatures have goals, desires or intentions. Give two or three examples that illustrate this.
  2. Describe Kismet. What has been learned about machine consciousness from Kismet's behaviour?
  3. Do thermostats have beliefs? Compare McCarthy's and Aleksander's views.
  4. Choose any theory of consciousness. How would you set about creating a conscious machine on the basis of that theory?
  5. Why is it so difficult to give true language to machines?
  6. What are the implications of machine imitation?
  7. What is the relevance of embodiment to machine consciousness?
  8. Compare Kurzweil's and Brooks's visions for the future of conscious machines.
  9. How would you set about building a conscious machine? (assume you could have any components or apparatus you needed.)
Philosophy of Mind and Philosophy of Cognitive Science: Resources

Recommended additional texts:
If you would like to do further reading, you are recommended to get hold of one or two of the following. Some are more conventional Philosophy of Mind texts, and some dedicated to the spectrum of issues in Philosophy of Cognitive Science.

• *Modern Philosophies of Mind, ed. W. Lyons* is an anthology of articles by twentieth-century writers on the Philosophy of Mind. After reading the selections from this volume, you will have a familiarity with some of the representative modern philosophical texts on the nature of the mind. It also contains a useful brief introduction to some of the major currents of thought in the philosophy of mind; and a very informative Chronology of 20th century philosophical, historical and scientific developments, which will help put the writings into a broader context.

• *Matter and Consciousness, (Revised Edition) by Paul M. Churchland* gives an extended presentation of a quite radical position on the nature of mind, by a modern writer who works within the Cognitive Science tradition. You will be able to sharpen your own views by working out how much you agree or disagree with Churchland's point of view. Some of the chapters provide excellent introductions to important areas of cognitive scientific inquiry, covering developments in psychology, biology, neuroscience and artificial intelligence.

• *The Mechanical Mind, by Tim Crane* This is a very accessible text which is written by a philosopher, not a cognitive or computer scientist, but which discusses a number of issues underlying computing, and classical and connectionist AI, while also addressing some important philosophical issues to do with mental representation.

• *Mind and Cognition 2nd Edition, (ed) W. Lycan* is a substantial collection of papers by a philosopher who has assembled a number of key papers in the philosophy of mind, AI and consciousness.

• *Mind Design II, (ed) J. Haugeland* This collection contains some of the key theoretical papers on classical and connectionist approaches to AI, with some interesting critical discussions. Many of the authors are computer scientists rather than philosophers, but several papers are classics in computationally-based philosophy.

• *Philosophy of Artificial Intelligence (ed) M. Boden.* This collection of papers, specifically on the philosophy of AI, contains a number of key articles by both philosophers and AI researchers. It provides a useful alternative to Haugeland’s anthology (see above).

General Philosophy:
• *The Cambridge Dictionary of Philosophy, R. Audi (ed.) (CUP, 1995)*
• *The Oxford Dictionary of Philosophy, S. Blackburn (OUP, 1996)*

Philosophy of Mind and Cognitive Science:

Encyclopedias/guides:
• *The Blackwell Guide to Philosophy of Mind*, Stich and Warfield (eds) (Blackwell, 2001)

**Collections/Anthologies:**
• *Modern Philosophy of Mind*, W.Lyons (ed) (Everyman, 1995)
• *Philosophy of Artificial Intelligence*, M.A.Boden (ed) (Oxford UP)
• *What is Cognitive Science?*, Lepore and Pylyshyn (eds) (Blackwell, 1999)

**Introductions/Historical Overviews:**
• *Philosophy of Mind*, Kim, J. (Westview, 1998)

**Online:**
• David Chalmers’ Consciousness website has many online papers: [http://consc.net/online](http://consc.net/online). This is a subset of an even bigger listing of papers, both online and offline, that be found at [http://consc.net/mindpapers/](http://consc.net/mindpapers/)
• The COGPRINTS archive, at [http://cogprints.org/](http://cogprints.org/) is a wealth of published papers which authors have lodged in preprint form, etc. There are 437 papers on Philosophy of Mind at [http://cogprints.org/view/subjects/phil-mind.html](http://cogprints.org/view/subjects/phil-mind.html). Of more limited use than the Chalmers list (above), especially for recent papers, but has some useful entries from earlier years.