**UNIT GUIDE** 

# BSc (Hons) PSYCHOLOGY BA/BSc COMBINED HONOURS – PSYCHOLOGY FIELD GRADUATE DIPLOMA IN PSYCHOLOGY

2007/2008

Semester Two

**Cognitive Science** 

URL - http://www.lsbu.ac.uk/psycho/teaching/cogsci-main.shtml

Faculty of Arts and Human Sciences Department of Psychology

# become what you want to be

# **Basic Data**

<u>Unit title</u> :	Cognitive Science	
Unit level(s):	3	
Reference Number:	PSY-3-CS3	
Credit Value:	1	
Student Study Hours:	150 hours	
Class Contact Hours:	36	
Private Study Hours:	114	
Pre-requisites:	Cognitive Psychology, Developmental Psychology and Social Psychology	
Co-requisites:	None	
Excluded Combinations:	None	
Assessment:	2500 coursework essay (40%) 2-hour unseen examination (60%)	
Unit Co-Ordinator:	Tony Stone, Room E329. Email: <u>stonea@lsbu.ac.uk</u>	
Additional Tutor	Jamie Smith-Spark Email: <u>smithspj@lsbu.ac.uk</u>	
Parent Faculty:	Arts and Human Sciences	
Subject Area:	Psychology	

#### 2. Short Description

This unit provides students with the opportunity to explore some of the key theoretical debates in contemporary cognitive science. Cognitive Science is the scientific study of thought. It deals with a wide variety of questions, amongst the core being:

- What is the nature of thought?
- What is the relationship between thought and language?
- □ How do we attribute thoughts to others?
- What is the nature of mental representation?
- What is the nature of mental processing?
- What is the relationship between thought and computation?
- What is the nature of consciousness?

However, there is also now some new work focused on such topics as the nature of the imagination and the emotions, and the application of ideas from cognitive science to aesthetics more generally. These new topics will also be introduced to provide students with experience of work at the very "cutting edge" of the discipline.

#### 3. Aims

- An understanding of the origins of contemporary cognitive science;
- The opportunity to explore a selection of current research topics in cognitive science;
- **u** Further tuition on the psychology of selected important cognitive abilities;
- An understanding of the interdisciplinary nature of the contemporary study of cognition.

# 4. Learning Outcomes

#### Knowledge and Understanding

At the end of the units students will be able to:

- □ Make informed use of contemporary work in the philosophy of mind and psychology in their thinking about cognitive science;
- Critically compare the approach to cognition taken by classical and connectionist approaches to cognition;
- □ Be able to explain the importance of the notion of mental representation to contemporary cognitive science
- Compare and contrast the roles and importance of internal and external representations in cognitive science
- Explain and evaluate some key contemporary ideas on the relationship between language and thought;

- Critically compare different approaches to the nature and development of our ability to understand the mental lives of others, especially the competing theory theory and simulation theory approaches to this ability;
- Provide informed comment on recent work applying cognitive science to the study of the imagination and aesthetics more generally;
- Critically compare different approaches to the nature of consciousness.

# Intellectual Skills

The unit will assist in the inculcation of the skills of:

- □ Handling primary source material critically;
- □ Presenting and evaluating research findings;
- Employing evidence based reasoning and examining issues associated with different approaches;
- □ Applying multiple perspectives to psychological issues;
- □ Integrating across multiple perspectives and recognising distinctive approaches.

# Practical Skills

The unit will require students to:

**D** Retrieve and organise information effectively e.g. from electronic sources.

# Transferable Skills

The unit will contribute to the development of the skills required to:

- □ Problem solve and reason scientifically;
- □ Make critical judgements and evaluations;
- Be sensitive to contextual and interpersonal factors;
- Communicate effectively verbally;
- Communicate effectively using written language;
- Operate as independent and pragmatic learners.

# 5. Assessment of the Unit

The unit is assessed by ONE coursework essay of no longer than 2,500 words and ONE 2hour unseen examination. The coursework question will require students to undertake independent research and to progress beyond the basic material presented in the textbook and the lectures. Questions will be designed to enable able students to demonstrate depth of knowledge, insight and originality. The examination will test students' understanding of basic concepts, arguments, methods and evidence in the context of more straightforward questions. The better answers will show a solid mastery of this basic material and argue clearly and cogently for the conclusions they have reached.

The coursework questions will be distributed during the first part of the semester.

# 6. Introduction to Studying the Unit

# 6.1 *Overview of the main content*

This unit provides students with the opportunity to study selected topics in contemporary cognitive science. The unit begins with a brief historical overview of the origins of cognitive science, but then moves swiftly on to look at some linked – though independently presented – topics in contemporary cognitive science.

A number of questions are central at this point in the unit:

- How do thoughts represent aspects of the world?
- How can thoughts cause behaviour?
- What are the building blocks of thought?
- How can we explain rational transitions in thought?

Students will be introduced to the basic ideas that underpin answers to these questions provided by the Computational Theory of the Mind, and by Fodor's language of thought (LOT) hypothesis (The Representational Theory of Mind). Following on from this we will look at the alternative connectionist approach to modeling the mind computationally and, in particular, whether this approach enables us to dispense with the language of thought in favour of some – allegedly – neurally more plausible alternative. Related to this will be discussion of the role of internal and external mental representations in the study of cognition. The unit then takes up the topic of the nature of folk psychological practice as this has been discussed by the differing theory theory and simulation theory approaches. In this regard we will also look at the nature of the imagination and one or two other topics in the newly developing field of the cognitive science of aesthetics. The unit then tracks back to look at some other issues concerning the relationship between computers and thought, discussing some seminal issues such as the Turing Test and the Chinese Room thought experiment. The final topic concerns contemporary debates over whether and how we can develop a scientific view of conscious experience itself, and not only the information processing mechanisms that subserve conscious mental processing.

This unit looks back to work students have done in their level 2 core units in Cognitive, Developmental and Social Psychology, and in the Biological Basis of Behaviour. It relates, in particular, to previous work on mental representation, theory of mind and autism, the relationship between mind and brain and attribution theory.

# 6.2 *Overview of the type of classes*

The first lecture on each topic will usually provide an introductory survey of the topic area; the second will discuss selected problems and issues in more depth. Attendance at lectures is **compulsory**. Following each lecture there will be a question and answer/discussion session which is **optional**. Students will have the opportunity to ask questions, and discuss the lecture material and any papers they have been asked to read. Students should only attend these sessions if they have undertaken required reading.

Attendance at all compulsory sessions is essential. The material in this unit is hard!

# 6.3 Importance of self-managed learning time

The issues we discuss are challenging – there is no getting around that. It is vital, therefore, that you engage in reading and thinking outside of the timetabled sessions, and prepare yourself for the classes. If this is not done, you will find the sessions frustrating.

You should also be prepared to spend part of the first two-three weeks of this time reading through the WHOLE of the core text a couple of times so that you can begin to develop an overview of the unit.

For each topic you will be required to read papers for discussion in seminars on which guidance questions will be set.

# 6.4 Employability

It might be thought that the abstract nature of this material means that it has no relevance for your future employability as Psychologists. I think it would be a mistake to think this. Psychological knowledge – such as it is – will change during your lives as Psychologists. You will need to be able to respond to these changes, and the kinds of issues and flexibility of thinking required in this course will promote your ability to do this. It is also the case that understanding the nature of different styles of computation, the relationship of computation to thought, and the possibilities and limitations of the scientific understanding of cognition will prepare you for Graduate work in, for example, Cognitive Science and Cognitive Psychology, and for work in the IT and related industries. Moreover, as psychologists you will need to be able to argue effectively and to communicate in a precise and clear way. The material contained in this course will hone your skills in this area also.

# 6.5 Equality and diversity

This unit contributes to the University's equality and diversity policy by providing students with a training in, and experience of, the kinds of philosophical/conceptual study that is needed for a critical and nuanced approach to the ideas lying behind this policy. The conceptual issues discussed will require students to draw upon their differing intellectual and personal resources if they are to make progress in the unit. The assessment is designed to

allow better students to demonstrate the full range of their abilities, and to enable weaker students to fulfill their potential.

The University equality and diversity policy suggests that it should be recognized that 'my world is not the only world'. This unit directly supports this proposal by requiring that students question that which they (and their culture) take for granted in the light of some of the most challenging ideas being debated in the contemporary study of cognition.

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# 7. Summary of unit content

Week	Торіс	Pre-lecture Reading	
1	Introduction	Pre-course reading	
2	Folk Psychology I: The Theory Theory, the Intentional Stance, and Eliminative Materialism	<i>The Mechanical Mind</i> , Chapter 2 <i>Mindware</i> , Chapter 3	
3	Folk Psychology: The Theory Theory/Simulation Theory debate	The Mechanical Mind, Chapter 2	
4	Thought and Computation I	<i>The Mechanical Mind</i> , Chapters 3 <i>Mindware</i> , Chapters 2 & 6	
5	Thought and Computation II	The Mechanical Mind, Chapters 4 & 5	
6	Connectionist Approaches to Cognition I (JSS)	Mindware, Chapter 4	
7	Connectionist Approaches to Cognition II (JSS)	Mindware, Chapter 4	
	Easter Break		
8	Perception and Action	Mindware, Chapter 5	
9	External Representation I (JSS)	Mindware, Chapter 8	
10	External Representation II (JSS)	Mindware, Chapter 8	
11	Consciousness I	The Mechanical Mind, Chapter 6	
12	Consciousness II	The Mechanical Mind, Chapter 6	

Lectures given by Tony Stone or Jamie Smith-Spark (indicated by JSS)

#### 8. Week-by-Week Breakdown

Note that it is not expected that the learning outcomes be met at the end of the session to which they are attached. They are an indication of the learning outcomes that need to be achieved on each topic to achieve high marks in assessment.

#### Week One: Introduction

#### Aims

To provide students with:

- □ An outline history of the emergence of cognitive science;
- An outline of the component disciplines that constitute cognitive science;
- An introduction to the topics and problems to be discussed on the course;
- An introduction to the ideas that thought is intentional, causal and rational;
- An introduction to the study of the mind from a "mechanical" perspective.

#### Learning Outcomes

Students will be able to:

- List the component disciplines of cognitive science and their interrelations
- □ Sketch out some of the key problems that will be discussed on the course;
- Provide brief outline definitions of concepts such as pyhsicalism, materialism and intentionality.

# Week Two: Folk Psychology I: The Theory Theory/Simulation Theory Debate

#### Aims

To provide students with:

- A brief overview of the mind-body problem and the alternative materialist and dualist solutions to it;
- An introduction to the idea of commonsense of folk psychology;
- An introduction to Fodor's formulation of the Representational Theory of Mind (RTM);
- An introduction to eliminative materialism;
- An introduction to Dennett's Intentional Stance approach to folk psychology.

#### Learning Outcomes

Students will e able to:

- Outline the alternative materialist and dualist solutions to the mind-body problem;
- Outline Fodor's RTM and the main lines of the debate surrounding it;
- **G** Formulate and evaluate eliminative materialism
- **D** Formulate and evaluate Dennett's intentional system's theory

# Reading<sup>1</sup>

Churchland, P. (1981) Eliminative Materialism and the Propositional Attitudes. <u>Journal of</u> <u>Philosophy</u>, 67-90. Reprinted in Lycan.

Dennett, D. (1978) Brainstorms. London: Penguin. Chapter 1.

Dennett, D. (1987) The Intentional Stance. Cambridge, MA: MIT Press. Chapters 1-3.

Fodor, J. (1987) Psychosemantics. Cambridge, MA: MIT Press. Chapter 1.

# Weeks Three: Folk Psychology II: The Theory theory/Simulation Theory Debate

- An introduction to the phenomenon of everyday mind-reading;
- □ An introduction to the rival theory theory and simulation theory approaches to everyday mind-reading and its development;
- A detailed discussion of the differing approaches to simulation theory of Jane Heal and Alvin Goldman.

# Learning Outcomes

Students will be able to:

- Outline the basic ideas lying behind the theory theory and simulation theory;
- Demonstrate an appreciation of the different versions that theory theory and simulation theory can take;
- Outline and evaluate some of the basic objections that simulation theory raises against the theory theory;

<sup>&</sup>lt;sup>1</sup> The reading given for each topic is a sample from a large literature to get you started on your coursework assessment. More reading on each topic may be given on lecture handouts and the blackboard web site. For general reading you should initially concentrate on the Crane set text and try to read it from cover to cover as quickly as possible. If you can read through Crane you will find you will get on top of the course faster.

- Describe and evaluate the main empirical issues that inform the debate between theory theory and simulation theory.
- Describe the main differences between Heal's and Goldman's versions of simulation theory, drawing particular attention to the level at which the theories are pitched;
- Describe and evaluate the different approaches to the epistemology of simulation taken by Heal and Goldman;
- □ State the "threat of collapse" and "prediction failure" challenges to simulation theory and outline at least one potential response to each of these challenges;

# Reading

Crane, T. (2003, 2<sup>nd</sup> Ed.) <u>The Mechanical Mind: A Philosophical Introduction To Minds</u>, <u>Machines And Mental Representation</u>. London: Routledge. **Chapter 2.** 

Currie, G. & Ravenscroft, I. (2002) Recreative Minds. Cambridge CUP. Chapters 1-3.

Davies, M. & Stone, T. (Eds) (1995) <u>Folk Psychology</u>. Oxford: Blackwell. **Introduction** and **papers by Heal, Gordon and Goldman.** 

Davies, M & Stone, T. (1995) (Eds.) <u>Mental Simulation</u>. Oxford: Blackwell. **Papers by** Heal, Gordon, Harris, Currie.

Davies, M. & Stone, T. (1998) Folk Psychology and Mental Simulation. In A. O'Hear (Ed.), <u>Contemporary Issues in the Philosophy of Mind: Royal Institute of Philosophy Supplement</u> <u>42</u>. Cambridge: Cambridge University Press (pp 53-82). [On Bb]

Davies, M. & Stone, T. (2001) Mental Simulation, Tacit Theory, and the Threat of Collapse. <u>Philosophical Topics</u>, 29, 127-173. Available at [On Bb]

Harris, P (2000) The Work of the Imagination. Oxford: Blackwell.

Heal, J. (2003) <u>Mind, Reason and Imagination: Selected Essays in Philosophy of Mind and Language</u>. Cambridge: Cambridge University Press. **Papers in Parts 1 and 2**.

Nichols, S & Stich, S. (2003) <u>Mindreading: An Integrated Account of Pretence, Self-awareness and Understanding Other Minds</u>. Oxford: OUP.

Stone, T. & Davies, M. (1996) The Mental Simulation Debate: A Progress Report. In P. Carruthers & P. K. Smith (Eds.), <u>Theories of Theories of Mind</u>. Cambridge: Cambridge University Press (pp 119-137). [On Bb]

#### Week Four: Thought and Computation I

#### Aims

To provide students with:

• An introduction to the debate on whether computers can think.

#### Learning Outcomes

Students will be able to:

- Outline and evaluate the Turing test for mentality;
- Outline and evaluate Searle's Chinese Room thought experiment.

# Reading

Block, N. (1983) The mind as software of the brain. On Bb.

Dennett, D. (1985) Can machines think? In D. Dennett Brainchildren.

Preston, J. & Bishop, M. (Eds.) (2002) <u>Views into the Chinese Room: New Essays on</u> <u>Searle and Artificial Intelligence</u>. Oxford: Clarendon Press.

Searle, J. (1980) Minds, brains and programmes. <u>Behavioral and Brain Sciences</u>, 1, 417-24. (Reprinted in many anthologies – e.g., Hofstadter & Dennett's <u>The Mind's I</u>)

Turing, A. (1950) Computing machinery and intelligence. <u>Mind</u>, 51, 433-60. (Reprinted in many anthologies. – e.g., Hofstadter & Dennett's <u>The Mind's I</u>)

# Week Five: Thought and Computation II - The Language of Thought Hypothesis

# <u>Aims</u>

To provide students with:

□ An outline of the Language of Thought Hypothesis (LOT) and to some of the major responses to the LOT hypothesis, including connectionist responses.

#### Learning Outcomes

Students will be able to:

- Outline the LOT
- Outline the major problems the LOT hypothesis faces;
- Outline at least one alternative to the LOT hypothesis;
- **Critically evaluate the LOT hypothesis.**

# Reading

Crane, T. (2003) <u>The Mechanical Mind: A Philosophical Introduction to Minds, Machines</u> <u>and Mental Representation</u>. **Chap 4**.

Aydede, Murat, "The Language of Thought Hypothesis", *The Stanford Encyclopedia of Philosophy (Fall 2004 Edition)*, Edward N. Zalta (ed.), URL = <a href="http://plato.stanford.edu/archives/fall2004/entries/language-thought/">http://plato.stanford.edu/archives/fall2004/entries/language-thought/</a>.

Braddon-Mitchell, D & Jackson, F. (1996) <u>The Philosophy of Mind and Cognition</u>. Blackwell: Oxford. **Chap 10**.

<u>Churchland, P. & Churchland, P. (1983) Stalking the wild epistemic engine. In</u> W. Lycan (Ed.). (1999) <u>Mind and Cognition: An Anthology</u>. Oxford: Blackwell.

Churchland, P. M. (1988) <u>Matter and Consciousness : A Contemporary Introduction to the</u> <u>Philosophy of Mind</u>. Cambridge, Mass: MIT Press. **Chap 2**, and esp. pp 40-49.

Churchland, P. M. (1981) Eliminative Materialism and the Propositional Attitudes. In W. Lycan, (Ed.). (1999) <u>Mind and Cognition: An Anthology</u>. Oxford: Blackwell.

Davies, M. (1991) Concepts, connectionism and the language of thought. In W. Ramsey, S. Stich and D. Rumelhart (eds), <u>Philosophy and Connectionist Theory</u> (Hillsdale, NJ: Lawrence Erlbaum Associates).

# Weeks 6 and 7: Connectionism

# <u>Synopsis</u>

Connectionist (or neural network) models of mind differ greatly from the symbolic architectures discussed in previous weeks. They bear more of a relation to the physical workings of the brain, using large numbers of simple processing 'units' linked in parallel to form networks of interconnected artificial neurons. After a general introduction to connectionism, we will consider what insights the neural network approach can give us into the *age of acquisition* (AoA) effect. This phenomenon describes a processing advantage for

words, objects, and faces that people have learnt early in life over similar types of stimuli learnt later. People are generally faster and more accurate to respond to early-acquired stimuli. The connectionist approach has been used successfully to simulate AoA effects. We will discuss several important papers in the area and what these can tell us about memory representation.

# Learning outcomes

- Be able to explain the connectionist approach to modelling the mind
- Critically evaluate the contribution of neural network models to cognition
- Examine what the connectionist approach can tell us about a specific cognitive phenomenon, the age of acquisition effect

# Reading

Barry, C., & Johnston, R. A. (Eds., 2006). *Age of acquisition effects in word and object processing*. Hove, East Sussex: Psychology Press.

Bem, S., & Looren de Jong, H., (2006). *Theoretical issues in psychology: An introduction* (2<sup>nd</sup> ed.). London: Sage. [Chapter 8: Modern approaches to mind (2): The brain-based view, pp. 181-208)].

Clark, A. (2001). *Mindware: An introduction to the philosophy of cognitive science*. New York: Oxford University Press. [Chapter 4: Connectionism, pp. 62-83].

Ellis, A. W., & Lambon Ralph, M. A. (2000). Age of acquisition effects in adult lexical processing reflect loss of plasticity in maturing systems: Insights from connectionist networks. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 26*, 1103-1123.

Mulholland, P., & Watt, S. (2005). Cognitive modelling and cognitive architectures. In N. Braisby and A. Gellatly (Eds), *Cognitive psychology*. Oxford: Oxford University Press. (pp. 579-583)

Steyvers, M., & Tenenbaum, J. B. (2005). The large-scale structure of semantic networks: Statistical analyses and a model of semantic growth. *Cognitive Science*, 29(1), 41-78.

# Week 8: Perception and Action

Aims

An introduction to contemporary views on the relationship between perception and action

• An introduction to the debate between input-output versus enactive theories of perception.

# Learning Outcomes

Students will be able to:

- Outline Marr's approach to visual perception, and specifically his three levels approach
- Critically evaluate Marr's approach to understanding the relationship between theories pitched at the level of information processing and those pitched at the level of neural implementation
- Evaluate competing modular and non-modular approaches to visual perception
- Assess the role of inference in perception
- Outline some of the leading accounts of the ways in which the relationship between perception and consciousness might be understood
- Outline the distinction between conceptual and non-conceptual content
- Provide an outline account of Milner and Goodale's work on visual perception
- Outline and evaluate the differences between the co-called "input-output" view of perception and the "sensori-motor" approach to visual perception recently advocated by Noë (2004) and colleagues.

# Reading

Fodor, J. (1983) The Modularity of Mind. Cambridge, MA: MIT Press.

Fodor, J (1985) Precis of <u>The Modularity of Mind</u>. In Fodor, J (1990) <u>A Theory of Content</u> and Other essays. Cambridge, MA: MIT Press.

Marr, D. (1982) Selections from <u>Vision</u>. In A. Noë & E. Thompson (Eds.) (2002) <u>Vision</u> and <u>Mind: Selected Readings in the Philosophy of Perception</u>. Cambridge, MA: MIT Press.

Milner, A. and Goodale, M (1998) The visual brain in action. In A. Noë & E. Thompson (Eds.) (2002) <u>Vision and Mind: Selected Readings in the Philosophy of Perception</u>. Cambridge, MA: MIT Press.

Noë, A. (2004) Action in Perception. Cambridge, MA: MIT Press.

Noë, A & Thompson, E (Eds.) (2002) <u>Vision and Mind: Selected Readings in the</u> <u>Philosophy of Perception</u>. Cambridge, MA: MIT Press.

Rock, Indirect Perception. Cambridge, MA: MIT Press.

#### Weeks 9 & 10: External representation

#### **Synopsis**

Traditionally, cognition has been studied in terms of internal representations such as schemas, propositions, and productions. According to this perspective, all cognitive processing occurs in an internally represented model of the external world and external representations (objects such as diagrams, graphical user interfaces, and notes) are viewed as peripheral tools. However, it has been argued that external representations may in fact 'guide, constrain, and even determine cognitive behavior' (Zhang, 1997, p.180). Problem solving is one area of cognition in which external representations can play an important role. By offloading rules and intermediate steps to external representations, additional cognitive resources can be freed up for solving the problem rather than being taken up with remembering the task rules. We will also consider the role that external representation can play in applied settings, focusing on medical treatment planning.

#### Learning outcomes

- Be able to explain theories and models of external cognition
- Critically evaluate the roles of internal and external representations in cognition
- Apply theories of external representation to problem solving tasks and to the real world domain of medical treatment planning

#### Recommended reading

Bem, S., & Looren de Jong, H., (2006). *Theoretical issues in psychology: An introduction* (2<sup>nd</sup> ed.). London: Sage. [Chapter 9: The extended mind, pp. 209-230)].

Clark, A. (2001). *Mindware: An introduction to the philosophy of cognitive science*. New York: Oxford University Press. [Chapter 8: Cognitive technology: Beyond the naked brain, pp. 140-159].

Clark, A., & Chalmers, D. J. (1998). The extended mind. *Analysis*, *58*, 10-23. [Online]. Available at <u>http://consc.net/papers/extended.html</u> (accessed on January 9th 2008).

Cox, R. (1999). Representation construction, externalised cognition, and individual differences. *Learning and Instruction*, *9*, 343-363.

Glasspool, D. W., Fox, J., Oettinger, A., & Smith-Spark, J. H. (2006). Argumentation in decision support for medical care planning for patients and clinicians. In T. Bickmore and N. Green (Co-chairs), Argumentation for consumers of healthcare. *American Association for Artificial Intelligence Spring Symposium Series Technical Report SS-06-01*. Menlo Park, CA: AAAI Press.

Glasspool, D. W., Oettinger, A., Smith-Spark, J. H., Fox, J., Castillo, F. C., & Monaghan, V. E. L. (2007). Supporting medical planning by mitigating cognitive load. *Methods of Information in Medicine, 46*(6), 636-640.

Larkin, J. H., & Simon, H. A. (1987). Why a diagram is (sometimes) worth ten thousand words. *Cognitive Science*, *11*, 65-99.

Rizzo, M., McEvoy, S., & Lee, J. (2007). Medical safety and neuroergonomics. In R. Parasuraman and M. Rizzo (Eds.), *Neuroergonomics: The brain at work* (pp. 360-378). New York: Oxford University Press.

Scaife, M., & Rogers, Y. (1996). External cognition: How do graphical representations work? *International Journal of Human-Computer Studies*, 45, 185-213.

Zhang, J. (1997). The nature of external representations in problem solving. *Cognitive Science*, 21(2), 179-217.

Zhang, J., & Norman, D. A. (1994). Representations in distributed cognitive tasks. *Cognitive Science*, *18*, 87-122.

#### Weeks Eleven: Consciousness I

#### Aims

To provide students with:

- An introduction to the major tasks faced by theories of consciousness;
- □ An introduction to some of the major contemporary theoretical approaches to consciousness (e.g. higher-order thought theory);
- □ An introduction to the idea of "qualia" and the alleged differences between the "easy" and the "hard" problems of consciousness;
- An introduction to Block's (1995) distinction between A-Consciousness and Pconsciousness;
- □ The opportunity to examine some recent fictional treatments of the cognitive scientific approach to consciousness.

# Learning Outcomes

Students will be able to:

- Outline and provide the basic arguments for at least two contemporary approaches to consciousness (e.g. that of Dennett, Chalmers, Crick & Koch, Block or McGinn);
- State the difference between A-consciousness and P-consciousness and the rationale for drawing this distinction;
- □ State the difference between the "easy" and "hard" problems of consciousness and give informed commentary on whether the former is "easy" and the latter is "hard";
- □ Make informed comment on one example of a contribution of literary fiction to the scientific study of consciousness or of cognitive science more generally.

#### Week Twelve: Consciousness II

# <u>Aims</u>

- □ An introduction to the philosophical position known as "physicalism", its attractions and its approach to consciousness;
- A sketch of some of the philosophical objections to physicalist theories of consciousness;
- An introduction to the idea that there is a "neural correlate" of consciousness.

#### Learning Outcomes

- Outline the main features of physicalism and its commitments via a vis consciousness;
- Outline and evaluate the force of Jackson's Mary thought experiment against physicalism;
- Describe what philosophers of consciousness mean by a "zombie" and outline and evaluate an argument using this idea;
- Outline what is required for finding a neural correlate of consciousness and evaluate the extent to which this discovery would answer any of the main questions facing a theory of consciousness
- □ Sketch and evaluate the idea that consciousness will forever be a mystery for human beings;
- Make informed comment of the use of thought experiments in recent work on consciousness.

# Reading

# Crane, T. (2003) <u>The Mechanical Mind: A Philosophical Introduction to Minds, Machines</u> <u>and Mental Representation</u>. Chapter 6.

Block, N., Flanagan, O & Guzeldere, G (1997) <u>The Nature of Consciousness</u>. Cambridge, Mass: MIT Press. The following chapters provide an introduction to a range of approaches on offer: **6**, **14**, **15**, **20**, **26**, **27**, **33**, **34**, **38**, **40**, **46**.

Block, N. (1995) On a confusion about a function of consciousness. In N. Block, O. Flanagan, & G. Guzeldere, G (Eds.) (1997) <u>The Nature of Consciousness</u>. Cambridge, Mass: MIT Press.

Block, N. (1998) How not to find the neural correlate of consciousness. In A. O'Hear (ed.) (1998) <u>Contemporary Philosophy of Mind</u>. Cambridge: Cambridge University Press. Available at: <u>http://www.nyu.edu/gsas/dept/philo/faculty/block/papers/NeuralCorrelate.html</u> (Last accessed 20/12/05)

See Block's web page for masses of his stuff on consciousness. http://www.nyu.edu/gsas/dept/philo/faculty/block/

Chalmers, D. (1996) The Conscious Mind. Oxford: Oxford University Press.

Dennett, D. (19930 Consciousness Explained. London: Penguin Books.

Jackson, F. (1982) Epiphenomenal qualia. <u>Philosophical Quarterly</u>, 32, 127-136. **Excerpt**. You can find a complete version of this paper at: <u>http://instruct.westvalley.edu/lafave/epiphenomenal\_qualia.html</u> (Last accessed 20/12/06)

Powers, R. Galatea 2.2. (2004) London: Picador.

Rosenthal, D. (2002) In Consciousness and Higher-Order Thought. In Macmillan <u>Encyclopedia of Cognitive Science</u>, Macmillan Publishers. This, and other articles on consciousness by Rosenthal can be found at: <u>http://web.gc.cuny.edu/cogsci/dr.htm#publications</u> (Last accessed 20/12/06)

# 9. Books and Other Learning Resources

# **Core Texts**

Clark, A. (2001) <u>Mindware: An Introduction to the Philosophy of Cognitive Science</u>. Cambridge, MA: MIT Press.

Crane, T. (2003, 2<sup>nd</sup> Ed.) <u>The Mechanical Mind: A Philosophical Introduction To Minds</u>, <u>Machines And Mental Representation</u>. London: Routledge.

# **Key Reference Books**

I haven't referred to specific entries in the following texts. But they all contain relevant material that you will find useful. **Take the time to get to know them**.

Bechtel, W & Graham, G (Eds) (1998) <u>A Companion to Cognitive Science.</u> Oxford: Blackwell.

Block, N., Flanagan, O & Guzeldere, G (1997) <u>The Nature of Consciousness</u>. Cambridge, Mass: MIT Press.

Craig, E. (Gen. Ed.). (1998) Routledge Encyclopedia of Philosophy. London: Routledge.

Guttenplan, S. (1994) A Companion to the Philosophy of Mind. Oxford: Blackwell.

Lycan, W. (Ed.) (1999) <u>Mind and Cognition: An Anthology</u>. Oxford: Blackwell. (This is a particularly useful collection of research papers.)

**Other Texts** (You will need to consult some of these texts to complete your CW successfully and to prepare properly for the examination.)

Bechtel, W & Abrahamson, A. (2002, 2<sup>nd</sup> Ed.) <u>Connectionism and the Mind: Parallel</u> <u>Processing, Dynamics, and Evolution in Networks</u>. Oxford: Blackwell.

Carruthers, P. (1996) <u>Language, Thought and Consciousness: An Essay in Philosophical</u> <u>Psychology</u>. Cambridge: Cambridge University Press.

Carruthers, P. (2005) <u>Consciousness: Essays from a Higher-order Perspective</u>. Cambridge: Cambridge University Press.

Carruthers, P. & Boucher, J. (1998) <u>Language and Thought: Interdisciplinary Themes</u>. Cambridge: Cambridge University press.

Carruthers, P & Smith, P (Eds.) (1996) <u>Theories of Theories of Mind</u>. Cambridge: Cambridge University Press.

Chomsky, N. (2000) <u>New Horizons in the Study of Language and Mind</u>. Cambridge: Cambridge University Press.

Cohen, G., Johnston, A. & Plunkett, K. (Eds.) 2000) <u>Exploring Cognition: Damaged Brains</u> and Neural Networks: Readings in Cognitive Neuropsychology and Connectionist <u>Modelling.</u> Hove, East Sussex: Psychology Press.

Currie, G & Ravenscroft, I (2002) <u>Recreative Minds</u>. Cambridge: Cambridge University Press.

Davies, M & Stone, T. (1995) (Eds.) Folk Psychology. Oxford: Blackwell.

Davies, M & Stone, T. (1995) (Eds.) Mental Simulation. Oxford: Blackwell.

Dennett, D. (1990) Consciousness Explained. London: Penguin Books.

Ellis, R & Humphreys, G. W. (1999) <u>Connectionist Psychology: A Textbook with Readings</u>. Hove, East Sussex: Psychology Press.

Elman, J., Bates, E. et al (1998) <u>Rethinking Innateness: A Connectionist Perspective on Development</u>.

Fodor, J. (1975) The Language of Thought. Cambridge, Mass: Harvard University Press.

Fodor, J. (1987) Psychosemantics. Cambridge, Mass: MIT Press.

Fodor, J. (2000) <u>The Mind Doesn't Work that Way: The scope and limits of computational psychology</u>. Cambridge, Mass: MIT Press.

Goldman, A (2006) <u>Simulating Minds: The Philosophy, Psychology, and Neuroscience of</u> <u>Mindreading.</u> Oxford: Oxford University Press

Harnish, R. (2002) <u>Minds, Brains and Computers: An Historical Introduction to the Foundations of Cognitive Science</u>. Oxford: Blackwell.

Harris, P (2000) The Work of the Imagination. Oxford: Blackwell.

Heal, J. (2003) <u>Mind, Reason and Imagination: Selected Essays in Philosophy of Mind and Language</u>. Cambridge: Cambridge University Press.

Hodges, A. (1983) Turing: The Enigma. London: Burnett Books.

Lodge, D. (2002) Thinks .... London: Penguin Books

McGilvray, J. (1999) Chomsky: Language, Mind and Politics. Oxford: Polity Press.

Marcus, G. (2001) <u>The Algebraic Mind: Integrating Connectionism and Cognitive Science</u>. Cambridge, Mass: MIT Press.

Nichols, S. (Ed.) (2006) <u>The Architecture of the Imagination</u>. Oxford: Oxford University Press.

Nichols, S & Stich, S. (2003) <u>Mindreading: An Integrated Account of Pretence, Self-awareness and Understanding Other Minds</u>. Oxford: OUP.

Plunkett, K., McLeod, P. & Rolls, E. (Eds) (1998) <u>Introduction to Connectionist Modelling</u> of Cognitive Processes. Oxford: Oxford University Press. Powers, R. Galatea 2.2. (2004) London: Picador.

Preston, J. & Bishop, M. (Eds.) (2002) <u>Views into the Chinese Room: New Essays on</u> <u>Searle and Artificial Intelligence</u>. Oxford: Clarendon Press.

Rey, G. (1997) Contemporary Philosophy of Mind. Oxford: Blackwell.

#### Journals

You should all make yourself familiar with the following journals that are relevant to this course that are available electronically via LISA. You should especially consult <u>Trends in</u> <u>Cognitive Sciences</u> which is published monthly and prints short authoritative articles on most of the topics we cover in the course.

Behavioral and Brain Sciences Cognition Cognitive Psychology Cognitive Science

Web Resources<sup>2</sup>

There are excellent philosophy resources on the web. Start with:

Epistemelinks: http://www.epistemelinks.com/

The Stanford Encyclopaedia of Philosophy: http://plato.stanford.edu/

Dave Chalmers' Centre for the Study of Consciousness web site is a major resource for cognitive science. <u>http://consciousness.anu.edu.au/</u>

Check out Chalmers' own site especially: http://consc.net/chalmers/

 $<sup>^2</sup>$  Many cognitive scientists have good web sites. Use a search engine such as google to find them - it takes no time at all. Many can also be found via Chalmers' site.

<u>Notes</u>