

Current Issues in Cognitive Science (C8807)

(Theme: **Embodied Subjectivity, Agency and the Extended Mind**)

Tutor and Course Convenor: **Dr Robert Clowes**

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Office hour: Friday, 11:15-12:15, Pevensey 5C8 (please try to make an appointment)

Course Code	Activity	Tutor	Day	Start	End	Room	Week Pattern
C8807	3y Current Issues in Cognitive Science (L1)/01	CLOWES, R.W.	Mon	11:00	12:00	PEV1-2A1	1111111111
C8807	3y Current Issues in Cognitive Science (S1)/01	CLOWES, R.W.	Tue	9:00	11:00	ARUN-209	1111111111

Course description

Course outline

Cognitive Science is a fast-changing area. This course will familiarize student with topics at the leading edge of scientific and philosophical progress in this area. It will provide insights into the range of methods used to research those topics and the theories behind those methods. Drawing on previous courses in the IDP, this course will look to the future development of Cognitive Science and prepare students to participate in that future development.

Pre-requisite

Autumn term Year 1 COGS IDP course: The Ghost in the Machine: Introducing Cognitive Science.

Learning outcomes

After the course, a successful student should be able to:

1. Demonstrate a sound knowledge and background understanding of some current debates and research areas in Cognitive Science.
2. Demonstrate ability to adopt and defend a personal position on a number of current issues in Cognitive Science.

3. Demonstrate an awareness of the different methods used by different disciplines to understand the field and will be able to demonstrate an awareness of the ways in which these different methods might be combined in approaches to specific problems in Cognitive Science.

Assessments

Type	Timing	Weighting
Dissertation (6000 words)	Summer Term	100.00%

In addition each students will be expected to give two mini-presentations in class and a more detailed presentation in the summer term toward their final dissertation.

There will be two non-assessed essays to be submitted in the 6th and 9th week of the Spring term.

Timing

Submission deadlines may vary for different types of assignment/groups of students.

Weighting

Coursework components (if listed) total 100% of the overall coursework weighting value.

Course Books

This year the first part of the course will focus on two recent books which detail competing visions of the embodied approach to mind. They are:

Clark, A. (2008). *Supersizing the Mind: Embodiment, Action, and Cognitive Extension* OUP. (available at [amazon](#))

Thompson, E. (2007). *Mind in Life Biology, Phenomenology and the Sciences of Mind*. Harvard University Press. (available at [amazon](#))

Students are advised to buy a copy of at least the Clark book before the beginning of term as the reading will be assumed for the first lecture.

Week 1 – Introduction to the Embodied Mind

The course will begin by considering an approach to mind which has developed since the 1990s based on the notion of embodied subjectivity. The lecture contrasts ‘embodimentalism’ with cognitivism and discusses some of the central metaphors of embodied approach to subjectivity. Particular attention is given to coherence as a theoretical programme and the possibilities for developing an overarching theory of mind and cognition.

Lecture – **The Metaphors of Embodiment: Situatedness, Flesh and Dynamics**
(Tuesday 13th of January)

(NB – The lecture for the first week only will be on Tuesday in the 2 hour slot, the Monday session will be an orientation meeting for the course)

Reading for Lecture and Seminar

Thompson, E. (2007). *Mind in Life Biology, Phenomenology and the Sciences of Mind*. Harvard University Press. (Chapter 1 – Cognitive Science and Human Experience 3-16)

Clark, A. (2008). *Supersizing the Mind: Embodiment, Action, and Cognitive Extension* OUP. (Chapter 1 – The Active Body, pages 3 - 23)

Also of use for the lecture is the short review article:

Neisser, U. (n.d.). Review of Philosophy in the Flesh. *Language*, 77(1), 166-168. (To be made available)

Further Reading

Clark, A. (1997). *Being There: Putting Brain, Body, and World Together Again*. Cambridge, MA: The MIT Press.

Haugeland, J. (1985). *Artificial Intelligence: The Very Idea*. Cambridge, Massachusetts: Bradford/MIT Press.

Lakoff, G., & Johnson, M. (1999). *Philosophy in the Flesh*. New York: Basic Books. (especially Chapter 3: The Embodied Mind the part on the metaphors of cognitivism)

Merleau-Ponty. (1962). *Phenomenology of Perception*: Routledge.

Varela, F. J., Thompson, E., & Rosch, E. (1991). *The Embodied Mind*. Cambridge, MA: MIT Press.

Week 2 – Dynamics, Emergence and Representation

This week will focus on the ideas of dynamics, autopoiesis and emergence and how these might give foundations to a new approach to cognitive science. We shall ask how the dynamical picture of mind contrasts with the cognitivist and computational pre-cursors. We shall look at why it might be held that biological systems are the proper domain of the cognitive and why their behaviour at a number of levels might be best characterised in terms of circular patterns of organisation. We shall contrast explore the limits of dynamicism and ask how far it should co-exist with and how be seen as a replacement for cognitivism.

Lecture 2 – **Exploring the dynamic approach to cognitive science. (19th Jan)**

Reading for Lecture and Seminar

Thompson, E. *Mind in Life*. (Chapter 3 – Autonomy and Emergence, pp. 56-93)

Clark, A. *Supersizing the Mind* (End of Chapter 1 – The Active Body, pp. 23 - 29)

Further Reading on Dynamics

Van Gelder, T. (1997). Dynamics and Cognition. In J. Haugeland (Ed.), *Mind Design II*. Cambridge, MA.: MIT Press.

Thelen, E. (1995). Time-Scale Dynamics and the Development of an Embodied Cognition. In R. F. Port & T. Van Gelder (Eds.), *Mind as motion: Explorations in the dynamics of cognition* (pp. 69–100). Cambridge, MA.: MIT Press.,

Beer, R. D. (2003). The Dynamics of Active Categorical Perception in an Evolved Model Agent. *Adaptive Behaviour*, 11(4), 209 -- 243.

For a more detailed introduction to **emergence** start with the Appendix II in *Life and Mind*

Week 3 – Language as Instinct and Dynamical System

This week's theme will look at the role of language as understood by cognitivists and will contrast an analysis of it as an emergent dynamic system. We will look at the Luc Steels simulations of language and look at how they relate to the ideas of emergent systems we discussed in the previous week. Questions we will ask are:

How do dynamicist accounts of language force us to rethink the received picture of thought and language from cognitivism? How do we need to reconsider nativist ideas about both language and thinking? What possible roles might there be for language in cognition?

Lecture: **Language Games, Scaffolding and Internalisation (26th Jan)**

Central Reading

Steels, L. (2007). The Symbol Grounding Problem Has Been Solved. So What's Next?. In M. De Vega, G. Glennberg & G. G. (Eds.), *Symbols, Embodiment and Meaning*. Oxford: Oxford University Press. (online at <http://www.ecagents.org/dllink.php?id=267&type=Document>)

Pinker, S. (2003). Language as an adaptation to the cognitive niche. Language Evolution: The States of the Art. Oxford University Press. M. H. Christiansen and S. Kirby.

Clowes, R. W. (2007). *The complex vehicles of human thought and the role of scaffolding, internalisation and semiotics in human representation*. Paper presented at the Adaptation and Representation, virtual platform @ <http://www.interdisciplines.org/adaptation/papers/11>

Clark, A. *Supersizing the Mind* (End of Chapter 3 – Material Symbols, pp. 44 - 59)

Wheeler, M. (2004). Is language the ultimate artefact? *Language Sciences*, 26(6), 688-710.

More primary reading on language and cognition in the journals

Steels, L., & Belpaeme, T. (2005). Coordinating Perceptually Grounded Categories through Language: A Case Study for Colour. *Behavioral and Brain Sciences*, 28(4), 469--489.

Carruthers, P. (2002). "The Cognitive Function of Language." *Behavioral and Brain Sciences*. (there's lots of interesting commentaries on this one)

Clark, A. (2004). Is language special? Some remarks on control, coding, and co-ordination. *Language Sciences*, 26(6), 717-726.

o Or

Clark, A. (2005). Material Symbols: From Translation to Co-ordination in the constitution of thought and reason. Cognitive Science Society Conference, Las

Strega, Italy.

For the critics of Clark see (more friendly)

Wheeler, M. (2004). Is language the ultimate artefact? *Language Sciences*, 26(6), 688-710.

(and more hostile)

[Representation in Extended Cognitive Systems: Does the Scaffolding of Language Extend the Mind?](#) forthcoming in R. Menary (ed.), *The Extended Mind* (Ashgate) (and preprint available from the Rupert's website)

Further reading

- Carruthers, P. (1998). Conscious thinking: language or elimination? *Mind and language*, 13(4).

or

- Donald Davidson "What Thought Requires" in J. Branquinho (ed) *THE FOUNDATIONS OF COGNITIVE SCIENCE* (Clarendon Press, Oxford, 2001) p. 121-132

- Vygotsky, L. S. (1986, original 1934). *Thought and Language* (Seventh Printing ed.): MIT Press. Chapter 7

- Kinsbourne, M. (2000). Inner speech and the inner life. *Brain and Language*, 71, 120-123.

- <http://www.nyu.edu/gsas/dept/philo/courses/concepts/magicwords.html>) or also look at his *Being There* chapter 10.

- Clark, A. (2006). *Language, embodiment, and the cognitive niche*. *Trends in Cognitive Sciences*, 10(8), 370-374.

- Spurrett, D. (2004). Distributed cognition and integrational linguistics. *Language Sciences*, 26, 497-501.

- Merleau-Ponty, *PHENOMENOLOGY OF PERCEPTION*, Part One Ch.6 "The Body as Expression, and Speech"

Rumelhart, D. E., Smolensky, P., McClelland, D. & Hinton, G. E. (1986) Schemata and Sequential Thought Processes in PDP. In: *Parallel Distributed Processing: Explorations in the Microstructure of Cognition 2*, ed. ^eds. Cambridge MA: MIT Press.

Week 4 – Embedded Cognition and the Bio-Cultural Niche

How does the idea of the cognitive niche help challenge the idea of methodological individualism we find in much cognitive science? How can a cognitive systems embedding transform its abilities? In what sense can culture be regarded as a niche and is it illuminating to look at human cultural systems in this way? What problems are there in applying the idea?

We will also continue to analyse some of the properties of human language especially from as a cognitive niche. In the seminar we will look we will ask: What does language do for minds like ours? Does Language mirror thought? If not, what is the relationship? Can we distinguish between externalist and internalist approaches to the cognitive role of language? Is language a good example for vehicle externalists? If so, can externalists make sense of inner speech?

Lecture: **The Cognitive Niche and Cultural Cognition. (2nd February)**

Clark, A. *Supersizing the Mind* (End of Chapter 4 – World Incorporated, pp. 61 - 81)
Laland, K. N., J. Odling-Smee, et al. (2000). "Niche construction, biological evolution, and cultural change." *Behavioral and Brain Sciences* **23**: 131-175.
Sinha, C. (forthcoming). Language as a biocultural niche and social institution. *New Directions in Cognitive Linguistics*. V. Evans and S. Pourcel.
(<http://www.port.ac.uk/departments/academic/psychology/staff/downloads/filetodownload,72600,en.pdf>)

Thompson, E. (2007). *Mind in Life Biology, Phenomenology and the Sciences of Mind*. Harvard University Press. (Chapter 7 - Laying Down a Path in Walking: Development and Evolution)

Some contextual work on how human beings and their artefacts relate

Clowes, R. W. (2008). The Dialectic of Wearing an iPod. *The Spiked Review of Books*(16). @ http://www.spiked-online.com/index.php?/site/reviewofbooks_article/5670/

And some simulation based work

Ziemke, T., N. Bergfeldt, et al. (2004). "Evolving Cognitive Scaffolding and Environment Adaptation: A new research direction for evolutionary robotics." *Connection Science* **4**(19): 339-350.

Further Reading

Sinha, C. (2006). "Epigenetics, Semiotics, and the Mysteries of the Organism." *Biological Theory* **1**(2): 112-115.
Clark, A. (1997). *Being There: Putting Brain, Body, and World Together Again*. Cambridge, MA, The MIT Press.

Week 5 – The Extended Mind

Does the basic claim reconfigure what we are trying to explain when we try to explain the mind? Can tools (non-biological cognitive prostheses) ever be proper parts of our minds? Does the idea of the extended mind violate folk-psychology? Is that a problem? Does the extended mind hypothesis have important implications for applied cognitive science research? Should we prefer HEMC or HEC?

Lecture: **The Extended Mind and the Cannons of Folk Psychology (9th Feb)**

Central Reading:

Clark, A. *Supersizing the Mind* (End of Chapter 5 & 6 – Boundary Disputes, pp. 85 - 138)

Rupert, R. D. (2004) Challenges to the hypothesis of extended cognition. *Journal of Philosophy* **101**: 389-428. (pre-print available at <http://spot.colorado.edu/~rupetr/ExtdRev5.pdf>)

In the original Journal Publications

Andy Clark and Dave Chalmers "The Extended Mind" ANALYSIS 58: 1: 1998 p.7-19 (Reprinted in THE PHILOSOPHER'S ANNUAL vol XXI-1998 (Ridgeview, 2000) p.59-74

Rupert, R. D. (2004) Challenges to the hypothesis of extended cognition. *Journal of Philosophy* 101: 389-428. (pre-print available at <http://spot.colorado.edu/~rupertr/ExtdRev5.pdf>)

Clark, A. (2007) Curing Cognitive Hiccups: A Defense of The Extended Mind. *Journal of Philosophy* 104(4).

or

Clark, A. (to appear). Memento's Revenge: Objections and Replies to the Extended Mind" to appear in (ed). In R. Menary (Ed.), *Papers On The Extended Mind*. (but available online at <http://www.philosophy.ed.ac.uk/staff/clark/pubs/Mementosrevenge2.pdf>)

Further Reading

*F. Adams and K. Aizawa "The Bounds of Cognition" PHILOSOPHICAL PSYCHOLOGY 14:1:2001 43-64

*K. Butler "Cognitive Explanation" Ch 6 of his INTERNAL AFFAIRS

Clark, Andy. (1997). *Being There: Putting Brain, Body, and World Together Again*. Cambridge, MA, The MIT Press. Chapter 1

Clark, A. (2001). "Reasons, Robots and the Extended Mind." *Mind and Language* 16(2): 121-145.

Clark, A. (2005) Intrinsic content, active memory and the extended mind. *Analysis* 65(285): 1-11.

Frawley, W. (1997). *Internalism and the Ideology of Cognitive Science. Vygotsky and Cognitive Science: Language and the Unification of the Social and Computational Mind*. W. Frawley. Cambridge, Harvard University.

John Haugeland 'Mind Embodied and Embedded' in his collection HAVING THOUGHT

*Hurley, S. L. (1998). Vehicles, contents, conceptual structure, and externalism. *Analysis*, 58, 1-6.

Hurley, S. L. (1998). *Consciousness in Action*. Cambridge, MA: Harvard University Press.

Rorty, R. (1980). *Philosophy and the Mirror of Nature*. Oxford, Blackwell. (Chapter 1)

Rowlands, M. (2003). *Externalism: Putting Mind and World Back Together Again*, Acumen.

Searle, J. R. (1983) *Intentionality*, Cambridge University Press. (useful to read on intrinsic intentionality)

Sterelny, K. (2003). "Externalism. Epistemic Artefacts and The Extended Mind."

Week 6 – Simulation and the Motor Hypothesis

What is a motor theory of thinking and how can it be contrasted with more traditional views? Should Hesslow's simulation theory be considered a form of behaviourism? Or might it rather rebuild a way of thinking about representationalism? How much (if any) of conscious thinking can it really explain?

Lecture – **Motor Theories, Thinking and Representation** (16th Feb)

Clark, A. Supersizing the Mind (**Chapter 7, Rediscovering the Brain** pp 140-166)
Hesslow, G. (2002). "Conscious thought as simulation of behaviour and perception." Trends In Cognitive Sciences 6(6): 242-247.

Further Background reading

Hurley, S. (2003). "Animal Action in the Space of Reasons." Mind and Language 18(3): 231-257.
Holland, O. & Goodman, R. (2003) Robots With Internal Models A Route to Machine Consciousness? *Journal of Consciousness Studies* 10(4): 77-109.
Holland, O. (2007) A strongly embodied approach to machine consciousness. *Journal of Consciousness Studies* 14(7): 97-110.

Week 7 – Agency, The Will and Knowing our Own Minds

Does the will have thin phenomenology and how should we explain it? How serious are the problems that Frith's model faces in attempting to explain control disorders? Is Pacherie's model phenomenologically convincing? What aspects of schizophrenia are illuminated by these models?

Lecture – **Explaining the Phenomenology of Thinking and Acting** (23rd Feb)

Campbell, J. (1999). "Schizophrenia, the space of reasons, and thinking as a motor process." The Monist 82(4): 609–25.
Bayne, T. 2008. [The Phenomenology of Agency](#). *Philosophy Compass*, 3:1-21.

Metzinger, T. (2005) Conscious volition and mental representation: Towards a more fine-grained analysis. In: *Disorders of Volition*, ed. N. Sebanz & W. Prinz, Bradford Book, MIT Press.

Further Background

Frith, C. D. (2005). The self in action: Lessons from delusions of control. *Consciousness and Cognition*, 14, 4: 752-770.
Frith, C. D., Blakemore, S.-J., & Wolpert, D. M. (2000). Abnormalities in the awareness and control of action. *Philosophical Transactions of the Royal Society of London B*, 355: 1771-1788.
Pacherie, E. (2007). "The Sense of Control and the Sense of Agency." PSYCHE 13(1).
Haggard, P. (2005). Conscious intention and motor cognition. *Trends in Cognitive Science*, 9, 6: 290-295.

Further Reading

Akins, K. A. and Dennett, D. 1986. Who may I say is calling? *Behavioral and Brain Sciences* 9: 517-18.

Bratman, M. E. (1987). *Intention, Plans, and Practical Reason*. Cambridge, MA: Cambridge University Press.

Frith, C. D. (1992). *The Cognitive Neuropsychology of Schizophrenia*. New Jersey, Lawrence Erlbaum Associates.

Gallagher, S. (2004) Neurocognitive Models of Schizophrenia: A Neurophenomenological Critique. *Psychopathology* 37(1): 8-19.

Jordan, M. I. & Wolpert, D. M. (1999). Computational motor control. In M. Gazzaniga, (Ed.), *The Cognitive Neurosciences*. Cambridge, MA: MIT Press.

Libet, B. (1985). Unconscious cerebral initiative and the role of conscious will in voluntary action. *Behavioral and Brain Sciences*, 8: 529-566.

Marcel, A. (2003). The sense of agency: Awareness and ownership of action. In J. Roessler & N. Eilan (Eds.) *Agency and self-awareness*. Oxford: Oxford University Press, pp. 48-93.

Stephens, G. L. & Graham, G. (2000) *When Self-Consciousness Breaks*, MIT Press.

Wegner, D. W. (2002) *The Illusion of Conscious Will*, MIT Press.

Wakefield, J. & Dreyfus, H. (1991). Intentionality and the phenomenology of action. In E. Lepore & R. Van Gulick (Eds.), *John Searle and his critics*. Cambridge, MA: Blackwell, pp. 259-270.

Week 8 – Mental life as Virtual Reality

Why might dreams serve as good model systems for conscious mental life? Why might virtual reality technologies be of interest to philosophers? What are the attractions of Revonsuo's internalism? Could we be a brain in a vat?

Lecture: Virtual Reality, Envatment and Dreaming as test cases for the Embodied Mind (2nd March)

Revonsuo, A. (2006) *Inner Presence: Consciousness as a Biological Phenomenon*, MIT Press. (Chapters to be confirmed)

D. Cosmelli and E. Thompson 'Embodiment and Envatment': Reflections on the Bodily Basis of Consciousness . In J. Stewart et al (eds); *Enaction: A New Paradigm for Cognitive Science*. (MIT Press, forthcoming)

<http://individual.utoronto.ca/evant/EnactionChapter.pdf>

Background Reading

Metzinger, T. (2004) The Subjectivity of Subjective Experience: A

Representationalist Analysis of the First-Person Perspective. *Networks* 3(4): 33-64.

Metzinger, T. (2004) *Being No One: The Self-Model Theory of Subjectivity*, Bradford Book.

Gallagher, S. (2005) Metzinger's Matrix: Living the Virtual Life with a Real Body. *PSYCHE* 11(5): 5.

Metzinger, T. (2006) Reply to Gallagher: Different conceptions of embodiment. *PSYCHE* 12(4): 4.

Week – 9 Confabulation, Self-Interpretation and Philosophical Psychiatry

How do neuropsychiatric conditions shed light on embodied subjectivity? What is confabulation? What different ways of understanding it are there? What light does it shed on the mind more generally?

Lecture: **What is it to explain oneself? (9th March)**

Bayne, T. & Fernandez, J. [Delusion and Self-deception: Mapping the Terrain](#). In T. Bayne & J. Fernandez (eds.) Forthcoming. *Delusions and Self-Deception: Affective Influences on Belief Formation*. Psychology Press.

Hirstein, W. (2005) *Brain Fiction: Self-Deception And The Riddle Of Confabulation*, Bradford Book; MIT Press. (Chapter(s) to be confirmed)

or

Hirstein, W. (2000) Self-Deception and Confabulation. *Philosophy of Science* 67: 418-429.

Further Reading

Gerrans, P. (2003) A one-stage explanation of the Cotard delusion. *Philosophy, Psychiatry, & Psychology* 9: 47-53.

+ Replies

Week 10 Seminar - Organisation of Final Projects

In this session students to presents themes and ideas toward an argument for the final project for seminar discussion. Plans will be organised toward further presentation early in the summer term.

Meetings for the following term will be student centred and geared toward the production of the final dissertation. We will therefore also agree the form that summer term meetings will take in this session.

Week 10 - What is it to be Human? (16th March or first week summer term)

We attempt to contextualise some of the ideas we have looked at in this course with respect to what they say about being human; we primarily contrast two visions. Andy Clark's idea that we are 'natural born cyborgs' with Francis Fukuyama's ideas that we are on the edge of undermining our own essential humanity with technological advance.

Main Reading will be chapters from

Fukuyama, F. (2002). *Our Posthuman Future: Consequences of the Biotechnological Revolution*: Picador.

Clark, A. (2003). *Natural Born Cyborgs: Minds, Technologies and the Future of Human Intelligence*. New York: Oxford University Press.

Further Reading

Stock, G. (2002). *Redesigning Humans: Choosing our genes, changing our future*.

Malik, K. (2000). *Man, Beast and Zombie: What science can and cannot tell us about human nature*. London: Weidenfeld & Nicolson.

