

## **Approaches to Consciousness: Buddhism and Cognitive Science**

Institution: Institute of Buddhist Studies at the Graduate Theological Union

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### Course Description:

Since both Buddhism and Cognitive Science claim to explain the workings of the mind, the explanations of Cognitive Science and Buddhism will be examined for similarities and differences with attention to questions concerning what these say about the assumptions, methods and goals of Buddhism and Cognitive Science. Such questions would include, for example: Are they both working to explain the same aspects of mind, i.e., do they have a shared problematic? Can Cognitive Science be used as an explanation of Buddhist religious practice, and what would explanation mean in that case? Do Buddhist perspectives on the workings of mind demonstrate the limitations of Cognitive Science, critiquing the reductionist tendencies that run through some forms of it? Is it possible to develop an understanding of consciousness that draws on the knowledge of both the Buddhist tradition and Cognitive Science?

### Course Goals:

- distinguish between science as method, science as body of knowledge, and science as social institution.
- provide an understanding of the relations between religion and science as these have developed in the West
- familiarize students with the fundamental issues of cognitive science, including the conflict over reductionist approaches and phenomenologically descriptive approaches.
- provide a basic grounding in the views of the mind as taught by Abhidharma and Yogacara.
- explore the ways in which Buddhist tradition can inform Cognitive Science, and Cognitive Science inform the ongoing development of contemporary Buddhist thought.

### Pedagogical Philosophy:

Instructional methods employed will include

- lectures by the instructor on specific topics
- student presentations on term paper research
- instruction in meditative practices and discussions of the students' experiences with those practices

Required Readings (available at the GTU Bookstore and on reserve at the GTU Library):

Brooke, John Hedley. *Science and Religion: Some Historical Perspectives*. Cambridge: Cambridge University Press, 1991.

Drees, Willem B. *Religion, Science and Naturalism*. Cambridge: Cambridge University Press, 1996.

Glynn, Ian. *An Anatomy of Thought: The Origin and Machinery of the Mind*. Oxford & New York: Oxford University Press, 1999.

Varela, Francisco J., Evan Thompson and Eleanor Rosch. *The Embodied Mind: Cognitive Science and Human Experience*. Cambridge and London: MIT Press, 1993.

Wallace, B. Alan. *The Taboo of Subjectivity: Toward a New Science of Consciousness*. Oxford & New York: Oxford University Press, 2000.

Recommended Readings:

Botterill, George and Peter Carruthers, *The Philosophy of Psychology*, Cambridge: Cambridge University Press, 1999.

Wallace, B. Alan. *Breaking New Ground: Essays on Buddhism and Modern Science*. (forthcoming as of date of course proposal)

\_\_\_\_\_. *Choosing Reality: A Buddhist View of Physics and the Mind*. Ithaca, New York: Snow Lion, 1996.

Student Evaluation:

Substantive term paper (15+ pp.) exploring some aspect of Buddhist meditative practice and teachings concerning the nature of consciousness with reflections on how these might interact with Cognitive Science. Paper is to evidence understanding of information presented in class and in readings. Students will be particularly expected to define their stance on the relation, i.e., do they see the two as fundamentally the same, fundamentally irreconcilable, complementary? Format must follow Turabian. Class presentation of term paper research will also be part of the evaluation process.

Course Calendar, by week:

1. basics of science: establishing fundamental literacy with the terminology and concepts employed in the discourse on religion and science

- distinguishing scientific method from scientific knowledge and scientific practice
- theory, hypothesis, verification, experimentation, Ockham's razor, confirmation vs. falsification

- distinguishing history of science, sociology of science and post-modernistic misrepresentations of science (e.g., Lacan's misappropriation of mathematics)

Readings:

Wallace: Part I: The Ideology of Scientific Materialism

ch. 1. Four Dimensions of the Scientific Tradition

ch. 2. Theological Impulses in the Scientific Revolution

Brooke: ch. I: Interaction between Science and Religion

ch. II: Science and Religion in the Scientific Revolution

ch. III: The Parallel between Scientific and Religious Reform

Drees: ch. 1: Religion and science: strategies, definitions and issues

2. science and religion: dialogue between what and what?

- foundational issues: epistemology and religious experience, faith and authority
- Christian assumptions regarding the nature of religion embedded in the dialogue
- differences between Christian and Buddhist assumptions

Readings:

Drees: ch. 2 Histories of relationships between science and religion

Brooke: ch. IV: Divine Activity in a Mechanical Universe

ch. V: Science and Religion in the Enlightenment

ch. VI: The Fortunes and Functions of Natural Theology

ch. VII: Visions of the Past: Religious Belief and the Historical Sciences

3. basic issues in cognitive science

- computational model, intentionality, domain specificity
- robotics and embodiment
- the role of evolutionary theory

Readings:

## Glynn: Section I: Clearing the Ground

ch. 1: What this book is about

ch. 2: The failure of the common-sense view

ch. 3: Evolution by natural selection

ch. 4: “The Descent of Man”

ch. 5: The origin of life

## Section II: Nerves and Nervous Systems

ch. 6: The nature of nerves

ch. 7: The nerve impulse

ch. 8: Encoding the message

ch.9: Interactions between nerve cells

ch. 10: “The Doors of Perception”

ch. 11: A Cook’s Tour of the brain

4. development of cognitive science

- interdisciplinary nature
- ontological considerations: dualism, monism and interactionism
- the banishing of consciousness: the failure of introspectionism, positivism and behaviorism
- philosophic inquiries into consciousness (Kant to Merleau-Ponty and beyond)
- conscious, unconscious (depth psychology) and nonconscious (Humboldt)

Readings:

Glynn: Section III: Looking at Seeing

Ch. 12: Illusions

Ch. 13: Disordered seeing with normal eyes

Ch. 14: Opening the black box

Ch. 15: Natural computers and artificial brains

Wallace: Part II: Toward a Noetic Revolution

Ch. 3. An Empirical Alternative

5. dimensions of contemporary cognitive science, I

- systems theory and the development of computer models (the move to connectionist theories)
- neuroscientific developments: imaging techniques and domain specificity

Readings:

Varela, et al., ch. 1: A Fundamental Circularity

ch. 2: What do we Mean by “Human Experience”?

6. dimensions of contemporary cognitive science, II

- cognitive approaches to psychology, anthropology and sociology
- linguistics (Chomsky and Jackendoff)

Readings:

Varela, et al., ch. 3: Symbols, The Cognitivist Hypothesis

ch. 4.: The I of the Storm

Glynn, section IV: Talking about Talking

ch. 16: In the steps of the “diagram-makers”

ch. 17: Chomsky and after

ch. 18: Monkey puzzles

7. cognitive science and the inquiry into consciousness

- distinguishing phenomenology, Husserlian phenomenology and Dennett’s heterophenomenology
- Turing’s Test, Searle’s Chinese Room, and Dennett’s reply to the Cartesian Theatre
- the irreducibility of phenomenal experience

Readings:

Varela, et al., ch. 5: Emergent Properties and Connectionism

Glynn, section V: Thinking about Thinking

ch. 19: Memory

ch. 20: The emotions

ch. 21: Planning and attention

8. foundations of Buddhist conceptions of human consciousness

- anti-essentialism (anatman) and the Indian religious context
- interdependence (pratityasamutpada)
- emptiness (sunyata)
- integrity of models of consciousness, practice and the goal of awakening (ground, path and goal)

Readings:

Varela, et al., ch. 6 Selfless Minds

ch. 7: The Cartesian Anxiety

Cabezon essay

9. Buddhist models of the mind, I: Abhidharma

- integrity of conceptions of mind and techniques of practice
- dharmas and their categorization
- skandhas, dhatus and ayatanas: phenomenological basis?

and introduction to the varieties of meditation from the Theravada tradition

- drawing on Buddhaghosa's Path of Purification

Readings:

class handouts of relevant sections of Buddhist texts

10. Buddhist models of the mind, II: Yogacara

- development from Abhidharma
- role of the alayavijnana

and introduction to the varieties of meditation from the Yogacara tradition

- drawing on the Mahayanasutralamkara

and visualization practices of the Pure Land, Tendai and Tantric traditions

- drawing on the Contemplation Sutra

Readings:

class handouts of relevant sections of Buddhist texts

11. neuroscientific studies of meditation

- results and reflections on the methodological and ethical considerations

Readings:

Varela, et al., ch. 8: Enaction: Embodied Cognition

ch. 9: Evolutionary Path Making and Natural Drift

Wallace: Part II: Toward a Noetic Revolution (cont.)

ch. 4. Observing the Mind

ch. 5. Exploring the Mind

12. comparing differing views of the self

- construct, epiphenomenon or evolutionarily useful development (Gazzaniga)

Readings:

Wallace: Part III: The Resistance

ch. 6. The Mind in Scientific Materialism

Glynn: Section VI: The Philosophy of Mind--Or Minding the Philosophers

Ch. 22: The “mind-body problem”--a variety of approaches

Ch. 23: The “mind-body problem”--consciousness and qualia

Ch. 24: Free will and morality

13. cognitive science and Buddhist explanations of consciousness: competing, complementary, shared problematic?

- does cognitive science “confirm” Buddhist conceptions of consciousness?
- do religions require science to confirm their claims?

Readings:

Wallace: Part III: The Resistance

ch. 7. Confusing Scientific Materialism with Science

ch. 8. Scientific Materialism: The Ideology of Modernity

conclusion: No Boundaries

Varela, et al., ch. 10: The Middle Way

ch. 11. Laying Down a Path in Walking

14/15. class presentations by students of their research work for term paper

### **Appendix: *Select Bibliography for Course Development***

#### A. Works on Science and Religion

Brooke, John Hedley. *Science and Religion: Some Historical Perspectives*. Cambridge: Cambridge University Press, 1991.

Drees, Willem B. *Religion, Science and Naturalism*. Cambridge: Cambridge University Press, 1996.

Lindberg, David C. *The Beginnings of Western Science: The European Scientific Tradition in Philosophical, Religious, and Institutional Context, 600 B.C. to A.D. 1450*. Chicago and London: University of Chicago Press, 1992.

McGrath, Alister E., *The Foundations of Dialogue in Science and Religion*. Oxford: Blackwell Publishers, 1998

\_\_\_\_\_. *Science and Religion: An Introduction*. Oxford: Blackwell Publishers, 1999.

#### B. Works on the Relation between Buddhism, Science and Cognitive Science

Austin, James H. *Zen and the Brain: Toward an Understanding of Meditation and Consciousness*. Cambridge and London: MIT Press, 1998.

deCharms, Christopher. *Two Views of Mind: Abhidharma and Brain Science*. Ithaca, New York: Snow Lion Publications, 1997.



Hayward, Jeremy and Francisco Varela, eds., *Gentle Bridges: Conversations with the Dalai Lama on the Sciences of the Mind*. Boston and London: Shambhala Publications, 1992.

Houshmand, Zara, et al., eds., *Consciousness at the Crossroads: Conversations with the Dalai Lama on Brain Science and Buddhism*. Ithaca, New York: Snow Lion Publications, 1999.

Varela, Francisco J., Evan Thompson and Eleanor Rosch. *The Embodied Mind: Cognitive Science and Human Experience*. Cambridge and London: MIT Press, 1993.

Wallace, B. Alan. *Choosing Reality: A Buddhist View of Physics and the Mind: A Buddhist View of Physics and the Mind*. Ithaca, New York: Snow Lion, 1996.

#### C. Works on Religion and Cognitive Science

Boyer, Pascal. *The Naturalness of Religious Ideas: A Cognitive Theory of Religion*. Berkeley: University of California Press, 1994.

Guthrie, Stewart. *Faces in the Clouds: A New Theory of Religion*. Oxford: Oxford University Press, 1993.

Lawson, E. Thomas and Robert N. McCauley. *Rethinking Religion: Connecting Cognition and Culture*. Cambridge: Cambridge University Press, 1990.

Russell, Robert John, Nancey Murphy, Theo C. Meyering, Michael A. Arbib, eds. *Neuroscience and the Person: Scientific Perspectives on Divine Action*. Vatican City State: Vatican Observatory, and Berkeley: Center for Theology and the Natural Sciences: 2000.

#### D. Works on Cognitive Science and Consciousness

Chalmers, David J. *The Conscious Mind: In Search of a Fundamental Theory*. New York and Oxford: Oxford University Press, 1996.

Churchland, P.S. *Neurophilosophy: Toward a Unified Science of the Mind-Brain*. Cambridge: MIT Press, 1986.

Cole, Michael, Yrjo Engestrom, Olga Vasquez, eds. *Mind, Culture and Activity: Seminal Papers from the Laboratory of Comparative Human Cognition*. Cambridge: Cambridge University Press, 1997.

Deacon, Terrence W. *The Symbolic Species: The Co-Evolution of Language and the Brain*. New York and London: W. W. Norton and Company, 1997.

Dennett, Daniel. *Consciousness Explained*. Boston, Toronto and London: Little, Brown and Company, 1991.

Horst, Steven W. *Symbols, Computation and Intentionality: A Critique of the Computational Theory of Mind*. Berkeley, Los Angeles and London: University of California Press, 1996.

Hunt, Harry T. *On the Nature of Consciousness: Cognitive, Phenomenological, and Transpersonal Perspectives*. New Haven and London: Yale University Press, 1995.

Johnson-Laird, Philip N. *The Computer and the Mind: An Introduction to Cognitive Science*. Cambridge: Harvard University Press, 1988.

\_\_\_\_\_. *Mental Models: Towards a Cognitive Science of Language, Inference, and Consciousness*. Cambridge: Harvard University Press, 1983.

Maturana, Humberto R. and Francisco J. Varela. *The Tree of Knowledge: The Biological Roots of Human Understanding*. Rev. ed. Boston & London: Shambhala, 1998.

Pinker, Steven. *How the Mind Works*. New York and London: W. W. Norton and Company, 1997.

Shore, Bradd. *Culture in Mind: Cognition, Culture, and the Problem of Meaning*. New York and Oxford: Oxford University Press, 1996.

Taylor, John. *The Race for Consciousness*. A Bradford Book. Cambridge and London: The MIT Press, 1999.

Von Eckardt, Barbara. *What is Cognitive Science?* Cambridge and London: MIT Press, 1993.