

# READING LIST FOR ENTERING GRADUATE STUDENTS

## 2004

Our graduate program foundations and issues courses are taught at a level that assumes a background similar to that provided by our undergraduate program. This list is a compilation of the textbooks used in undergraduate courses as well as a general reading list to round out the background. Several of the undergraduate courses also use reading packets of numerous journal articles from the field. The list is a guide; there are several other texts and journal articles that could provide the preparation needed for graduate studies.

We don't expect you to go out and read all of these texts. The textbooks are listed just to indicate the material covered in the corresponding courses. Some books listed below are relatively unique to the UCSD way of doing Cognitive Science, and you should probably read them if you haven't. A few of the books are more advanced, and their material overlaps quite a bit with graduate courses in this department.

If this is **all** very new to you, then we recommend one book on cognitive psychology, one on language, one on experimental design, one on the brain, on programming and/modeling, one on Human-computer interaction.

## METHODOLOGY

### **Design and Analysis of Experiments (Cog Sci 14)**

If you have taken any undergraduate courses in statistics and logic, you probably have this covered.

Statistics textbooks:

(14)

Introduction to probability theory, statistics and experimental design.

Hinkle, D., Wiersma, W., & Jurs, S. Applied Statistics for the Behavioral Sciences (5th edition), Boston: Houghton Mufflin

## BEHAVIOR

### **Fundamental Cognitive Phenomena (Cog Sci 101A-B)**

Course textbooks:

(101A, B)

Baddeley, A. (199X). Human Memory: Theory and Practice, 2nd ed. Allyn & Bacon

Hunt & Ellis, Fundamentals of Cognitive Psychology.

Posner, M. I. (1989). *Foundations of cognitive science*. Cambridge: MIT Press. (This text has good readings in all areas of cognitive science.)

### **Linguistics and Semantics (Cog Sci 101C)**

Introductory linguistics textbooks:

(101C)

Barsalou, L. Cognitive Psychology: An Overview for Cognitive Scientists :Lawrence Erlbaum

Bollinger, D., & Sears, D. (1981). *Aspects of language* (3rd ed.). New York: Harcourt, Brace, Jovanovich.

Finegan, E., & Besnier, N. (1989). *Language, its sructure and use*. San Diego, CA: Harcourt, Brace, Jovanovich.

Computational linguistics:

Allen, J. (1987). *Natural language understanding*. Menlo Park, CA: Benjamin/Cummings.

Readings in semantics:

The New Psychology of Language: Cognitive and Functional Approaches to Language Structure. Ed. M. Tomasello, Lawrence Erlbaum. 1998.

Coulson, Seana. Semantic Leaps. Cambridge, New York: Cambridge University Press. 2001.

Eco, M., Santambrogio, M., & Violi, P. (1988). *Meaning and mental representations*. Bloomington: Indiana University Press.

Lakoff, G. (1987). *Women, Fire, and Dangerous Things*. U. of Chicago Press.

Pragmatics, speech act theory, and conversation analysis:

Levinson, S. (1983). *Pragmatics*. Cambridge: Cambridge University Press.

Recommended:

Bates, E., & Goodman, J. *On the inseparability of grammar and the lexicon: Evidence from acquisition, aphasia, and real-time processing*. *Language and Cognitive Processes*, 1997, 12(5/6), 507-586.

**Cognitive Development (Cog Sci 113)**

Recommended:

Elman, J., Bates, E., Johnson, M., Karmiloff-Smith, A., Parisi, D. & Plunkett, K. *Rethinking Innateness: a connectionist perspective on development*. Cambridge, Mass.: MIT Press/Bradford Books, 1998.

Haith, M., & Benson (1998). Infant cognition. In D. Kuhn & R. Siegler (Volume Eds.), W. Damon (Series Ed.), *Handbook of child psychology (5th Ed.): Volume 2: Cognition, perception, and language* (pp. xxx-xxx). New York: Wiley.

Maratsos, M. P. (1998). The acquisition of grammar. In D. Kuhn & R. Siegler (Volume Eds.), W. Damon (Series Ed.), *Handbook of child psychology (5th Ed.): Volume 2: Cognition, perception, and language* (pp. 421-466). New York: Wiley.

Siegler, R.S. (1996). *Emerging Minds*. Oxford

Thelen, E. & Smith, L.B. (1998). Dynamic systems theories. In R. Lerner (Volume Ed.), W. Damon (Series Ed.), *Handbook of child psychology (5th Ed.): Volume 1: Theoretical models of human development* (pp. 563-634). New York: Wiley.

Tomasello, M. (1999). *The cultural origins of human cognition*. Cambridge, MA: Harvard University Press.

Vygotsky, L. (1978). *Mind in Society*. Harvard.

**Distributed Cognition, Cognitive Ethnography, and Cognitive Engineering (Cog Sci 102A, B&C)**

You should be somewhat familiar with these books, especially the first, obviously. Happily, they are all interesting reading.

Norman, D. A. (1988). *The design of everyday things*. New York: Doubleday.

Baecker, Grudin, Buxton, & Greenberg. *Human-Computer Interaction: Toward the year 2000*: Morgan Kaufman.

Fleck, L. (1979). *Genesis and Development of a Scientific Fact*. University of Chicago.

Holland, D., & Quinn, N. (1987). *Cultural models in language & thought*. Cambridge: Cambridge University Press.

Hutchins, E. (1995). *Cognition in the wild*. MIT Press.

Rogoff, B., & Lave, J. (1984). *Everyday cognition: Its development in social context*. Cambridge: Harvard University Press.

Perrow, C., (1984). *Normal accidents: Living with high-risk technologies*. New York: Basic Books.

## FOUNDATIONS

Churchland, P. S. (1986). *Neurophilosophy*. Cambridge: MIT Press.

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

Gibson, J. J. (1979). *The ecological approach to visual perception*. Boston: Houghton Mifflin.

Haugeland, J. (1981). *Mind design*. Cambridge: MIT Press.

Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago: University of Chicago Press.

Lakoff, G. & Nunez, R. (2000). *Where Mathematics Comes From: How the Embodied Mind Brings Mathematics into Being*. New York: Basic Books.

Maturana, H. & Varela, F. (1987). *The Tree of Knowledge: The Biological Roots of Human Understanding*. Boston: Shambhala.

Newell, A. (1990). *Unified theories of cognition*. Cambridge: Harvard University Press.

Varela, F., Thompson, E. & Rosch, E. (1991). *The Embodied Mind: Cognitive Science and Human Experience*. Cambridge: MIT Press.

Recommended:

Nunez, R. & Freeman, W. (Eds.) (1999). *Reclaiming Cognition: The Primacy of Action, Intention, and Emotion*. Throverton, UK: Imprint Academic.

## BRAIN

### Neurobiology (Cog Sci 17)

This requirement is covered by any reasonable undergraduate course in neurobiology.

Course textbook:

(17)

Carlson. *Physiology of Behavior*: Allyn & Bacon

Another good text:

Shepherd, G. M. (1988). *Neurobiology* (2nd ed). New York: Oxford University Press.

### Cognitive Neuroscience (Cog Sci 107A-B-C)

Course textbooks:

(107A,B)

Rosenzweig, Breedlove L. *Biological Psychology*. Sinauer Associates, Inc.

(107C)

Gazzamga, Ivry, & Magnum (1998). *Cognitive Neuroscience: The biology of the mind*. W.W. Norton.

## COMPUTATION

### Programming for Cognitive Science (Cog Sci 18)

Students entering our Ph.D. program should be able to program in a higher language, e.g. Java. Programming languages frequently used in reach and teaching include but are not limited to, Java, Matlab, C++.

### Computational Modeling and Artificial Intelligence (Cog Sci 108DEF)

An important early book:

McClelland, J., & Rumelhart, D. (1988). *Parallel distributed processing* (Vols. 1 & 2). Cambridge: MIT Press.

Modern books:

Ballard, D.H. (1997). *An Introduction to Natural Computation*. Cambridge, MA : MIT Press.

Dayan, P. and Abbot, L.F.(2001). *Theoretical Neuroscience*. Cambridge, MA: MIT Press.

Duda, Hart & Stork (2001). *Pattern Classification*. (2<sup>nd</sup> Ed.). Wiley.

Forsyth, David A. and Ponce, Jean (2003). *Computer Vision: A Modern Approach*. Prentice Hall.

Haykin, S. (1999). *Neural Networks: A Comprehensive Foundation*. Prentice Hall.

MacKay, David J.C. (2003). *Information Theory, Inference, and Learning Algorithms*. Cambridge University Press.

Recommended for students not specializing in computation:

O'Reilly, Randall C. and Munakata, Yuko (2000). *Computational Explorations in Cognitive Neuroscience*. A Bradford Book, The MIT Press.