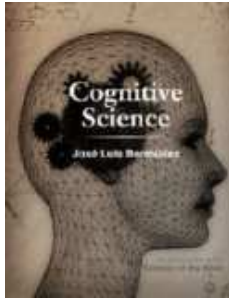


metapsychology

online reviews

[Home](#)
[Browse Subjects](#)
[Search](#)
[New Reviews](#)
[About Us](#)
[Feedback](#)

PSYCHOLOGY



Review - Cognitive Science

An Introduction to the Science of the Mind

by Jose Luis Bermudez
Cambridge University Press, 2010

Cognitive science or cognitive sciences? This question can be rephrased in other terms: One science of the mind or several sciences about the mind? This question synthesizes the tension, presented all over the book, between the different disciplines that collaborate together to study the mind – with the ultimate goal of formulating a theory that ties all the results together and unifies the different research programs. This common basis is the idea that mental operations are information-processing operations. The whole book is an attempt to show how all the interdisciplinary endeavors that study the mind turn around this idea. The book presents the main historical milestones of cognitive science and their particular methods, always with the aim to elucidate the connections and links between the different procedures and the whole project of understanding the mind from an information-processing point of view.

Part I "Historical landmarks" traces the history of the discipline from its early beginnings as a reaction against behaviorism, together with the mathematical model of computation suggested by the Turing Machine, Chomsky's transformational linguistics, and the early models of information-processing in psychology. The starting point of cognitive science is the discovery that most kinds of behavior involve information-processing, that this information can take many forms and has an internal structure, and that this information can be processed in a mechanical and algorithmic way. The book then describes the "turn to the brain" that took cognitive science during the 1980s thanks to the

RESOURCES

[email page](#)
 [print page](#)

All Topic Reviews

[A Theory of Feelings](#)
["Intimate" Violence against Women](#)
[1001 Solution-Focused Questions](#)
[101 Healing Stories](#)
[101 Things I Wish I'd Known When I Started Using Hypnosis](#)
[50 Great Myths of Popular Psychology](#)
[50 Reasons People Give for Believing in a God](#)
[A Brief History of Modern Psychology](#)
[A Conceptual History of Psychology](#)
[A Guide to Teaching Introductory Psychology](#)
[A History of Modern Experimental Psychology](#)
[A History of Psychology in Autobiography](#)
[A History of Social Psychology](#)
[A History of the Mind](#)
[A Hole in the Head](#)
[A Matter of Security](#)
[A Mind of Its Own](#)
[A Place for Consciousness](#)

RELATED PAGES

[Guidelines for Making a Formal Referral](#)
[Steps in Making a Formal Referral](#)
[Services to Supervisors](#)

RELATED TOPICS

[Addiction & Alcoholism](#)
[Anxiety & Panic](#)
[Art and Photography](#)
[Audio Books](#)
[Childhood Disorders](#)
[Children and Teens](#)
[Client Reviews](#)
[Depression](#)
[Ethics](#)
[Fiction](#)
[General Topics](#)
[Genetics and Evolution](#)
[Grief, Loss, Death & Dying](#)
[Medications & Psychiatry](#)
[Memoirs and Biographies](#)
[Mental Health](#)
[Movies & DVDs](#)
[Personality Disorders](#)
[Philosophy](#)
[Psychoanalysis](#)
[Psychology](#)
[Psychotherapy](#)
[Relationships](#)
[Religion](#)

Search



EXPLORING THE HUMAN BRAIN,...
 (Hardcover)
\$33.00



The Brain Our Universe Withi...
 (VHS Tape)
\$44.10



The cognitive control of emo...
 K.N. Ochsner, J.J. ...
\$14.95



Thought before language [An a...
 J.M. Mandler (Digit...)
\$14.95



The Happiness Advantage: Th...
 Shawn Achor (Hard...)
\$14.88



Annoying: The Science of Wha...
 Joe Palca, Flora Lich...
\$16.10



Authentic Happiness: Usi...
 Martin Seligman (P...)
\$9.30

amazon.com

Get Widget

Privacy

Art Therapy in New York

Looking for a therapist? Try Art Therapy for all ages.

www.yourartiswonderf...

CNS & Neuro. Drug Targets

Online & Print Journal, Imp.F: 4.7 For Updated Reviews &

development of different techniques of studying the information pathways in the brain, such as *single cell recording*, *positron emission tomography* (PET)

[Self-Help](#)
[Sexuality](#)
[Wellness and Complementary Medicine](#)

and *functional magnetic resonance imaging* (fMRI) among others. These factors allowed researchers to go further from the algorithmic level of information-processing to study the implementation level of the actual mechanisms that process the information. From that moment, information processing won't be considered anymore as independent of the brain structure and activity.

Part II "The integration challenge" deals with the epistemological problem that faces cognitive science given its interdisciplinary nature. The challenge is to develop a unified framework that makes explicit the relations between the different disciplines and between the different levels of organization of the brain/mind. Two accounts are elaborated. The first is the intertheoretical reduction developed in the context of physical sciences, claiming that different sciences can be reduced to more basic ones. The second view is Marr's multilevel hypothesis which distinguishes between the computational, algorithmic and implementational levels of explanation, and connects them in a top-down way. The author shows the main problems of these accounts and sketches his own account in terms of mental architecture. From his point of view, what unifies the different disciplines that compose cognitive science is the idea that a satisfactory explanation of cognition involves the description of a cognitive architecture understood as a general model of how the mind is organized into cognitive systems and how they process information. This is an interesting idea that would deserve further clarification and development.

Part III "Information-processing models of the mind" describes two competing models of information-processing: the physical symbol system hypothesis and the artificial neural network approach. The physical symbol system model is a computer-inspired view of the mind, developed further by Jerry Fodor in terms of the Language of Thought Hypothesis. In contrast, the artificial neural network model is a brain-inspired view of the information-processing. The book describes the main principles of artificial networks and some of their limitations; yet it also shows how they can be used for modeling some cognitive abilities such as language learning and object cognition. Faced with the dichotomy of which model to accept, the author plausibly suggests that the mind itself may be composed by two different ways of information-processing and that each of the competing models may be accounting for one of them.

Part IV "The organization of the mind" examines some models of the overall organization of the mind. Fodor's idea of the modularity of mind states that it is a collection of many modules, each module being a specialized sub-system that processes information in an automatic way. This model, however, assigns a function to a mysterious, non-modular, central processing unit. In contrast, the massive modularity hypothesis by Leda Cosmides and John Tooby puts forward arguments to eliminate such central processing, claiming that all cognition is modular and carried out by sub-systems or sets of subsystems. Bermúdez then presents the different methods of cognitive neuroscience to trace those modules or subsystems in the brain from an anatomical and functional point of view.

Part V "New horizons" presents some new trends in cognitive science and the main challenges that the discipline should affront in the proximal future. It explores dynamical system theories and the way they model cognitive skills and abilities. Then, it explores the situated cognition view of the mind inspired by some developments in robotics. Both of these movements challenge some of the fundamental assumptions of classical cognitive science such as the idea that cognition is information-processing, representational, computational, sequential and homuncular. However, as the author opportunely points out, this does not mean that the dynamical systems view should replace the classical view; it sheds light on a particular level of organization and thus enhances our understanding of cognition. But it doesn't replace the classical view in any strong sense. Finally, some of the challenges of cognitive science are briefly considered: the sleeping brain, the issue concerning the possibility of constructing a brain or using neuroprosthesis, developing tools to enhance education, the relation between cognitive science, economics and the law, and finally the issue of developing a cognitive theory of consciousness.

Beyond the intellectual virtue of providing a very elaborated account of what cognitive science is, how it has developed and where it is heading, one

[www.benthamscience...](#)

[Your Zodiac Horoscope](#)

Insert Your Birthdate & Get Answers about Past-Present and Future. Free
[AboutAstro.com/horos...](#)

[Aachen Angebote -70%](#)

Unschlagbare Angebote & Gutscheine in Aachen. Bis zu -70% sparen!
[www.GROUPON.de/...](#)

Like

5



Welcome to MHN's unique book review site *Metapsychology*. We feature over 6000 in-depth reviews of a wide range of books and DVDs written by our reviewers from many backgrounds and perspectives. We update our front page weekly and add more than fifty new reviews each month. Our editor is [Christian Perring, PhD](#). To contact him, use the form [available here](#).

Can't remember our URL? Access our reviews directly via 'metapsychology.net'

Metapsychology Online reviewers normally receive gratis review copies of the items they review. *Metapsychology Online* receives a commission from Amazon.com for purchases through this site, which helps fund our continuing growth. We thank you for your support!

Join our e-mail list! Metapsychology New Review Announcements:

Sent out monthly, these announcements list our recent reviews. To subscribe, [click here](#).

Interested in becoming a

should highlight some pedagogical virtues of the book. It is really well organized and methodic in its way of presenting each topic. Each chapter starts with a clear overview of the main topic that will be discussed. This is followed by a detailed and self-contained explanation of each topic, so that the reader doesn't need a prior background in cognitive science to understand it. Each topic is illustrated by a carefully selected paper that is analyzed and explained with the aim to clarify, elucidate or explain its role and importance within the development of cognitive science. Finally, at the end of each chapter there is always a summary and a checklist of the main points discussed. So the book is highly pedagogical in the sense of preparing the reader with an overview, conveying the main discussion clearly and finally summarizing the main points. Another virtue of the book is the fact that the author indicates many internet recourses that the reader can use to continue her studies.

Philosophers are often accused of being social parasites that pass their life to incubate weird and useless ideas; as a student of cognitive science I had the opportunity to hear this directly from cognitive psychologists and neuroscientists. This book demonstrates that they are wrong. It demonstrates how a philosopher could organize and make sense of many different ideas coming from very different domains. Moreover, it succeeds in providing a truly interdisciplinary overview that a specialized cognitive scientist could hardly supply; it is remarkable how Bermúdez moves from psychology to neuroscience, and then to robotics, mathematics or philosophy, demonstrating his general expertise in all these areas and proving to be a real cognitive scientist. This is an enlightening book which can be read with profit by all people interested in the scientific study of the mind.

© 2011 Santiago Arango Muñoz

Santiago Arango Muñoz, Ruhr-Universität Bochum

**book reviewer for
 Metapsychology?**
**Currently, we especially
 need thoughtful
 reviewers for books in
 fiction, self-help and
 popular psychology. To
 apply, write to our
 editor.**

Metapsychology
 Online Reviews



Promote your Page
 too

*Metapsychology Online
 Reviews*
 ISSN 1931-5716



[About Us](#) | [About CenterSite](#) | [Terms & Privacy](#)
 Copyright © CenterSite, LLC, 1995-2011