

Computers And Thought

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Understanding Computers and Cognition Terry Winograd 1986 This book is about the design of computer technology. It it, we look closely at computers as they exist today and we set out new directions for future development. This discourse presented here, however, is not what one would expect to find in a book of science and engineering. It moves among topics and purposes that appear to be worlds apart: it is both theoretical and practical; it is concerned with computer technology and with the nature of human existence; with the philosophy of language with office automation.

Language and Thought in Humans and Computers Morton Wagman 1998 The centrality of language and thought provides an intellectual focus for experimental conceptual approaches to psychology, computation, and neural science. The wealth of detailed research and theory that reflects current knowledge in the area of language and across computational and human domains is of special interest.

Making AI Intelligible Herman Cappelen 2021 This innovative and accessible study illustrates how philosophy can help us understand and improve our interactions with AI.

Daydreaming in Humans and Machines Erik T. Mueller 1990 This volume presents a computer model of human daydreaming to demonstrate how it is useful for creative problem solving and learning in both humans and computers. The model is implemented as the running computer program Daydreaming, which takes simple descriptions of external world events as input and produces descriptions of daydreams and actions as output.

Brain, Mind, and Computers Stanley L. Jaki 1969 This work represents Dr. Jaki's rebuttal of contemporary claims about the existence of, or possibility for, man-made minds. His method includes a meticulously documented survey of computer development, a review of the relevant results of brain research, and an evaluation of the accomplishments of the physicalist schools in psychology, symbolic logic, and linguistics.

Artificial Intelligence David L. Poole 2017-09-25 Artificial Intelligence presents a practical guide to AI, including agents, machine learning and problem-solving simple and complex domains.

Tools for Thought Howard Rheingold 2000-04-13 In a highly engaging style, Rheingold tells the story of what he calls the patriarchs, pioneers, and infonauts of the computer, focusing in particular on such pioneers as J. C. R. Licklider, Doug Engelbart, Bob Taylor, and Alan Kay. The digital revolution did not begin with the teenage millionaires of Silicon Valley, claims Howard Rheingold, but with such early intellectual giants as Charles Babbage, George Boole, and John von Neumann. In a highly engaging style, Rheingold tells the story of what he calls the patriarchs, pioneers, and infonauts of the computer, focusing in particular on such pioneers as J. C. R. Licklider, Doug Engelbart, Bob Taylor, and Alan Kay. Taking the reader step by step from nineteenth-century mathematics to contemporary computing, he introduces a fascinating collection of eccentrics, mavericks, geniuses, and visionaries. The book was originally published in 1985, and Rheingold's attempt to envision computing in the 1990s turns out to have been remarkably prescient. This edition contains an afterword, in which Rheingold interviews some of the pioneers discussed in the book. As an exercise in what he calls "retrospective futurism," Rheingold also looks back at how he looked forward.

Machines and Thought Robert Matthew French 1996-11-28 Turing asked 3 famous questions relating to the nature of artificial intelligence: this collection of considerations by leading academics attempts to respond to his questions as his legacy continues to be salient and controversial.

Thinking Like a Computer George Towner 2020-09-30 Thinking Like a Computer is the result of a detailed 30-year study of how computers imitate life. Although they are machines, computers are designed to act like human beings. Software is specifically created to help accomplish human-like tasks and to be understood in human terms. Yet unlike human life, computer operations can be analyzed in detail because we build the machines that accomplish them and we know the design decisions that make them work. With every choice made during the evolution of digital technology, computer architects have intuitively or consciously incorporated truths of human functioning into their designs. Thinking Like a Computer is based on these truths, assembling them into a new explanation of human knowledge. In addition, it provides insights into the foundations of theoretical science because much of digital technology is dedicated to creating new realities.

Cognitive Science Noel Sheehy 1995

The Thinking Computer Bertram Raphael 1976

Superminds Thomas W. Malone 2018-05-15 From the founding director of the MIT Center for Collective Intelligence comes a fascinating look at the remarkable capacity for intelligence exhibited by groups of people and computers working together. If you're like most people, you probably believe that humans are the most intelligent animals on our planet. But there's another kind of entity that can be far smarter: groups of people. In this groundbreaking book, Thomas Malone, the founding director of the MIT Center for Collective Intelligence, shows how groups of people working together in superminds -- like hierarchies, markets, democracies, and communities -- have been responsible for almost all human achievements in business, government, science, and beyond. And these collectively intelligent human groups are about to get much smarter. Using dozens of striking examples and case studies, Malone shows how computers can help create more intelligent superminds simply by connecting humans to one another in a variety of rich, new ways. And although it will probably happen more gradually than many people expect, artificially intelligent computers will amplify the power of these superminds by doing increasingly complex kinds of thinking. Together, these changes will have far-reaching implications for everything from the way we buy groceries and plan business strategies to how we respond to climate change, and even for democracy itself. By understanding how these collectively intelligent groups work, we can learn how to harness their genius to achieve our human goals. Drawing on cutting-edge science and insights from a remarkable range of disciplines, Superminds articulates a bold -- and utterly fascinating -- picture of the future that will change the ways you work and live, both with other people and with computers.

Beyond Calculation Peter J. Denning 2012-12-06 In March 1997, the Association for Computing Machinery celebrated the fiftieth anniversary of the electronic computer. Computers are everywhere: in our cars, our homes, our supermarkets, at the office, and at the local hospital. But as the contributors to this volume make clear, the scientific, social and

economic impact of computers is only now beginning to be felt. These sixteen invited essays on the future of computing take on a dazzling variety of topics, with opinions from such experts as Gordon Bell, Sherry Turkle, Edsger W. Dijkstra, Paul Abraham, Donald Norman, Franz Alt, and David Gelernter. This brilliantly eclectic collection will fascinate everybody with an interest in computers and where they are leading us.

Superminds Thomas W. Malone 2018-05-15 From the founding director of the MIT Center for Collective Intelligence comes a fascinating look at the remarkable capacity for intelligence exhibited by groups of people and computers working together. If you're like most people, you probably believe that humans are the most intelligent animals on our planet. But there's another kind of entity that can be far smarter: groups of people. In this groundbreaking book, Thomas Malone, the founding director of the MIT Center for Collective Intelligence, shows how groups of people working together in superminds -- like hierarchies, markets, democracies, and communities -- have been responsible for almost all human achievements in business, government, science, and beyond. And these collectively intelligent human groups are about to get much smarter. Using dozens of striking examples and case studies, Malone shows how computers can help create more intelligent superminds simply by connecting humans to one another in a variety of rich, new ways. And although it will probably happen more gradually than many people expect, artificially intelligent computers will amplify the power of these superminds by doing increasingly complex kinds of thinking. Together, these changes will have far-reaching implications for everything from the way we buy groceries and plan business strategies to how we respond to climate change, and even for democracy itself. By understanding how these collectively intelligent groups work, we can learn how to harness their genius to achieve our human goals. Drawing on cutting-edge science and insights from a remarkable range of disciplines, Superminds articulates a bold -- and utterly fascinating -- picture of the future that will change the ways you work and live, both with other people and with computers.

The Cult of Information Theodore Roszak 1994-04-29 As we devote ever-increasing resources to providing, or prohibiting, access to information via computer, Theodore Roszak reminds us that voluminous information does not necessarily lead to sound thinking. "Data glut" obscures basic questions of justice and purpose and may even hinder rather than enhance our productivity. In this revised and updated edition of The Cult of Information, Roszak reviews the disruptive role the computer has come to play in international finance and the way in which "edutainment" software and computer games degrade the literacy of children. At the same time, he finds hopeful new ways in which the library and free citizens' access to the Internet and the national data-highway can turn computer technology into a democratic and liberating force. Roszak's examination of the place of computer technology in our culture is essential reading for all those who use computers, who are intimidated by computers, or who are concerned with the appropriate role of computers in the education of our children.

Computers, People, and Thought Malachy Eaton 2020-09-22 In this book the author discusses synergies between computers and thought, related to the field of Artificial Intelligence; between people and thought, leading to questions of consciousness and our existence as humans; and between computers and people, leading to the recent remarkable advances in the field of humanoid robots. He then looks toward the implications of intelligent 'conscious' humanoid robots with superior intellects, able to operate in our human environments. After presenting the basic engineering components and supporting logic of computer systems, and giving an overview of the contributions of pioneering scientists in the domains of computing, logic, and robotics, in the core of the book the author examines the meaning of thought and intelligence in the context of specific tasks and successful AI approaches. In the final part of the book he introduces related societal and ethical implications. The book will be a useful accompanying text in courses on artificial intelligence, robotics, intelligent systems, games, and evolutionary computing. It will also be valuable for general readers and historians of technology.

Computational Thinking: A Perspective on Computer Science Zhiwei Xu

Computers and Creativity Jon McCormack 2012-08-21 This interdisciplinary volume introduces new theories and ideas on creativity from the perspectives of science and art. Featuring contributions from leading researchers, theorists and artists working in artificial intelligence, generative art, creative computing, music composition, and cybernetics, the book examines the relationship between computation and creativity from both analytic and practical perspectives. Each contributor describes innovative new ways creativity can be understood through, and inspired by, computers. The book tackles critical philosophical questions and discusses the major issues raised by computational creativity, including: whether a computer can exhibit creativity independently of its creator; what kinds of creativity are possible in light of our knowledge from computational simulation, artificial intelligence, evolutionary theory and information theory; and whether we can begin to automate the evaluation of aesthetics and creativity in silico. These important, often controversial questions are contextualised by current thinking in computational creative arts practice. Leading artistic practitioners discuss their approaches to working creatively with computational systems in a diverse array of media, including music, sound art, visual art, and interactivity. The volume also includes a comprehensive review of computational aesthetic evaluation and judgement research, alongside discussion and insights from pioneering artists working with computation as a creative medium over the last fifty years. A distinguishing feature of this volume is that it explains and grounds new theoretical ideas on creativity through practical applications and creative practice. Computers and Creativity will appeal to theorists, researchers in artificial intelligence, generative and evolutionary computing, practicing artists and musicians, students and any reader generally interested in understanding how computers can impact upon creativity. It bridges concepts from computer science, psychology, neuroscience, visual art, music and philosophy in an accessible way, illustrating how computers are fundamentally changing what we can imagine and create, and how we might shape the creativity of the future. Computers and Creativity will appeal to theorists, researchers in artificial intelligence, generative and evolutionary computing, practicing artists and musicians, students and any reader generally interested in understanding how computers can impact upon creativity. It bridges concepts from computer science, psychology, neuroscience, visual art, music and philosophy in an accessible way,

illustrating how computers are fundamentally changing what we can imagine and create, and how we might shape the creativity of the future.

Thinking about Android Epistemology Kenneth M. Ford 2006 Articles by various authors arranged in 5 parts.

The Artist in the Machine Arthur I. Miller 2019-10-01 An authority on creativity introduces us to AI-powered computers that are creating art, literature, and music that may well surpass the creations of humans. Today's computers are composing music that sounds "more Bach than Bach," turning photographs into paintings in the style of Van Gogh's *Starry Night*, and even writing screenplays. But are computers truly creative—or are they merely tools to be used by musicians, artists, and writers? In this book, Arthur I. Miller takes us on a tour of creativity in the age of machines. Miller, an authority on creativity, identifies the key factors essential to the creative process, from "the need for introspection" to "the ability to discover the key problem." He talks to people on the cutting edge of artificial intelligence, encountering computers that mimic the brain and machines that have defeated champions in chess, Jeopardy!, and Go. In the central part of the book, Miller explores the riches of computer-created art, introducing us to artists and computer scientists who have, among much else, unleashed an artificial neural network to create a nightmarish, multi-eyed dog-cat; taught AI to imagine; developed a robot that paints; created algorithms for poetry; and produced the world's first computer-composed musical, *Beyond the Fence*, staged by Android Lloyd Webber and friends. But, Miller writes, in order to be truly creative, machines will need to step into the world. He probes the nature of consciousness and speaks to researchers trying to develop emotions and consciousness in computers. Miller argues that computers can already be as creative as humans—and someday will surpass us. But this is not a dystopian account; Miller celebrates the creative possibilities of artificial intelligence in art, music, and literature.

Mind Over Machine Hubert Dreyfus 2000-03-01

Artificial Unintelligence Meredith Broussard 2019-01-29 A guide to understanding the inner workings and outer limits of technology and why we should never assume that computers always get it right. In *Artificial Unintelligence*, Meredith Broussard argues that our collective enthusiasm for applying computer technology to every aspect of life has resulted in a tremendous amount of poorly designed systems. We are so eager to do everything digitally—hiring, driving, paying bills, even choosing romantic partners—that we have stopped demanding that our technology actually work. Broussard, a software developer and journalist, reminds us that there are fundamental limits to what we can (and should) do with technology. With this book, she offers a guide to understanding the inner workings and outer limits of technology—and issues a warning that we should never assume that computers always get things right. Making a case against technochauvinism—the belief that technology is always the solution—Broussard argues that it's just not true that social problems would inevitably retreat before a digitally enabled Utopia. To prove her point, she undertakes a series of adventures in computer programming. She goes for an alarming ride in a driverless car, concluding "the cyborg future is not coming any time soon"; uses artificial intelligence to investigate why students can't pass standardized tests; deploys machine learning to predict which passengers survived the Titanic disaster; and attempts to repair the U.S. campaign finance system by building AI software. If we understand the limits of what we can do with technology, Broussard tells us, we can make better choices about what we should do with it to make the world better for everyone.

The Computer and the Mind Philip Nicholas Johnson-Laird 1988 Briefly traces the history of cognitive science, looks at computational models of how the human mind works, and discusses visual perception, learning, memory, reasoning, and the formation of new ideas

Computers and Thought Edward A. Feigenbaum 1963 Articles by: Paul Armer. Carol Chomsky. Geoffrey P. E. Clarkson. Edward A. Feigenbaum. Julian Feldman. H. Gelernter. Bert F. Green, Jr. John T. Gullahorn. Jeanne E. Gullahorn. J. R. Hansen. Carl I. Hovland. Earl B. Hunt. Kenneth Laughery. Robert K. Lindsay. D. W. Loveland. Marvin Minsky. Ulric Neisser. Allen Newell. A. L. Samuel. Oliver G. Selfridge. J. C. Shaw. Herbert A. Simon. James R. Slagle. Fred M. Tonge. A. M. Turing. Leonard Uhr. Charles Vossler. Alice K. Wolf.

After Thought James Bailey 1997-05-16 Through the first fifty years of the computer revolution, scientists have been trying to program electronic circuits to process information the same way humans do. Doing so has reassured us all that underlying every new computer capability, no matter how miraculously fast or complex, are human thought processes and logic. But cutting-edge computer scientists are coming to see that electronic circuits really are alien, that the difference between the human mind and computer capability is not merely one of degree (how fast), but of kind(how). The author suggests that computers "think" best when their "thoughts" are allowed to emerge from the interplay of millions of tiny operations all interacting with each other in parallel. Why then, if computers bring to the table such very different strengths and weaknesses, are we still trying to program them to think like humans? A work that ranges widely over the history of ideas from Galileo to Newton to Darwin yet is just as comfortable in the cutting-edge world of parallel processing that is at this very moment yielding a new form of intelligence, *After Thought* describes why the real computer age is just beginning.

The Age of Spiritual Machines Ray Kurzweil 2000-01-01 Ray Kurzweil is the inventor of the most innovative and compelling technology of our era, an international authority on artificial intelligence, and one of our greatest living visionaries. Now he offers a framework for envisioning the twenty-first century--an age in which the marriage of human sensitivity and artificial intelligence fundamentally alters and improves the way we live. Kurzweil's prophetic blueprint for the future takes us through the advances that inexorably result in computers exceeding the memory capacity and computational ability of the human brain by the year 2020 (with human-level capabilities not far behind); in relationships with automated personalities who will be our teachers, companions, and lovers; and in information fed straight into our brains along direct neural pathways. Optimistic and challenging, thought-provoking and engaging, *The Age of Spiritual Machines* is the ultimate guide on our road into the next century.

Philosophy and Computing Thomas M. Powers 2017-10-26 This book features papers from CEPE-IACAP 2015, a joint international conference focused on the philosophy of computing. Inside, readers will discover essays that explore current issues in epistemology, philosophy of mind, logic, and philosophy of science from the lens of computation. Coverage also examines applied issues related to ethical, social, and political interest. The contributors first explore how computation has changed philosophical inquiry. Computers are now capable of joining humans in exploring foundational issues. Thus, we can ponder machine-generated explanation, thought, agency, and other quite fascinating concepts. The papers are also concerned with normative aspects of the computer and information technology revolution. They examine technology-specific analyses of key challenges, from Big Data to autonomous robots to expert systems for infrastructure control and financial services. The virtue of a collection that ranges over philosophical questions, such as this one does, lies in the prospects for a more integrated understanding of issues. These are early days in the partnership between philosophy and information technology. Philosophers and researchers are still sorting out many foundational issues. They will need to deploy all of the tools of philosophy to establish this foundation. This volume

admirably showcases those tools in the hands of some excellent scholars.

Minds and Computers Matt Carter 2007-02-14 Could a computer have a mind? What kind of machine would this be? Exactly what do we mean by 'mind' anyway?The notion of the 'intelligent' machine, whilst continuing to feature in numerous entertaining and frightening fictions, has also been the focus of a serious and dedicated research tradition. Reflecting on these fictions, and on the research tradition that pursues 'Artificial Intelligence', raises a number of vexing philosophical issues. *Minds and Computers* introduces readers to these issues by offering an engaging, coherent, and highly approachable interdisciplinary introduction to the Philosophy of Artificial Intelligence. Readers are presented with introductory material from each of the disciplines which constitute Cognitive Science: Philosophy, Neuroscience, Psychology, Computer Science, and Linguistics. Throughout, readers are encouraged to consider the implications of this disparate and wide-ranging material for the possibility of developing machines with minds. And they can expect to de

From Computing to Computational Thinking Paul S. Wang 2017-07-20 Computational Thinking (CT) involves fundamental concepts and reasoning, distilled from computer science and other computational sciences, which become powerful general mental tools for solving problems, increasing efficiency, reducing complexity, designing procedures, or interacting with humans and machines. An easy-to-understand guidebook, *From Computing to Computational Thinking* gives you the tools for understanding and using CT. It does not assume experience or knowledge of programming or of a programming language, but explains concepts and methods for CT with clarity and depth. Successful applications in diverse disciplines have shown the power of CT in problem solving. The book uses puzzles, games, and everyday examples as starting points for discussion and for connecting abstract thinking patterns to real-life situations. It provides an interesting and thought-provoking way to gain general knowledge about modern computing and the concepts and thinking processes underlying modern digital technologies.

The Emperor's New Mind Roger Penrose 1999-03-04 Winner of the Wolf Prize for his contribution to our understanding of the universe, Penrose takes on the question of whether artificial intelligence will ever approach the intricacy of the human mind. 144 illustrations.

New Directions in Question Answering Mark T. Maybury 2004 Major trends in the development of an important new method of information access that combines elements of natural language processing, information retrieval, and human computer interaction. Question answering systems, which provide natural language responses to natural language queries, are the subject of rapidly advancing research encompassing both academic study and commercial applications, the most well-known of which is the search engine Ask Jeeves. Question answering draws on different fields and technologies, including natural language processing, information retrieval, explanation generation, and human computer interaction. Question answering creates an important new method of information access and can be seen as the natural step beyond such standard Web search methods as keyword query and document retrieval. This collection charts significant new directions in the field, including temporal, spatial, definitional, biographical, multimedia, and multilingual question answering. After an introduction that defines essential terminology and provides a roadmap to future trends, the book covers key areas of research and development. These include current methods, architecture requirements, and the history of question answering on the Web; the development of systems to address new types of questions; interactivity, which is often required for clarification of questions or answers; reuse of answers; advanced methods; and knowledge representation and reasoning used to support question answering. Each section contains an introduction that summarizes the chapters included and places them in context, relating them to the other chapters in the book as well as to the existing literature in the field and assessing the problems and challenges that remain.

Computers and Thought, Edited by E.a. Feigenbaum and J. Feldman, New York, Mcgraw-hill, 1963: Book Review A. V. Napalkov 1967 A summary and review (favorable) of the book 'Computers and Thought' is followed by a general discussion of the potential value of heuristic programming. It is stated that there is almost no comparable literature in Russian, and it is recommended that the book be translated.

Mindstorms Seymour A Papert 2020-10-06 In this revolutionary book, a renowned computer scientist explains the importance of teaching children the basics of computing and how it can prepare them to succeed in the ever-evolving tech world. Computers have completely changed the way we teach children. We have *Mindstorms* to thank for that. In this book, pioneering computer scientist Seymour Papert uses the invention of LOGO, the first child-friendly programming language, to make the case for the value of teaching children with computers. Papert argues that children are more than capable of mastering computers, and that teaching computational processes like de-bugging in the classroom can change the way we learn everything else. He also shows that schools saturated with technology can actually improve socialization and interaction among students and between students and teachers. Technology changes every day, but the basic ways that computers can help us learn remain. For thousands of teachers and parents who have sought creative ways to help children learn with computers, *Mindstorms* is their bible.

Computer Book Simson L. Garfinkel 2018-11-06 With 250 illustrated landmark inventions, publications, and events--encompassing everything from ancient record-keeping devices to the latest technologies--this highly topical addition to the *Sterling Milestones* series takes a chronological journey through the history and future of computer science. The topics include the first spam message, Isaac Asimov's laws of robotics, early programming languages and operating systems such as BASIC and UNIX, the microcomputer revolution, hacking, virtual reality, and more.

Parsing the Turing Test Robert Epstein 2008-12-01 An exhaustive work that represents a landmark exploration of both the philosophical and methodological issues surrounding the search for true artificial intelligence. Distinguished psychologists, computer scientists, philosophers, and programmers from around the world debate weighty issues such as whether a self-conscious computer would create an internet 'world mind'. This hugely important volume explores nothing less than the future of the human race itself.

The Myth of Artificial Intelligence Erik J. Larson 2021-04-06 Futurists are certain that humanlike AI is on the horizon, but in fact engineers have no idea how to program human reasoning. AI reasons from statistical correlations across data sets, while common sense is based heavily on conjecture. Erik Larson argues that hyping existing methods will only hold us back from developing truly humanlike AI.

The Cult of Information Theodore Roszak 1986 When the word 'computer' entered the general vocabulary in the 1950s, the most advanced example filled a reasonable sized room. Three decades of rapid technological revolution have resulted in the acceptance of computers in nearly every office, school and home. A corresponding dramatic rise in the status of 'information' has promoted the people who manipulate it from the status of office clerks to information scientists. Despite the wonderful claims for the abilities of the computer and the hallowed tones of 'computerese', Theodore Roszak dares to suggest that perhaps, like the unfortunate emperor, the computer has been overdressed with false claims made by those with something to gain by it - elements in our society that are making some of the most morally questionable

uses of computer power. Roszak challenges the reader to ask: "Is our capacity to think creatively being undermined by the very 'information' that is supposed to help us? Is information processing being confused with science or even beginning to replace thought? And are we in danger of blurring the distinction between what machines do when they process information and what minds do when they think?" He explains why humankind's primary beliefs, in equality, justice and in God are not computable; why great scientific theories and fundamental 'master ideas' cannot be developed by computers; and why bad ideas cannot even be refuted by them. Roszak is no contemporary Luddite - this book was written on a word processor - but he is deeply concerned that we have all been sold a misleading and potentially harmful vision of the computerised society.

Predicting Human Decision-Making Ariel Rosenfeld 2018-01-22 Human decision-making often transcends our formal models of "rationality." Designing intelligent agents that interact proficiently with people necessitates the modeling of human behavior and the prediction of their decisions. In this book, we explore the task of automatically predicting human decision-making and its use in designing intelligent human-aware automated computer systems of varying natures—from purely conflicting interaction settings (e.g., security and games) to fully cooperative interaction settings (e.g., autonomous driving and personal robotic assistants). We explore the techniques, algorithms, and empirical methodologies for meeting the challenges that arise from the above tasks and illustrate major benefits from the use of these computational solutions in real-world application domains such as security, negotiations, argumentative interactions,

voting systems, autonomous driving, and games. The book presents both the traditional and classical methods as well as the most recent and cutting edge advances, providing the reader with a panorama of the challenges and solutions in predicting human decision-making.

Systems, Experts, and Computers Agatha C. Hughes 2011-01-21 This groundbreaking book charts the origins and spread of the systems movement. After World War II, a systems approach to solving complex problems and managing complex systems came into vogue among engineers, scientists, and managers, fostered in part by the diffusion of digital computing power. Enthusiasm for the approach peaked during the Johnson administration, when it was applied to everything from military command and control systems to poverty in American cities. Although its failure in the social sphere, coupled with increasing skepticism about the role of technology and "experts" in American society, led to a retrenchment, systems methods are still part of modern managerial practice. This groundbreaking book charts the origins and spread of the systems movement. It describes the major players including RAND, MITRE, Ramo-Wooldrige (later TRW), and the International Institute of Applied Systems Analysis—and examines applications in a wide variety of military, government, civil, and engineering settings. The book is international in scope, describing the spread of systems thinking in France and Sweden. The story it tells helps to explain engineering thought and managerial practice during the last sixty years.

Microcognition Andy Clark 1989 Microcognition provides a clear, readable guide to parallel distributed processing from a cognitive philosopher's point of view.