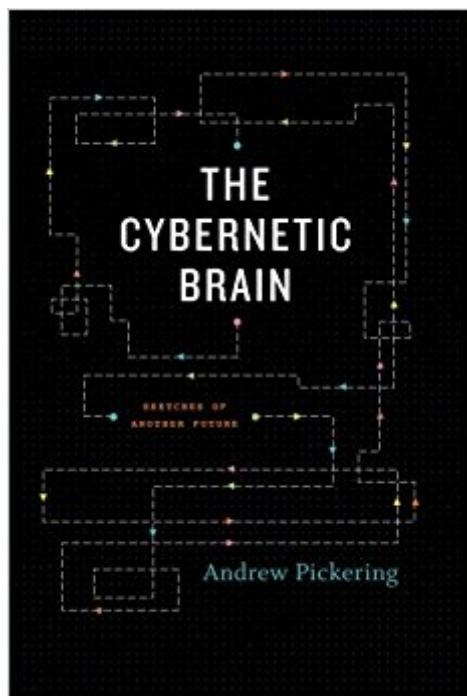


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# The Cybernetic Brain: Sketches Of Another Future



## Synopsis

Cybernetics is often thought of as a grim military or industrial science of control. But as Andrew Pickering reveals in this beguiling book, a much more lively and experimental strain of cybernetics can be traced from the 1940s to the present. The Cybernetic Brain explores a largely forgotten group of British thinkers, including Grey Walter, Ross Ashby, Gregory Bateson, R. D. Laing, Stafford Beer, and Gordon Pask, and their singular work in a dazzling array of fields. Psychiatry, engineering, management, politics, music, architecture, education, tantric yoga, the Beats, and the sixties counterculture all come into play as Pickering follows the history of cybernetics' impact on the world, from contemporary robotics and complexity theory to the Chilean economy under Salvador Allende. What underpins this fascinating history, Pickering contends, is a shared but unconventional vision of the world as ultimately unknowable, a place where genuine novelty is always emerging. And thus, Pickering avers, the history of cybernetics provides us with an imaginative model of open-ended experimentation in stark opposition to the modern urge to achieve domination over nature and each other.

## Book Information

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## Customer Reviews

"By focusing on the developments in Britain, Andrew Pickering's The Cybernetic Brain opens wide new vistas for exploring cybernetic practice and its legacy.... As a protean science with connections to psychiatry, theater, music, politics, and counterculture, it was a lot more glamorous and fun than previous accounts of the field would have us believe." (Science)"

Andrew Pickering is professor and chair of sociology at the University of Exeter. He is the author of several books, including *Constructing Quarks: A Sociological History of Particle Physics* and *The Mangle of Practice: Time, Agency, and Science*, both published by the University of Chicago Press.

In my opinion this book captures the essence of cybernetics better than any other. If you want to understand why the cybernetic view is more than just an old-fashioned model for making robots, this book is essential reading.

Excellent history of Cybernetics and cybernetic thinking.

This is a profound, well researched, and well written exposition on the history and philosophical implications of relatively recent research into self-organizing/self-regulating/complex systems.

Wonderful book.

Read this book, especially if you are interested in the history of science, of technology or science studies. It is incredibly refreshing and thought-provoking.

Andrew Pickering seeks to rescue cybernetics from the margins and to make it more widely available. Writing from outside the cybernetic camp, he is able to approach the subject matter in an impartial way. Counting myself as a member of the cybernetic community, I believe he has met his aim with great success. He makes a convincing case for a cybernetic worldview that is quite distinct from the traditional worldview of physics. Pickering argues that the latter rests on the assumption that everything is in principle knowable, and that if we know enough about things in themselves, it increases our control over them. Distinct from this, he describes cybernetics as having emerged with what he calls a 'performative' worldview. This is complementary to the approach of physics, with a focus upon human interaction with the phenomenal world, rather than striving to understand it 'out there' without reference to the observer of it. In this performative worldview, the basic assumption is the essential unknowability of things. Human knowledge is then seen as a 'process of becoming' which arises through the cycle of doing followed by reflection on the effects of our doing. Such a cycle entails a view of human knowledge as a capacity to understand a dynamic and changing reality through our engagement with it over time - hence 'performative'. There is no rejection of a physics-orientated view (after all, the background of the author is physics). But, during

and immediately after the Second World War, in response to the huge challenges posed by increasing rates of change and complexity, certain individuals developed an approach intended to more effectively tackle indeterminate and massively complex dynamic systems. This innovative work in what became known as cybernetics, has far-reaching implications for our present understanding of global issues including climate change, ecology and the financial system. Pickering describes particular implications of such a worldview for human knowing and society. Knowledge is surely about the way things are and how they behave in response to our interactions with them. This is quite distinct from the more traditional notion that knowledge is gained from taking things apart and analysing them in greater and greater detail. In passing, he relates this to both continental philosophy and the pragmatism of William James without getting bogged down in philosophical issues. He also touches on ways in which this approach combines the spiritual/experiential on the one hand, and the rational on the other. The author uncovers intriguing material on all the key protagonists. The accounts of experimentation with cybernetic machines such as Ashby's 'Homeostat' or Pask's 'Colloquy of Mobiles', give clear and concrete examples which clearly convey the meaning of this 'performative ontology' (Pickering). There is excellent original material on Ross Ashby, Stafford Beer, Gordon Pask, Grey Walter and others. Pickering also makes a convincing if provocative link between the endeavors of such individuals with the emergence of the so-called counter-culture of 1960's (e.g. R.D. Laing), and the insights of Gregory Bateson. On a more general note, the book provides wonderful insight into the creative process of such a performative ontology - how this disparate group of highly original thinkers 'ran their intuitions past reality' as it were, through the conception and construction of physical artefacts, artefacts whose behaviours embodied a radically novel insight into life and human experience of it, enabling further new realities to emerge in a range of new disciplines. In summary - the book is a very rich account of how such early work in cybernetics impacted upon our contemporary intellectual landscape. It clearly and succinctly describes how the work and ideas of seminal British figures in cybernetics impacted on the emergence of major new disciplines. This is a must for anyone interested in the provenance of complex adaptive systems (CAS), artificial intelligence, cognitive science and artificial life as well as for students of cybernetics itself.

Roger Harnden's review gives an excellent overview of the book, so I will just express some reservations here. Pickering's historical synthesis is fascinating and very readable, and I learned a lot about the peculiar eclectic history of cybernetics that added to my view of 20th century explorations in mind and artificial intelligence. But Pickering's analysis is blinkered: he sets up a false

dichotomy between the "nonmodern ontology" of the cyberneticists and the presumably "modern ontology" of everyone else, but he doesn't seem to be familiar enough with the full history of cognitive science to make the dichotomy stick. (References to the mushy There is no mention in the entire book of perceptron inventor Frank Rosenblatt, who gives lie to Pickering's insistence that \*only\* the cyberneticists were exploring the supposedly radical philosophical ideas Pickering chronicles. The cyberneticists were weird and unique in their way, but they didn't stand in opposition to a monolithic modern scientific establishment.Instead, Pickering invokes Steven Wolfram, author of the overblown and almost universally reviled A New Kind of Science. I'm not sure why Pickering thought that Wolfram's theoretically ungrounded and ultimately inconsequential experiments with cellular automata deserved mention alongside the very real (if quirky) accomplishments of Ross Ashby and Grey Walter, but I suspect it has to do with Pickering putting his philosophical agenda before the technical facts. Unfortunately, his agenda is rooted in Heidegger's untenable philosophy of technology, and so it leads him down some blind alleys. He would have done better to discuss Stanislaw Lem, who read heavily in cybernetics and wrote some serious analysis of it, particularly in Summa Technologiae, but who goes unmentioned here.Nonetheless, there's great stuff in this (overlong) book and the history is a great read. Just be very cautious in believing the polemic.

This book is very thought provoking and stimulating. The sciences have never been so clear as they are now that I have read this book.

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