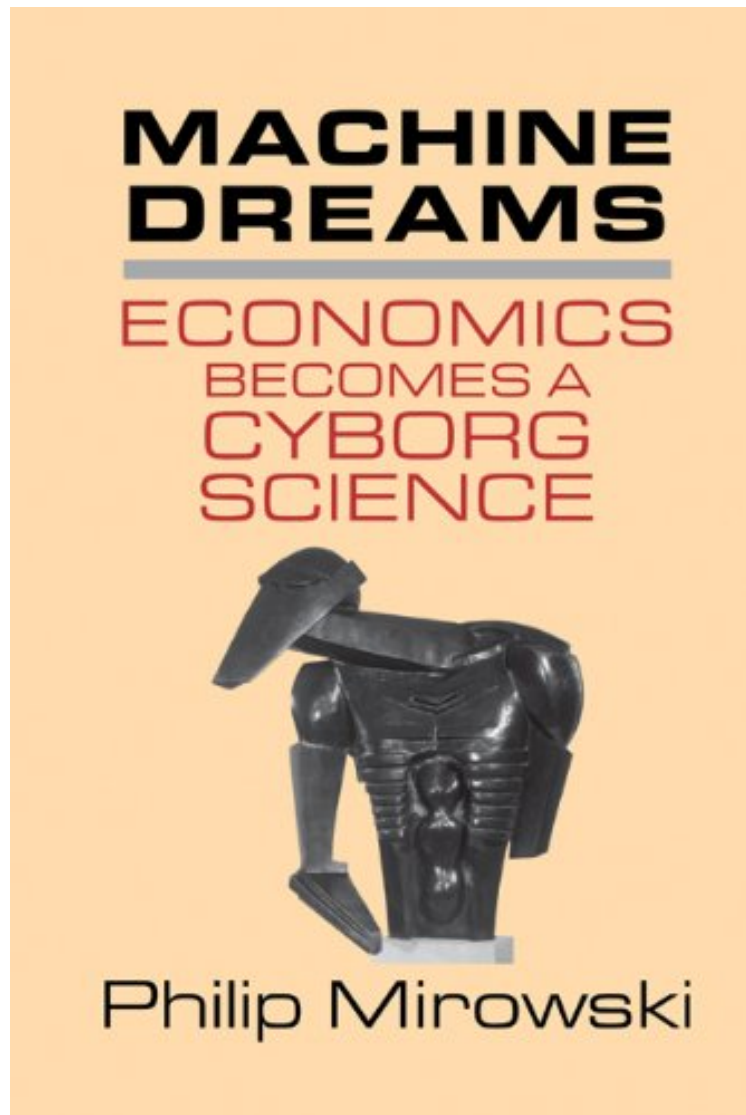


Machine Dreams: Economics Becomes a Cyborg Science

Philip Mirowski

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Philip Mirowski : Machine Dreams: Economics Becomes a Cyborg Science before purchasing it in order to gauge whether or not it would be worth my time, and all praised Machine Dreams: Economics Becomes a Cyborg Science:

33 of 33 people found the following review helpful. Impressive and funBy A. J. SutterAs you can see from the previous reviews, this is a book that provokes strong feelings. As usual that's often more a reflection on the reader than on the book. You'd never guess that this book is (by intention) very funny. But it is.Mirowski has written elsewhere that John von Neumann is the "hero" of this book. Von Neumann thought neoclassical economics was nonsense, and made no secret of that opinion. As a result, many post-war American economists have tried to write him out of history. One fruit of their effort was the beatification of John Nash as the patron saint of game theory, a process that began in

the 1980s. According to this book, the irony is that those same economists have "followed the trajectory" of von Neumann's thinking for the last five decades, even if they wouldn't acknowledge it. Through the 1970s or so they relied on fixed-point theorems and other nonconstructive proof techniques (von Neumann in the 1930s). From the 1980s to now, they have relied on game theory (von Neumann for a few years in the 1940s). Recently, they have begun to rely more on computers, particularly to study "agent"-type automata (von Neumann from the mid-1940s to the end of his life). And, as for von Neumann, military funding has been an important factor throughout this development. Actually, this isn't "the" irony, but just one of many. If you've ever had any suspicions that neoclassical economics was kind of a crock, you'll find them well-supported in this impressively well-researched book. (Some highlights include the misplaced aspiration to axiomatize economic theory, the impossibility of computing Nash equilibria, ditto for Walrasian general equilibria, the socialist antecedents of "free market" jingoism, the bounded usefulness of V. Smith's market experiments, and much else.) It may be a bit of a stretch to say that the book reads like a thriller, but the fun of uncovering some additional bit of intellectual dishonesty with each turn of the page did keep my attention. For over 500 pages, this story is told with a sustained, righteous and gleeful sarcasm. Such a tone may sound tiresome, but based on the evidence Mirowski brings forward - much of it the neoclassicals' own words - it struck me as quite justifiable. And I laughed a lot. However, be aware that this book is less self-contained than Mirowski's earlier book, "More Heat Than Light". Even if you've read that book first (which I recommend, especially if you're not an economist), you should have at least a Scientific American-level of acquaintance with theory of computation, a bit more math-intensive experience with game theory (like a few chapters of Myerson -- not that "Machine Dreams" has any equations, but the math is often alluded to), and smidgens of Arrow, Debreu, Herb Simon, Vern Smith and Kahneman Tversky. You should also know "who" Bourbaki is and have some experience of the Bourbakist style, because it's taken for granted that you already do. There are a few quirks, but nothing so dire as what other reviewers have mentioned. For example, the "Newtonian" issue appears maybe in one offhand comment. More frequent, no less irritating, and just as utterly inconsequential is the use of the word "thermodynamics" when "statistical mechanics" would have been more appropriate. (None of those physics gaffes is important to the main theme.) An august group of manuscript readers allowed the author repeatedly to use "phenomena" and "automata" as singular nouns in the first two-thirds of the book. And throughout, there are ironic allusions and silly puns based on pop culture references, which is fine; but those of you born after 1965 may miss a lot of them. Maybe one day, some econ undergrad as yet unborn will write a senior honors thesis glossing those many dozens of goofy remarks. For its multitude of remarks both insightful and trenchant, this book deserves to continue to be read at least until that time.

27 of 32 people found the following review helpful. Undecidable econ vs. Perfect Rationality By Professor Joseph L. McCauley I've read about 250 pages and can recommend that anyone with an interest in economics and finance should read this fantastic book. The basis for the text are the contributions of Shannon, Turing, von Neumann, Wiener, Koopmans, Marshak, and Arrow. Mirowski tells us the main story of the interaction of the Cowles Commission with RAND, which Bernstein does not at all hint at in his Capital Ideas. Having praised the book, I will now concentrate mainly on a few points of disagreement. Undecidability should not be confused with noise in stochastic processes. Systems at the transition to chaos can define automata that can perform simple arithmetic. That 'cyborg' has its origin in the physical sciences seems farfetched (the connection between Turing and physics is supposed to be via Maxwell's demon, but was Turing really motivated by the idea of Maxwell's demon?). Nonlinear dynamics and fractals ('chaos' and fractals) certainly did not evolve from cybernetics or 'system theory' ('system theory' was based at best on an awareness of equilibria and limit cycles of differential equations, and made vague, unjustifiable allusions to holism). Cybernetics cannot really be seen as the midwife of what is now loosely called 'complexity' either, rather, that (still undefined) field grew out of nonlinear dynamics, neural networks, computability theory and molecular biology. Mirowski is right that many scientists confuse simulations with experiment and observations. I have argued against this confusion in papers and books. Mirowski paints an intriguing picture of (Gouml;del-influenced) von Neumann, RAND, researchers with awareness of information and computability limitations leading to agent-based modelling with some respect for empiricism on the one hand, and then, on the other hand, Arrow, the Cowles Commission and their later rejection of empirics, instead with emphasis on Bourbaki-style existence proofs leading to infinite demands on information requirements on Walrasian agents and noncomputable equilibria. We now know that agent-based modelling can easily lead to fat-tailed price distributions (as observed empirically), whereas in contrast the origin of the systematic head-in-the-sand philosophy of the neo-classical economic theorists is made quite clear in this work. One can summarize the neo-classical economic agent as follows: his dynamics are trivial (equilibrium, including Nash equilibria) but the information demands made on him to interact with other agents and locate an equilibrium point are impossible (noncomputable). Moreover, we now know that financial market statistics point toward the instability of Adam Smith's hand, so that the notion of dynamic equilibrium is completely uninteresting so far as understanding markets is concerned.

0 of 0 people found the following review helpful. Five Stars By Pgd Excellent copy, as described

This was the first cross-over book into the history of science written by an historian of economics. It shows how 'history of technology' can be integrated with the history of economic ideas. The analysis combines Cold War history

with the history of postwar economics in America and later elsewhere, revealing that the Pax Americana had much to do with abstruse and formal doctrines such as linear programming and game theory. It links the literature on 'cyborg' to economics, an element missing in literature to date. The treatment further calls into question the idea that economics has been immune to postmodern currents, arguing that neoclassical economics has participated in the deconstruction of the integral 'self'. Finally, it argues for an alliance of computational and institutional themes, and challenges the widespread impression that there is nothing else besides American neoclassical economic theory left standing after the demise of Marxism.

"As history, *Machine Dreams* is a remarkable achievement. It is hard to imagine a historian who was not an economist (as Mirowski is) being able to encompass the economics of the second half of the 20th century in its diversity and technicality." London of Books "Phil Mirowski reminds me of an investigative reporter with a world-class story. He has gone straight to the heart of a really interesting problem--the emergence of economics' modern era in the crucible of World War II--and come back with a detailed account of events at The Cowles Commission and the RAND Corporation. It is news, the best that can be said quickly. It is opinion: cyborg economics (meaning purely cognitive economics) is not the sort of science Mirowski wants to see. And it is sensationally interesting. You don't have to agree with his conclusions to recognize that Mirowski is the most imaginative and provocative writer at work today on the recent history of economics. *Machine Dreams* is a real-time cousin to *The Difference Engine* .". David Warsh, *The Boston Globe* "Machine Dreams is an astonishing performance of synthetic scholarship. Mirowski traces the present-day predicaments of economic theory to its intellectual reformulation and institutional restructuring by military funding and in the crucibles of World War II and the Cold War. His demonstration that the mathematical economics of the postwar era is a complex response to the challenges of "cyborg" science, the attempt to unify the study of human beings and intelligent machines through John von Neumann's general theory of automata, is bound to be controversial. His critics, however, will have to contend with a breathtakingly wide range of published and unpublished evidence in fields ranging from psychology to operations research he presents. This noir history of economic thought will change its readers' understanding of twentieth century economics profoundly." Duncan Foley, *New School University* "In *Machine Dreams* the most exciting historian of economic thought of our time takes on one of the most fascinating themes of the intellectual history of the 20th century--the dream of creating machines that can think and how this has affected the social sciences. The result is an extraordinary book that deserves to be read by everyone interested in the social sciences." Richard Swedberg, *University of Stockholm* About the Author Philip Mirowski is Carl Koch Professor of Economics and the History and Philosophy of Science at the University of Notre Dame. His areas of specialization are in the history and philosophy of economics and the politics and economics of knowledge, with subsidiary areas in evolutionary computational economics, the economics of science and technological change, science studies and the history of the natural sciences. His most recent books include *The Effortless Economy of Science* (2004, winner of the Ludwig Fleck Prize from the Society for the Social Studies of Science), *Machine Dreams* (Cambridge University Press, 2001) and *ScienceMart* (2011), and he edited *Agreement on Demand* (2006), *Science Bought and Sold* (2001) and *The Road from Mont Pelerin* (2009). His landmark book *More Heat than Light* (Cambridge University Press, 1989) has been translated into French (2001). He has been the recipient of fellowships from the Fulbright program and New York University and was elected visiting Fellow at All Souls College, Oxford. He was elected President of the History of Economics Society for 2011.