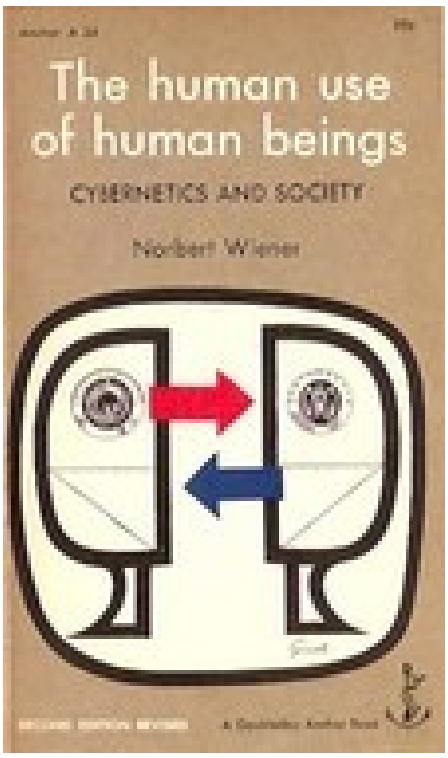

The Human Use of Human Beings: Cybernetics and Society

Norbert Wiener

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Only a few books stand as landmarks in social and scientific upheaval. Norbert Wiener's classic is one in that small company. Founder of the science of cybernetics—the study of the relationship between computers and the human nervous system—Wiener was widely misunderstood as one who advocated the automation of human life. As this book reveals, his vision was much more complex and interesting. He hoped that machines would release people from relentless and repetitive drudgery in order to achieve more creative pursuits. At the same time he realized the danger of dehumanizing and displacement. His book examines the implications of cybernetics for education, law, language, science, technology, as he anticipates the enormous impact—in effect, a third industrial revolution—that the computer has had on our lives.

The Human Use of Human Beings: Cybernetics and Society Details

Date	:	Published 1954 by Doubleday Anchor (first published November 30th 1949)
ISBN	:	
Author	:	Norbert Wiener
Format	:	Paperback 199 pages
Genre	:	Science, Philosophy, Nonfiction, Technology, Computer Science, Sociology, Psychology, History, Theory, Popular Science

From Reader Review The Human Use of Human Beings: Cybernetics and Society for online ebook

Chris Wells says

(my review for Amazon)

More than fifty years after its initial publication, this book remains as relevant and prophetic as it is brilliant and exhilarating.

To start, Wiener explains cybernetics in a way that the intelligent layperson can understand; he discusses how human beings, animals, and machines relate to one another through communication and feedback, thus becoming systems that limit or temporarily reverse the universal tendency toward disorganization (entropy). After establishing this framework, he discusses the implications of cybernetics on society. As he takes cybernetic theory to its logical conclusions--that is, accounting for the communication and feedback between human beings, machines, and the environment as a whole--his insights are shown to be profoundly humane and ultimately very inspiring.

This is no ordinary scientific text. There are discussions of Augustinian vs. Manichaean worldviews and their implications; the inevitable spread of dangerous information (such as that resulting in the atomic bomb) despite the strenuous efforts of governments; and the need not to rely on machines--non-human machines as well as "human machines" such as bureaucracies and corporations--to do the difficult work that human beings must do to remain ethical, responsible, and free.

All in all, this is an outstanding book written in lucid, beautiful prose. The book tells us as much about the systems that make up our world as it does about the brilliance, humility, and humanity of Wiener himself. No summary of this book, in blurb or review format, can possibly do justice to Wiener's achievement.

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philosovamp says

This is the kind of book that used to be written when scientists and science writers were philosophically literate.

Vincent Russo says

Norbert Weiner, who should most certainly be a household name, is the father of cybernetics. This book was written more than 50 years ago, but the predictions and conclusions are startling and fairly consistent with our current state of affairs. Much of the context is set upon our technological progression, and the inevitable inclination from some to utilize this technology for evil. The book is also very interesting at noting some of the early overlap between society and technology, and the resulting early implications.

DJ says

Thoughts on accelerated change, the singularity, neuroscience, evolution, and more from a man who refers to the last decade of the 19th century as "the nineties".

This book is the forerunner to a line of fantastic (yet, at times, exaggerated) works straddling mathematics, machines, and biology, known as the "cybernetics" movement. At times, this book suffers from the same affliction that Akira Kirosawa's films do - they seem cliched and unoriginal to the modern reader/viewer who has grown up in a creative world molded by their influence. Nevertheless, it is certainly worth a look for both its historical importance and Wiener's unique interweaving of disparate scientific fields.

Wiener is the first instance I've encountered of a writer adopting contemporary technology as a new framework through which to view the world. (I assume that there were others before him, but I suspect they would have been almost nonexistent before the first Industrial Revolution. New paradigms based on technology require huge technological leaps that occur within a generation for inspiration and I'm not sure there were any before then that qualify.) Today, this baton has been passed to those viewing the world as networks (i.e. Steven Johnson) and information (i.e. Seth Lloyd), but Wiener scooped them all.

Employing Claude Shannon's new information theory, Von Neumann's thoughts on computers, Gibbs' statistical physics, and his own keen intellect, Wiener muses on humans as patterns of information in the entropic flow of the universe, human "transmission" (teleportation), and even the social issues stemming from it, such as the economic leapfrog played by agile third-world economics and the dangers of a wholesale shift away from menial labor (and the ensuing creation of an entire generation with no place in the world). Actually, his awareness of the ethical issues implicated by the changes he describes are outstanding coming from a lifelong theoretical mathematician.

He also employs these paradigms in ways I hadn't seen before such as interpreting science as the decoding of nature's secrets. He describes each species and other entity in their world as adopting its own "secret codes" to communicate with allies and befuddle enemies (yes, this was the era when every scientist in America was employed by the US war effort in some fashion and Wiener indeed worked on code-breaking). Evolution then progresses as a constant effort for an entity in the world to maintain the integrity and secrecy of those communications against the continual efforts of competitors to decode them. Its a fascinating way to view evolution (both of biological species and non-living evolutionarily stable situations in our universe), but Wiener is careful to point out that it would be a mistake to view nature as seeking to keep her secrets from man. I'm not sure he gave a satisfactory justification for believing this beyond the fact that the entire endeavor of science presupposes that we are not being lead on a wild-goose chase. (Though honestly, the physics we're exploring know sometimes makes you wonder...) Half the battle of science and engineering is simply knowing that a solution to your problem exists. For instance, if Russian scientists were to announce that they had figured out how to encode humans and safely transmit them through broadband lines, half the physicists and computer scientists in the US would immediately drop their projects and focus on figuring out how to do it themselves. One, because no American likes to be beat by the Russians, but two, and more importantly, because *they know a solution exists*. The scientific endeavor (like many others I imagine) is inevitably plagued by that tiny voice of doubt inside every researchers head that says, "This cannot be done." Wiener's sound advice: ignore it.

Wiener's careful consideration of the details of early computers also tipped me off to the technological desensitization that occurs with each passing generation. To Wiener, the computer's great limitation was the time investment needed to design a "tape" customized to the user's needs. Computers, he suspected, would spread as far as cottage industry but not down to the consumer level because consumers would never be able to afford to a hire a team of technicians to create a "tape" suitable to their needs. He never saw desktops, consumers OSs, commoditized software, and ten-year olds programming in their basements... *because he never saw past the tape*. The shift from "hard" software programs like a tape and those we have today is one that's hard to appreciate if you grew up with C++, STL, and a school full of Dells. Each generation marvels at and analyzes the new; the constant or omnipresent is taken for granted and left unexamined. Wiener

analyzes that which to us would not seem worth a second glance.

My one criticism is against Wiener's stoicism. For such a revolutionary thinker, he can still be quite stodgy. His extremely disciplined childhood seems to have closed his mind to any view of invention and scientific investigation but that of the careful, ever-progressing technician. He outright condemns the idea of an engineer taking apart and building things "for fun" when he could be working toward solving the world's problems. While I agree with his statement that its important to prioritize the "know-what" over the "know-how" question, engineering "play" is essential. One, humans are powerful predicting machines but not *that* powerful and a bit of leeway can lead to many an accidental discovery. Two, science and engineering is *not* solely for the purpose of progress. Its also a source of pleasure for those who do it. I suspect Wiener would faint like a Victorian duchess in the presence of pot-smoking, bongo-playing Richard Feynman or Dean Kamen and his technotoy paradise island.

Sean Toru says

The idea behind the field of cybernetics is that systems can control and regulate themselves, as well communicating with other systems. The interesting part is that these 'systems' could be anything from iPhones to human brains to political regimes - and they can be studied in and compared using the same methodologies.

The author, a heavyweight MIT scientist, was at the vanguard of this new field. In this book he manages to convey quite complex ideas in a non-technical way. But beyond the science he also goes meta and explores the effect his way of thinking has on the understanding of science itself as well as its potentially harmful approach should it be misused at the political/industrial level. Weiner's incisive ethical critique is refreshing especially when it is considered he was a leading US scientist essentially speaking out against McCarthyism.

There's a lot repeated from 'Cybernetics' (by the same author) - which is a book that outlines the same ideas but in much more technical language. There's no need to read both, if you're not scared off by lengthly pages of calculus then read Cybernetics and otherwise read The Human Use of Human Beings. But definitely read one of them.

Advances in machine learning and the apparent collapse of the political dogmas established around the time this book was written add further spice. On the latter point I would suggest that 'All Watched Over By Machines of Loving Grace' by Adam Curtis would be an excellent companion piece as it shows the rise and fall of Cybernetic theory in mainstream politics and economics in the intervening years since this book was published.

ps. if you're having trouble getting your head around the theory of information entropy (Shannon's law) then I would recommend watching episode 2 of 'Art of the Problem' on YouTube - which can be found at https://www.youtube.com/playlist?list...

Andrew says

I read it just to see if there was anything to be gained from returning to the horse’s mouth when it comes to

cybernetics and information theory…but there’s not a great deal of interest today, given how much his ideas have permeated our society. It’s a mixum-gatherum of various observations and what he thinks are noteworthy implications of different ideas, a type of free-association of theory in the abstract to try bring it to bear on reality.

Sumanth Srinivasan says

There are many things I love about this book, but most of all is the fact that Norbert Wiener, then a professor at MIT, wrote this book in 1950. Despite its existence well before its time, 'The Human Use of Human Beings' stands as a great precursor to both information technology and media theory.

Analogies fly back and forth throughout the first half of the book, between human individuals, societal systems and machines. He pulls this off especially well, putting an engineer inside fever dreams of sociology and cognition. In the process of evoking thermodynamics, cybernetics, media and information theory, Wiener introduces a very new kind of vocabulary to understand human behavior - in terms of entropy, feedback systems, taping, encoding, transmission and denoising. He does so with the help of fiction, often from the likes of Kipling and Poe, and sometimes the mythical Augustinian and Machiavellian devils.

Starting with a complete lack of surprise at automation by citing humans' basic abilities to perform as cogs, Wiener then uses this vocabulary to comment on the trajectory of industrial revolution, early valuations of information and the use of communication machines in sensory prosthetics - often delving into ideas of secrecy, deception, surveillance and malicious jamming. In 'The Human...', Wiener actively warns about the commodification of information itself, and prophecies the militarization of such an industry, resulting in heavy gate keeping and rhetoric of meaningless invention.

Arthur Gershman says

Norbert Wiener was a child prodigy and Professor of Mathematics at MIT from 1919 until his death in 1964. He invented the science of cybernetics (look it up in the dictionary) and the guided missile but refused to help the military during the cold war. This volume includes an open letter published in the January, 1947 Atlantic Monthly magazine entitled "A Scientist Rebels" by Norbert Wiener. An introduction by Wiener biographer Steve J. Heims provides a context for Wiener's works.
If you are at all interested in cybernetics, and particularly interested in the effects it is having and will have on society, this book is must reading. Of course, this book does not approach Wiener's "God & Golem, Inc."(reviewed elsewhere in Amazon.com) for sheer brilliance, but then, what does, except perhaps the "Bahir."

Bojan Dzodan says

"Nauka je nacin zivota koji moze da cveta samo ako je ljudima data sloboda da imaju veru. Vera koju sledimo po naredjenju nametnutom spolja nije vera, a zajednica koja se oslanja na takvu pseudoveru osudjena je da sebe unisti zbog paralize koju namece nedostatak zdravog procvata nauke."

Mengsen Zhang says

Wiener was a genius for his understanding of the nature of communication, as well reflected in his mastery of writing. The chapter on law and communication definitely helped me reconnect to a neglected island of knowledges within my pond of thoughts. Overall, he's in a neutral and intelligent voice, but I LOVE the occasional bursts of yelling(e.g. in chapter 8: role of the intellectual and the scientist).

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dv says

Libro difficile, non lineare, eterogeneo. Eppure ricco di spunti sull'apprendimento, il lavoro e in generale lo sviluppo umano che vanno ben oltre quanto nel linguaggio comune si intende per "cibernetica". Wiener fa decisamente fatica a tenere i suoi molti spunti di riflessione in poche pagine.

«L’uomo trascorre circa il quaranta per cento della sua vita nella condizione di apprendista, per ragioni che hanno a che fare con la sua struttura biologica. E? del tutto naturale che una societa? umana si fondi sulla capacita? di apprendere, come all’opposto una comunita? di formiche si basi su un modello ereditario». Norbert Wiener

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10001010001 says

This is what happens when one tries hard to glaze a phony layer of "polymath" look on oneself, without actually getting one's hand dirty in initiating one into various disciplines.

Der Teufelskreis wird enger!
Doch man glaubt nur was man glauben will.

Alb Bte says

A 1950s vision of what the future could be like, based on the recent developments in science.
The author outlines his vision of what will be become cybernetics -- the science of information, also an umbrella-term for many other fields of science, ranging from hard science to human sciences. Having the author's opinion, a brilliant mathematician, about what would the dangers of a poorly managed human/machine relationship be, at a time where personal computer hasn't been invented is very interesting. Some parts are quite technical and thus need the reader to increase his knowledge about other fields such as mechanics or industrial engineering to really grasp the author's point of view. The author delves into societal implications, religions and also talks about history. Not a must-read in my opinion, but a very refreshing point of view.

Jimmy Head says

Pre-digital world that never could not see beyond analog.

Ben Peters says

A brilliant, wild little book from a polymath of prodigious proportions, it summarizes his seminal and baffling Cybernetics (1948) and extends an early critique of the information society. Written amid postwar froth, Wiener vaults a theory of communication and control meant to help stabilize any agent (quantum, chemical, biological, human, mechanical, social) into a sweeping philosophically informed lattice of "communal information." A must read for anyone interested in cold war history, philosophy, and politics of information science, technology, and society.

John Jr. says

In looking back more than 15 years to when I read this book, I find, as is usually the case, that what persists are general impressions more than specific recollections. Instead of attempting to construct some sort of short essay, I'll present a few comments.

The word "cybernetics" was coined by Norbert Wiener, in 1947 (to use the year specified by the usually reliable Science Fiction Encyclopedia), as an English adaptation of a Greek word, *kubern?t?s*, meaning pilot, steersman, navigator, controller (depending on your source). The history of that Greek word tells us something about Wiener's purposes, though I don't recall whether he puts it this way. From the Greek, the Latin language derived *gubernator,> which led to the English word "governor," and that word was applied in the 19th century to a component devised to regulate the speed of a steam engine by means of a feedback loop. The feedback loop is a concept central to Wiener's analysis of automatic communication and control processes in biological and mechanical systems (which may have been the limit of his discussion in his original, 1948 book Cybernetics) and in social systems as well. And there you have something that's central to Wiener's broader view: cybernetics is not applicable solely to technology. His work has influenced many fields, including biology and anthropology (the latter through Gregory Bateson and Margaret Mead), and it's one of the regrettable, unintended consequences of his coinage that the popular view of cybernetics is limited almost entirely to compounds beginning in "cyber-" and denotes nothing beyond vaguely imagined "computer stuff"…*

The coinage "governator," applied to Arnold Schwarzenegger in his role as governor of California, is ironic here. It happens to be an almost-exact lift from the Latin gubernator but was conceived only as a combination of "governor" and "terminator." In the latter role in James Cameron films, I seem to recall that Arnold had defined his character as a cybernetic organism, and in any case that's what a Terminator is. Thus Wiener's influence is detectable even in "governator"…

Wiener's discussion is very wide-ranging and far-seeing. He discusses entropy, aspects of information theory, the potential for machine learning, the inevitability of increasing man-machine interaction, the likelihood of increasing machine autonomy, and the need for human management of machines toward proper, human ends--lest we end up with machine management of humans…

One instance of a detail I do recall: Wiener makes an important point about the development of atomic weapons, which is, I remember thinking, the only important point not explicitly discussed by Richard Rhodes in his magisterial account The Making of the Atomic Bomb. It's this: the entire Manhattan Project was conducted in great secrecy, but as soon as the first two bombs were used and reported on, it was apparent to knowledgeable scientists everywhere that they must have employed atomic energy, and the greatest secret, that it was possible to do such a thing, was thereby revealed, for it had not been known ahead of time by

anyone whether it was possible or not. Thus any other nation, or non-state agent for that matter, hoping to possess such a weapon no longer needs to determine whether, but only how, it can be done. This has been taken for granted for a long time now, but Wiener was the first author I know to have publicly made the point, and he made it in 1949…

Stephen Lee says

Good insights, but not as coherent, insightful, or interesting as 'Cybernetics' by the same author

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Jake Staples says

well written and still relevant today in many of the predictions of the effects of increasingly complicated and capable machines upon humans and our use of them. Published in 1950. A true forerunner.

"What i have said about newspapers and the movies applies equally to the radio, to television and even to book selling. Thus we are in an age where the enormous per capita bulk of communication is met by the ever thinning stream of total bulk o communication. more and more we must accept a standardised inoffensive and insignificant product which, like the white bread of the bakeries, is made rather for its keeping and selling properties than for its food value."

Still love me some soft white loaf though.

Walter Michalski says

Not enough robots

Roberto Rigolin F Lopes says

We are in 1949, Wiener is lecturing us on communication of humans and its machines; the scope is broad: from physics to society. Regarding information, humans are patterns trying to perpetuate themselves fighting nature’s probabilistic tendency to disorder (second law of thermodynamics). How we are doing it? Well, the whole discussion unveils the beginning of the information revolution supported by computers. Hey, just 70 years ago, geniuses like Wiener and Von Neumann weren't sure about machines beating humans on chess!
