Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence

Andy Clark
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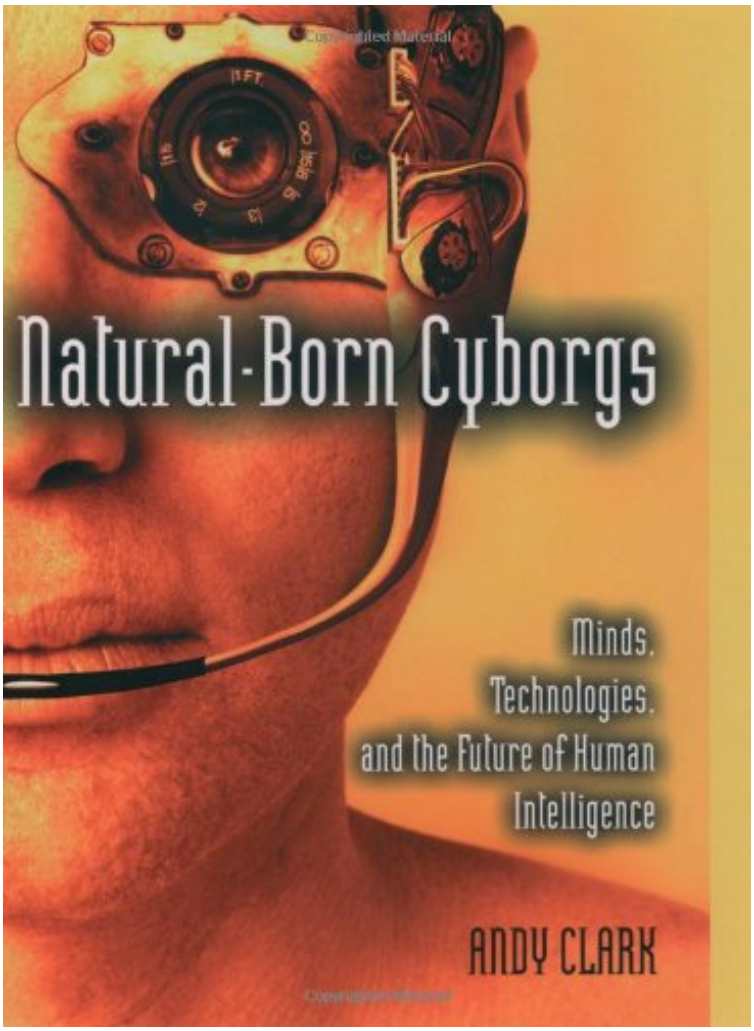

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Andy Clark : Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence before purchasing it in order to gage whether or not it would be worth my time, and all praised Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence:

0 of 0 people found the following review helpful. Brilliant.By GreyFirst book read by this author... It won't be the last. Oh, how I adore a scientific mind eloquently expressed via playful perceptions of interconnectedness. It's obviously not all fiction, and that's what I love most about this. I found myself learning about things I'd never thought about directly whilst enjoying his writing style that partially reads like a diary. Kind of reminds me how I always grew frustrated with my teachers who seemed to teach out of obligation rather than out of passion... This guy, wow. He'd be

the most epic professor. You can feel how enthralled he is. And through that loud fascination, I'm now a lot more engrossed in transhumanism not just as a technological advancement, but a collective upgrade of tools as well. Love this. Absolutely love this.2 of 2 people found the following review helpful. Mind-bendingly EnjoyableBy Anish JosephIn his book Natural Born Cyborgs, Andy Clark supports a view of human-machine symbiosis that puts our recent integration with computer interfaces on a continuum of human evolutionary development along with "clothes, cooking, bricklaying, and writing." Through his writing the author makes the case to support this view in which he systematically lays out a foundation for readers to see things from his perspective. Overall the book is written very well. I would recommend it to anyone with an open mind, some background in technology/neuroscience and a general interest in thinking about how we, in effect, have developed as human beings throughout the course of history.After first introducing the book by playing off of our fear of the fictional cyborgs we all know from the movies ie Terminator, Eve 8, Cable - the book begins with a brief introduction of the author's background; Andy Clark claims that it was during his time directing a new interdisciplinary program in philosophy, neuroscience, and psychology that he first realized this concept of "cyborg" that he details in this book. From here he introduces the idea of humans being intrinsically technology dependent beings. He states that his goal in writing such a book is "to hijack that image (our preconceived notion of cyborg) and to reshape it, revealing it as a disguised vision of our own biological nature." What really impressed me about his style of argument and writing was his use of examples from research in many different fields to illustrate his point. Where many times we see arguments like his fall into ambiguity and opinion, his use of concrete examples helps paint the picture of the story he tells.The book itself is very short, consisting of only 8 chapters, however every chapter has been thoroughly annotated so readers can dive deeper if they wish. For the sake of my synopsis I've divided the book into two halves.Chapters 1-3The first chapter of the book is spent educating the reader on where the term cyborg originally came from putting it in the context of the first early technologies which "sought to incorporate exogenous components extending the self-regulating control function of the organism in order to adapt it to new environments" Here Clark cites early osmotic pumps, auditory prosthetics, and peripheral nerve interfaces. The focus of this chapter is to draw out what Clark calls "an ancient western prejudice" which creates the illusionary belief that the mind is distinctly different from the rest of natural order. Instead of viewing technology as something distinct from our human nature he argues that technology is integrated and always has been integrated with our nature placing us in our current condition at a transition point between first wave (pen,paper,diagram, and digital media) and second wave (personalized, online, dynamic biotechnological unions) technologies. The cell phone is the technology he uses as an example of this transition.Moving from the concrete into more abstract realms Andy Clark then introduces the idea of transparent and opaque technologies before diving into his categorization of technologies, which he labels "ready-to-hand" and "present-at-hand." In categorizing the way people perceive and interact with technologies Clark attempts to bring some level of awareness to how we as lay people may simply generalize and interact with technologies and our environment taking what we have right in front of us for granted. The importance of understanding concepts such as these are again driven home using experimental example - in this case the ability of chimps who are trained to reason symbolically vs chimps who are not. Andy uses this example to make his point that only the chimps who were trained to reason symbolically were then able to understand higher order relationships - what he calls the relation between relations.Chapters 4-8Once laying out this abstract scaffold for his argument Andy Clark gets into his answers to bigger questions: Where are we? and What are we?. Here he takes the reader through reported experiments and experiences, which alter human perception through illusions and the use of technology based telepresence to play with the idea of embodied consciousness. From here he explores the application and ethics of such technologies for the future of mankind. Andy Clark takes a look at how this knowledge is already currently being used through computational application dipping into the darker areas of misuse of such information/technology. He ends this section making the point that it is not technology itself that is evil; it's how the technology is used. In conclusion Andy Clark argues that it's not the preconceived invasive and material tools themselves that make us cyborgs rather it's the extended thinking systems that are created as a result of these tools that make us who we are.I thoroughly enjoyed reading this book and I especially liked the importance he gives to interdisciplinary perspectives. Through the experience of working on constructing an interdisciplinary research program at Georgia Tech under Dr. Steve Potter I came to notice and support many of the ideas presented here. What impressed me most about the book was the amazing job the author does in translating ideas to the reader through examples while at the same time demonstrating the concept in the structure of his writing. For example in introducing the idea of the symbolically reasoning chimps he is setting up the scaffold to introduce his concept of scaffolded thinking.The biggest problem I can see readers having with this book is what can appear as Andy Clark's loose use of what he defines as a technology. Because he is speaking of technology in both a physical and metaphysical sense I can see many readers having a hard time accepting the case that he makes if they do not consider what he has to say carefully. If the reader does buy into Clark's definition, this book is an amazing source of perspective on how we as human beings have grown in an interlocked web of biology and technology. In my opinion what Andy Clark talks about in this book has incredible application in models of education and perspective regardless of opinion on the monistic, dualist, or pluralist nature of the world.2 of 2 people found the following review helpful. Cyborgs in the FleshBy Kjell OevergaardClark presents an argument that

we do not need to implant microchips or electronic prostheses in our body to become Cyborgs, - We are already Cyborgs. The argument is based in our natural ability to use tools and technics to enhance our capabilities for movement, cognition and perception.The book is easy to read and draws upon research from the fields of robotics, cognitive science, neuroscience, cybernetics, dynamic systems theory, feminist theory, cognitive anthropology and english litterature studies.The fact that he draws upon such diverse fields of research does not reduce the logic or persuasiveness of his arguments, but rather show the interdisciplinary basis for the book. The breadth of the arguments' basis is a major plus with this book, showing that the interplay between humans and technology are not merely technical but also something which changes who we are and how we understand our selves.

From Robocop to the Terminator to Eve 8, no image better captures our deepest fears about technology than the cyborg, the person who is both flesh and metal, brain and electronics. But philosopher and cognitive scientist Andy Clark sees it differently. Cyborgs, he writes, are not something to be feared--we already are cyborgs. In Natural-Born Cyborgs, Clark argues that what makes humans so different from other species is our capacity to fully incorporate tools and supporting cultural practices into our existence. Technology as simple as writing on a sketchpad, as familiar as Google or a cellular phone, and as potentially revolutionary as mind-extending neural implants--all exploit our brains' astonishingly plastic nature. Our minds are primed to seek out and incorporate non-biological resources, so that we actually think and feel through our best technologies. Drawing on his expertise in cognitive science, Clark demonstrates that our sense of self and of physical presence can be expanded to a remarkable extent, placing the long-existing telephone and the emerging technology of telepresence on the same continuum. He explores ways in which we have adapted our lives to make use of technology (the measurement of time, for example, has wrought enormous changes in human existence), as well as ways in which increasingly fluid technologies can adapt to individual users during normal use. Bio-technological unions, Clark argues, are evolving with a speed never seen before in history. As we enter an age of wearable computers, sensory augmentation, wireless devices, intelligent environments, thought-controlled prosthetics, and rapid-fire information search and retrieval, the line between the user and her tools grows thinner day by day. "This double whammy of plastic brains and increasingly responsive and well-fitted tools creates an unprecedented opportunity for ever-closer kinds of human-machine merger," he writes, arguing that such a merger is entirely natural. A stunning new look at the human brain and the human self, Natural Born Cyborgs reveals how our technology is indeed inseparable from who we are and how we think.

From Publishers WeeklyCyborgs have long been a part of America's cinematic imagination (think Arnold Schwarzenegger's Terminator), but Clark says they're very much a reality. Not only that; pretty much everyone is a cyborg already, according to the author, who heads up Indiana University's cognitive science program. With our laptops, cell phones and PDAs, we're all wired to the hilt and becoming more so every day. As Clark points out, "the mind is just less and less in the head"; when we need information, we usually fire up our PC and access it elsewhere. Clark is at his best when he's writing for a wide audience, distilling arcane technological advances into their essential meaning. But sometimes his sheer enthusiasm for the subject takes over, and the book feels as if it's intended only for tech wonks who can appreciate the minutiae of various mind-machine experiments. Clark gives a passing nod to the negative consequences of an increasingly cyborg world-social alienation, information overload-but retains his essentially positive take on the "biotechnological merger" that is transforming so many people's lives. Copyright 2003 Reed Business Information, Inc.From BooklistCognitive scientist Clark believes we are liberating our minds, thanks to our penchant for inventing tools that extend our abilities to think and communicate, starting with the basics of pen and paper and moving on to ever more sophisticated forms of computers. In this lively and provocative treatise, Clark declares that we are, in fact, "human-technology symbionts" or "natural-born cyborgs," always seeking ways to enhance our biological mental capacities through technology, an intriguing claim he supports with a brisk history of "biotechnology mergers," which currently range from pacemakers to the way a pilot of a commercial airplane is but one component in an elaborate "biotechnological problem-solving matrix." Cell phones, Clark explains, are "a prime, if entry-level cyborg technology," as are Internet search engines. As Clark clearly and cheerfully discusses cognitive processes, how we build "better worlds to think in," opaque versus transparent technologies, and the fluidity of our sense of self and adaptation to environmental changes, he offers hope that our brainy species can use its ever-evolving powers in beneficial ways. Donna SeamanCopyright American Library Association. All rights reserved "A book that is at once profound, ground breaking, and delightful reading. Clark, more than anybody, understands how human nature is shaped by the technology and culture through which it finds expression. Bravo!" --Jerome Bruner, University Professor, New York University, and author of Making Stories"Highly interesting, provocative and easy to read.... Natural-Born Cyborgs is impressive and entertaining, giving the book a potentially wide audience that includes those interested in cognitive science, performance art and the philosophy of mind."--Nature"In this lively and provocative treatise, Clark declares that we are, in fact, 'human technology symbionts' or 'natural-born cyborgs,' always seeking ways to enhance our biological mental capacities through technology, an intriguing claim he supports with a brisk history of biotechnology mergers, which currently range from pacemakers to the way a pilot of a commercial airplane

is but one component in an elaborate 'biotechnological problem-solving matrix.'"--San Diego Union-Tribune"This is a marvelous book, one I intend to use and reuse. I want to teach a course using it. I want to tell my friends. The neatest part is that it is both fun and deep, a hard trick to pull off, but Clark managed wonderfully. He combines a broad array of insights and stories into a charming, yet profound, excursion into what it means to be human as more and more we rely upon--and may even be coupled to--our technology. I read it in a day, but I know I will return to it often."--Donald Norman, Professor of Computer Science, Northwestern University, and author of Emotional Design"Andy Clark has given us an exciting yet realistic vision of what lies ahead. If you've ever wondered what Cyborgs are really all about, this is where you will find your answers." --Kevin Warwick, Professor of Cybernetics, University of Reading, and author of I, Cyborg