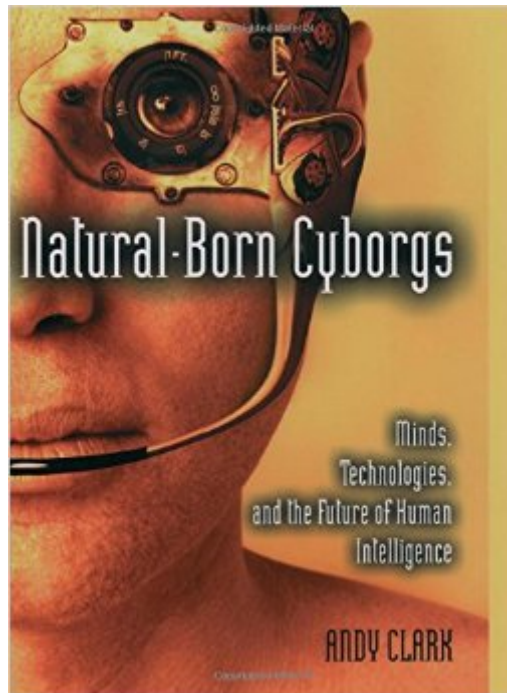


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# Natural-Born Cyborgs: Minds, Technologies, And The Future Of Human Intelligence



## Synopsis

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.

## Book Information

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## Customer Reviews

What is the future of humanity? Is the next phase of human evolution the merging of humans and machines? Or perhaps, are we humans already merged with machines and have we been for centuries? These and other questions are ones that occupy Andy Clark, director of the Cognitive Science Program at Indiana University and author of this thought-provoking book written for an informed but lay audience. Clark makes the case that long before cyborgs became the villains of so many popular films--the "Terminator" and "Matrix" series, "Blade Runner," and "2001: A Space Odyssey" come immediately to mind--humans had become inextricably linked to machines in a way that ensured that they could not survive without them. Accordingly, even without electronic implants Homo Sapiens are cyborgs, and have been as far back as the first time one of our ancestors picked up a tree limb and used it as club. Clark argues that the human-technology symbiosis is totally natural and has been for millennia. The speed with which the merging of human and machine is advancing expanded greatly in the twentieth century as such technologies as pacemakers, artificial hips and knees, prosthetics, and other electronic implants have enhanced and sometimes prolonged the lives of millions of people. Andy Clark explores this increasingly close relationship of humans and machines--the "cyborg-ization" of humanity--in eight chapters. Beginning with the argument that we are already cyborgs dependent for our lifestyle on all manner of technologies, he moves through a succession of possible steps into the future that will find us more and more closely tied to the technologies we have created. Eventually, we will reach a post-human state.

Andy Clark has a bold - no, a really bold - thesis: our minds and our selves are not limited to our 'biological skin bag' called the brain or even our biological selves. We, in reality, are cyborgs in the sense that we are merging with a world of technology so much that where 'it' begins and 'we' end is becoming a fuzzy line - a line that we might be best to dispense with altogether. Quite literally, our brains can be called only part of our mind. Curious yet? I know I was. So, here is my experience with the book: I read it, raised my eyebrows quite a bit (and mumbled some under-my-breath "Wow"s) and remained unconvinced that we are LITERALLY cyborges in the sense that Clark has in mind.

What I did come away with (the reason for the 4 stars) is a new lens with which to view the world. Every time I see someone talking on their cell-phone, saving data to their hard-drive for retrieval later on, or even driving their cars, I will now be asking questions like, "How much can this piece of technology be said to add to her nature?" Still sounds weird? Clark's method of argument is to argue that the brain - what we sometimes call the seat of the self - is surprisingly malleable and accommodating to outside influences. Even our own image of what is and is not 'part of ourselves' is radically fluid. His case is surprisingly powerful. For an appetitive whetter, though, just think of yourself driving a car. When you are driving, you usually do not think about driving as such: "I need to turn left, and to do that, I move my steering wheel left which moves this external car, with me in it, left.

In this accessible, provocative, and thought provoking text Andy Clark argues nothing less than what the title suggests: Human nature is predisposed and especially adapted to create and interact with technologies in a way which advances human cognition. Thus, "human-machine symbiosis" is not only a fact of our future; it is that of our present and our past. We are, in a phrase, "natural-born cyborgs". The arguments that Clark presents to establish this are in fact persuasive, and I encourage anyone interested in the relationship between human beings and technology to read this book. For, whether the reader has at anytime in the past considered this complicated relationship or not, they are not likely to look at it the same way after coming away from the text. That is not to say that all is well in Professor Clark's analysis, for he tends to take what has been referred to as a techno-enthusiast approach to technology, blatantly negating any undesirable consequences that may arise from such an intimate acceptance of technology into our everyday lives. This despite the fact that he devotes an entire chapter to supposedly addressing some of the potential negative impacts that technology poses. Yet, these are so minimized that it is obvious that for Andy Clark no price is too high for what he sees as the inevitable evolutionary advance of the human species. In addition, Clark tends to overlook the political aspects of technology involving the decisions over what sorts of technologies will be developed and how they will be implemented. Without going in to too much detail it is suffice to say that Clark's analysis is in no way comprehensive and tends to overlook the ethical dimensions of the question of technology.

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