**Book Review: Wendell Wallach's *A Dangerous Master:
How to Keep Technology from Slipping Beyond Our Control****

By Carl Mitcham**

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This book addresses the most fundamental challenge of the contemporary world: How to live with advancing science and technology. What follows is an initial, brief appreciation of a volume that will no doubt be returned to on other occasions — for both positive and negative reasons. It tells many interesting stories and is full of useful information. Yet despite such virtues, it fails to deal in the deepest ways with its fundamental challenge. An alternative title for this book review could have been "A Responsible, All Too Responsible, Criticism of Technology."

According to the author's acknowledgments, his original title for the book itself was "Navigating the Future." It remains the title of chapter one, which presents the theme: examining "the challenges of predicting and managing the potential harms that result from the adoption of emerging technologies, and [weighing] those against the anticipated benefits.... Navigating the future of technological possibilities is a hazardous venture. It begins with learning to ask the right questions — questions that reveal the pitfalls of inaction, and more importantly, the passageways available for plotting a course to a safe harbor" (p. 7). The navigation theme is reprised in the concluding chapter 15 "Guild Navigators," which builds on an idea from Frank Herbert's *Dune* science fiction universe.

Chapter two reinforces the navigation theme by reviewing a prediction from a previous book co-authored with Colin Allen on *Moral Machines: Teaching Robots Right from Wrong* (2009). Wallach and Allen had postulated possible catastrophic events caused by semi-autonomous computer systems. The 2010 "flash crash" of the stock market as a result of automated high-speed trading programs confirmed this possibility (although a techno-positivist could respond that other trading programs limited the damage). Wallach further argues the benefits of cautionary fictions such as Aldous Huxley's *Brave New World* (1931) and *The Terminator* movie (1984). The discussion in this chapter might have been deepened by considering Hans Jonas's more extended argument for the "heuristics of fear" (1984) and Jean-Pierre Dupuy's for "enlightened doomsaying" (2004). Wallach, by contrast, seems to want to eschew fear as a primary motivator in favor of a measured effort to map "a framework for the broad interdisciplinary

understanding of the societal impact of emerging technologies" (p. 30).

To this end, five chapters (3-7) calmly argue that three factors are likely to cause the benefits of emerging technologies to be accompanied by tragedies and disasters. First, complex systems that involve interactions among natural, technological, and human elements are inherently unpredictable. Second, the accelerating speed of technoscientific change makes anticipatory governance increasingly difficult. Wallach coins the term "techstorm" to refer to the "incessant outpouring of groundbreaking discoveries and tools" (p. 8), furthering the metaphor of a need for navigation. Third, some specific fields of technoscience, such as climate change remediation and synthetic biology, pose unique dangers.

Expanding on the third factor, the next three chapters (8-10) focus on the techstorm of biotechnoscience: transhumanist programs, the affirmations and projections of ourselves as cyborgs in the making, and the conceptualization of human nature as a pathology in need of being re-engineered. Manifesting his own aspiration for even-handed reflection, however, Wallach mentions how "leading transhumanist thinkers are sensitive to the concerns that make large segments of modern society uncomfortable with major alterations of the human mind and body. They offer deeply reflective, creative, and serious responses to their critics. They are working hard to explain why transhuman possibilities will be positive for humanity, and have turned their attention to the ethical concerns that have been raised" (p. 186). Yet in the contemporary context, Wallach suspects such ethics talk does little more than inoculate riders of the biotechstorm against their untimely critics, as he struggles to defend his thesis that "Technology is a helpful aid, but an untrustworthy leader" (p. 186). The enthusiasm of the techno-optimist consistently overshadows the author's efforts to call out the inaccuracies of past promises and his request for more democratic debate about possible futures.

A pivotal chapter 11 zeros in on the military and medical drivers of the techstorm. "The logic propelling the drivers of the storm forward appears irrefutable. How can we not make every effort to alleviate pain and suffering by searching for cures to diseases such as cancer and Alzheimer's? Have not all empires weak on defense been destroyed?" (p. 201). He is forced to admit that the "collective logic of these arguments and the manner in which they support existing trends feeds the sense of inevitability" (p. 201). To counter the inevitable, Wallach concludes by arguing "it all begins with questioning the assumptions and values that drive the techstorm forward at an increasing pace" and the idea that "many different strategies must be employed to effectively manage the impact of emerging technology" (p. 209).

The four final chapters (12-15) seek to identify concrete ways effectively to manage or navigate the techstorm. One is to identify "inflection points," points in the trajectory of a technological development where the development could be effectively tracked one way or another. For Wallach a key example is "killer robots". Before they "become a core weapons system around which major powers formulate their defense strategy" (p. 219),

there exists an inflection point at which they could be banned. Will they be? How can such an inflection point be seized?

Another real-world navigational practice is responsible engineering. "Creative approaches to engineering innovative tools and techniques offer ways to address many of the dangers" that Wallach sees on the horizon (p. 236). Indeed, there are many more efforts going on in the area of engineering education and practice than Wallach is able to catalog.

Still a third navigational opportunity is regulation and governance. Although he does not reference it, efforts of this type have been around for some time. For example, the U.S. Congressional Office of Technology Assessment was created in 1972 but then de-funded in 1995. In a world racked with suspicion of government and fawning over innovative wealth and job creators, is governance by anything other than money and power really possible?

A final contributor to intelligent navigation would be creation of a scientifically literate citizenry. Wallach means his book to be "an invitation for [the reader] to engage the challenge arising from our adoption of new technologies — to be among the representatives for us all in navigating the future" (p. 264). But in a body politic where a significant portion of the public rejects claims offered by the scientific community, from the biological theory of evolution and anthropogenic climate change, what are the real prospects for intelligent democratic debate?

In the end, despite all I learned about specific issues from reading this detailed book, I could not help but wonder whether it was all too measured and too responsible. The clear aim of the book was to attempt to cultivate intelligence — to encourage more sustained and systematic critical reflection. One might describe it as a commitment to the public equivalent of Sigmund Freud's "talking cure." Repeatedly, however, I longed for a voice more akin to Friedrich Nietzsche's. Wallach's *A Dangerous Master* deals with a dangerous issue: the dominance of science and technology. Would that it were itself a more dangerous book.

References
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