Review of Edwards' *The Closed World*

Paul N. Edwards, *The Closed World: Computers and the Politics of Discourse in Cold War America*, Inside Technology Series, Cambridge, MA: MIT Press, 1996, xx + 440 pp., $40.00 (cloth), ISBN 0-262-05051-X.

1. What Is the Book About?

This book is about computers and their cross-relations with the politics and culture of Cold War America. It takes a new and unique approach to the writing of the history of computers and is thus a revisionist history that tells an old story in a new way. Almost all of the existing histories of computing are insider engineering/economic narratives about the development of computers as information-processing devices and about the people and organizations associated with them, seldom referring to the impact of computers on society and almost never explicitly mentioning the impact of society on computing.

Edwards deplores the fact that almost all previous historians of computing sadly ignored outside influences, and he says that he believes that his history demonstrates the influence on the development of computers of ideologies, popular culture, and political power. He says that he shows computer technology to be the product of complex interactions among scientists and engineers, funding agencies, government policies, ideologies, and cultural frames. It is worth noting that this list of outside influences does not explicitly include customers and market forces.

The book's time frame is usually limited to that of the late Cold War, 1947–1989, lapping slightly into World War II. The book's list of subjects extends far beyond computers themselves to include computing, artificial intelligence, operations research, the military, strategy, politics, psychology, noise, communication, cognition, cyborgs, movies, culture, and many of their interactions, interrelations, and cross-connections both real and imaginary. It is based entirely on US and UK sources. Although it originated as a 1988 "dissertation in the Board of Studies in History of Consciousness of the University of California at Santa Cruz under the incomparable Donna Haraway" (p. xvii), it has been vigorously reworked and expanded into something stronger and more important. In particular, his references and his comments on them show that Edwards has read and understood almost all the existing important material about the history of computing. (In accordance with the current style of the MIT Press, there are no footnotes. All the reference material is in the 65 pages of "Notes", which can be read through profitably as if straight text.)

Although Edwards does not say so directly, he shows quite early that the book is also a critique of the US conduct of both the Cold and the Vietnam Wars. In

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my opinion, his tone in dealing with these wars is vituperative and severely condemnatory of US actions as well as almost all those he names who participated in the planning, management, and conduct of those wars. He adopts the tone of the revisionists on whose accounts he depends, as exemplified in this summary quotation from Fred M. Kaplan (1983, pp. 143–144):

> [Vietnam] "exposed something seamy and disturbing about the very enterprise of the defense intellectuals. It revealed that the concept of force underlying all their formulations and scenarios was an abstraction, practically useless as a guide to action."

2. What Is the Author's Purpose?

First, Edwards says that he wants to demonstrate that ideas and devices are the products of their surrounding politics and culture, which, in turn, are the products of the very ideas and devices that they have produced, and so on in an unending sequence of loops. Secondly, in this particular case, he wants his readers to understand the history of computers as simultaneous metaphors in Cold War science, politics, and culture. Finally, while he says he is making an implicit critique of all previous writing about the history of computers, it quickly becomes clear that his criticism is much stronger and is, indeed, explicit. By proving the utility of his new approach to historiography, he hopes to set the writing of the history of computing on a new course.

3. To Whom Is It Addressed?

Edwards says that he writes for several diverse audiences: historians of technology, science, politics, and culture; computer professionals; scientifically and technologically literate generalists; and people interested in studies of science, technology, and culture.

4. How Does He Go about It?

The following chapter-by-chapter critical summary shows how the author went at this daunting task. In general, I simply say what he said without implying criticism. I have tried to make my critical comments explicit.

In Chapter 1, " 'We Defend Every Place': Building the Cold War World", Edwards says that he defines some of his more unusual terms, sketches the overall pattern of his argument, and describes his conceptual tools. His frequently used term 'discourse' has many common meanings and almost as many in current scholarly writing. He insists on a unique definition: "a way of knowledge, a background of assumptions and agreements about how reality is to be interpreted or expressed, supported by paradigmatic metaphors, techniques, and technologies and potentially embodied in social institutions" (p. 34). Although he calls this definition "fresh and

active" (p. 34), I consider it to be extremely fuzzy and note that his writing takes liberal advantage of this feature.

I made a careful search of this chapter for his statement of his tools, since I hoped to use them myself in this review. Unfortunately, I was unable to find any clear descriptions of them other than his references to Ludwig Wittgenstein, Michel Foucault, Roland Barthes, Jacques Derrida, and Haraway. I resorted to my usual tools of a sharply pointed word-processor, William of Occam's well-honed razor, Percy Bridgeman's operations, Karl Popper's falsifier, E. B. White's strunk, and the admonition of that really invariable Marxist, G. H. Hardy: "Sometimes one has to say difficult things, but one ought to say them as simply as one knows how."

The pattern of Edwards's argument, as expressed here, is to "explore how computers became a crucial infrastructural technology – a crucial Foucaultian support – for Cold War closed-world discourse" (p. 41).

He includes three, short, foreshadowing scenes. "Operation Igloo White" is a horror story that should appeal to critics and haters of the military and the Vietnam War; "Turing's Machines" is a concise and quite accurate retelling of Alan Turing's testing tale that should encourage some readers to believe that more conventional historical material will be forthcoming; and "Cyborgs in the Closed World" should suggest to the immature illiterates who confuse ka-boom! movies of violence with reality that the author is about to entertain them with no-brainer mind/machine fantasies as he finally does in Chapter 10.

In Chapter 2, "The Military Role in Computer Research", he gives a superficial overview of this subject. He unconvincingly asserts, without presenting any real evidence, that the military's well-known financial role in computer research had deep social and technological significance that was revealed in the resulting nature of computers and computing and the direction of their development. He fails to give any examples of the design of hardware or software that shows military rather than academic or engineering influence.

In Chapter 3, "SAGE", he retells the story of this enormous network of interconnected radars, air bases, civilian contractors, Air Force officers and troops, and computers spread across the entire northern part of the American continent to protect against an attack from the USSR with World War II manned bombers. Started in 1949, it was totally obsolete long before it was fully operational in 1961. It is notorious as probably the largest of several Air Force industrial-military-academic boondoggles. His list of computer developments ascribed to SAGE, contrary to his subjective interpretation, can, on the basis of the very references he used, all be traced back to the academic and commercial world that fed from the never-empty SAGE trough rather than to military demands, needs, or culture.

In Chapter 4, "From Operations Research to the Electronic Battlefield", Edwards sketches the history of operations research, emphasizing its application to the US Cold and Vietnam Wars. He ascribes the footless electronic battlefield of Robert McNamara and William Westmoreland to operations research and its practitioners, and concludes that the ultimate result sought by the US civilian-

military-industrial complex in those wars was to make the globe itself into a huge prison with every prisoner under constant observation as a consequence of the final union of information technology with closed-world politics. The fact of the matter is that while operations research had an effect on how computers were then used, and the electronic-battlefield nonsense used computers, these circumstances had almost no effect on computers as such and little or no effect on how computing is done today. Edwards does not produce any evidence to the contrary.

Chapter 5, "Interlude: Metaphor and the Politics of Subjectivity", "focuses on the political significance of computer metaphors in psychological theories" (p. 147). After explaining what he means and giving the history of the interaction of computers with psychology, Edwards concludes that computers have become tools, metaphors, and domains of experience in psychological theory and that this "supports, in the Foucaultian sense" (p. 169), cyborg discourse. He accepts that computers have affected psychology, but nowhere does he claim or show the inverse, that psychology has influenced computers or computing.

Chapter 6, "Cybernetic Psychology and World War II", explores the origins of cybernetics. Edwards follows Norbert Wiener in defining "cybernetics" as the grand theory of information and control in biological and mechanical systems.

Chapter 7, "Noise, Communication, and Cognition", explores the origins of cognitive psychology.

Chapter 8, "Constructing Artificial Intelligence", explores the origins of artificial intelligence, which Edwards classes as software that simulates complex symbolic thought.

In Chapter 9, "Computers and Politics in Cold War II", Edwards carries his theme into the era of Ronald Reagan, in which he says the role of computers and their political and cultural relationships were essentially the same as before.

In Chapter 10, "Minds, Machines, and Subjectivity in the Closed World", Edwards first contrasts the dreadful aspects of the closed world with the imaginative romantic dream of Northrop Frye's green world (Frye 1965)[1] and then tries to illustrate his arguments with plot summaries of the cult movies of today's middle-aged: *Fail-Safe*, *Dr. Strangelove*, *2001: A Space Odyssey*, *Colossus: The Forbin Project*, *War Games*, *Tron*, *Star Wars*, *Blade Runner*, and *Necromancer*. He insists that since these doom-and-boom stories of disaster and terrifying special effects are part of America's culture, they are significant parts of his argument. By this point in the book, his argument has become a polemic.

In "Epilogue: Cyborgs in the World Wide Web", Edwards may be proving that he is up to date by listing some computing events not previously mentioned. He remarks on ARPANET, Internet, the Persian Gulf War, Neural Networks and AI, and tells the story of *Terminator 2: Judgment Day*. To me, 'cyborg' merely means part-machine, part-human, but Edwards provides this more verbose definition, which is characteristic of much of his writing: "In this book I usually use the word 'cyborg' as a generic term for sentient entities anywhere along a continuum from humans with artificial parts to fully artificial beings" (p. 425). The Epilogue contributes

nothing useful and may indicate that here Edwards slipped from the role of a revisionist historian into that of a journalist who must report the hottest news.

In the book's penultimate paragraph, Edwards gives a few characteristic sobs from the list of complex and unanswerable questions always hurled by moralists against pragmatists. They are not actually questions but are long, involved, convoluted, and complicated statements of faith, assumptions, and pre-conceptions more suitable to sermons than discussion or even discourse. For example: "How do we find sources of integrity and authenticity in a world where the enormous pressures of global capitalism inexorably hew all forms of worth to fit the Procrustean bed of money value?" (p. 364). Like all the other sobs, it has fine dramatic sound and fury but signifies little.

Here is the last sentence of the book. "Cyborgs in the World Wide Web will face the tripartite tension among the global bonds of communication and control technology; the ideological individualism of cyberspace, with its totally malleable personal identities and disposable virtual communities; and the deepening crisis of culture in an increasingly rootless world" (p. 365). Is this really a meaningful statement? If so, what does it mean, and who cares?

5. Did the Author Achieve His Goals?

As his dust-jacket-blurbers write, the book is bold, brilliant, provocative, and original, but Edwards was not merely trying to sparkle. He says that he wanted to persuade. In this, in my opinion, he failed. I doubt if those of his readers who do not already agree with his assumptions and conclusions will be persuaded by his arguments. Few of them outside his own closed world will even grasp the abstract and subjective meaning of "metaphors in Cold War science, politics, and culture" (p. ix) much less understand the history of computers in these terms. Those now engaged in writing the history of computing, for example, the contributors to the IEEE *Annals of the History of Computing*, will not be tempted to follow his lead. In writing history, interpretation always occurs, but the best historians still strive for objectivity. In this revision of the history of computing, Edwards did not strive hard enough. If he does not at least appear to be balanced, fair, and objective, he is not going to convince those who do not agree with the validity or value of his arguments.

Although Edwards has read, understood, and often gives good, comprehensible explanations and interpretations of all the applicable historical material, he has selected from this treasure trove whatever supports his argument and omitted or distorted that which does not. That is, he is making an adversarial argument as if in a court of law in which he expects his adversary to present the counterarguments.

6. Why Did He Fail?

He had too many goals. He tried to satisfy too many audiences. His tools are too blunt and too much like bludgeons. His approach is too subjective, too adversarial,

too argumentative, too confrontational. His arguments, like his definitions, are too foggy and often sound as if they should be accompanied by arm-waving. His deep emotional antagonism to the Cold and Vietnam Wars continually gets in the way of clear, convincing discourse.

His writing is so discursive that it often slips into fuzziness. (I am told that this comment reflects a lack of disciplinary breadth on my part, which I take to mean that there is a vast literature of such writing that I have fortunately been spared.)

7. Unasked-For Advice that Is Offered with Respect

Edwards can write a much better book. He should limit his aspirations. First, he should take on a much smaller closed-world, let us say SAGE. Second, he should choose one audience, for example, the historians of computers. Third, he should choose only one goal, say, to convince his most sympathetic readers that his revised version of the history is right. Fourth, he should not decide, before he starts, on the result that he is going to find. That is, he should approach SAGE with an open mind. What drove it? Let the evidence that he collects tell him and, through him, the reader. Finally, he should find an editor who is devoted to unity, coherence, and emphasis.

8. Epilogue: A Metaphor

I participated in the writing, editing, and publishing of much of the material about the history of computers that Edwards has used. My colleagues and I knew that others would stand on our shoulders to see further, but we did not expect to be kicked in the head. It has fallen to me to bite Edwards in the ankle.

Note

[1]Frye's "green world is an unbounded natural setting such as a forest meadow or glade" (p. 13), ruled by magical forces with mystical powers, for example, as portrayed in "A Midsummer Night's Dream".

References

1. Kaplan, Fred M. (1983), *The Wizards of Armageddon*, New York: Simon & Schuster.
2. Frye, Northrop (1965), *A Natural Perspective: The Development of Shakespearean Comedy and Romance*, New York: Columbia University Press.

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