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The Anthropology of Computing
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THE COLD WAR: CODING AND CLOSING THE WORLD
Lecture 5. October 18

Edwards, Paul. 1996. The Closed World: Computers and the Politics of Discourse in Cold War America. Cambridge: MIT Press, Chapters 1-2, 4-5, 8-9 (pp. 1-73, 113-173, 239-301).

"This book is about computers, as machines and as metaphors, in the politics and culture of Cold War America. …Computers made the closed world work simultaneously as technology, as political system, and as ideological mirage" (p. 1). PRIMARILY CH 1 2 4

in order to understand this, we have to have some definitions:

COMPUTERS:
p. 27: "*tools* or machines, technical levers usefully interposed between practical problems and their solutions. But two essential features distinguish computers from all other machines (a) their ability to store and execute programs that carry out conditional branching and (b) their ability to manipulate any kind of symbolic information at all." (they can REPRESENT things)

CLOSED WORLD (p. 12):

"A 'closed world' is a radically bounded scene of conflict, an inescapably self-referential space where every thought, word, and action is ultimately directed back toward a central struggle" (e.g. *The Death Star, Truman Show, Dark City, The Matrix*, The Cold War: HOW?)

CLOSED WORLD DISCOURSE (p. 15) language, worldview, practices:

and what is a *discourse*? (form of life: p. 38)

techniques drawn from engineering and mathematics for modeling aspects of the world as closed systems

technologies, especially the computer, that make systems analysis and central control practical on a very large scale

practices of mathematical and computer simulation [e.g. IGLOO WHITE]

experiences of grand-scale politics as rule-governed and manipulable (THE COLD WAR)

fictions, fantasies, and ideologies, including such visions as global mastery through air power and nuclear weapons

language/metaphors of systems, gaming, and abstract communication and information

CLOSED WORLD DISCOURSE LINKED TO CYBORG DISCOURSE (p. 21)

CYBORG DISCOURSE imagines that HUMANS are information processing devices or can be coupled with information processing devices to interface with and become part of the closed world.

techniques of automation and integration of humans into mechanical and electronic systems

technologies, especially the computer, with linguistic, interactive and heuristic problem-solving capacities

practices of computer use.

experiences of intimacy with computers and other people through computers

fictions, fantasies, and ideologies about cyborgs, robots, intelligent machines, movies

language/metaphors of people/minds as information processing devices

Edwards argues that the history of militarism in the US during the Cold War glued these discourses together.

CHAPTER 2: Why Build Computers?: The Military Role in Computer Research

"the speed and complexity of high-technology warfare have generated control, communications, and information analysis demands that seem to defy the capacities of unassisted human beings" (p. 65).

"practical military objectives guided technological development down particular channels, increased its speed, and helped shape the structure of the emerging computer industry" (p. 44).

"The war effort …brought about the most radical disciplinary mixing, administrative centralization, and social reorganization of science and engineering ever attempted in the United States" (p. 47).

Vannevar Bush and *analog* computing

ENIAC and digital computing (p. 50) 1.5 million dollars built by military HBOMB!

automation of firing tables, first electronic *digital* computer vacuum tubes!

EDVAC: "the first machine to incorporate an internal stored program, making it the first true computer in the modern sense (the ENIAC was programmed externally, using switches and plugboards)" (p. 51).

Let's linger for a moment over the distinction between Analog and Digital. Anyone?

In analog systems “the physical structure of [a] signal changes in proportion to changes in the information it represents. Rather than being arbitrary, the physical structure is a direct reflection of its information” e.g. temperature.

Analog machines directly couple to signals; digital allows abstract representations

CHAPTER 4: From Operations Research to the Electronic Battlefield

“We have seen how the rapidly evolving geopolitical concerns of the United States as a nuclear power shaped a grand strategy and a political discourse involving a closed system *accessible to technological control*. Computers, as tools, supported the technological aspects of that discourse, for example, in weapons design, ballistics calculation, and cryptanalysis. In the centralized digital command control systems of the 1950s, computers embodied the discourse of ‘containment’ and technological closure — its paradoxes and failures as well as its ideals” (p. 113).

“the coevolution of computer technology, grand strategy, and closed world politics “ (p. 115). OK, so WHAT HAPPENED DURING THAT COEVOLUTION?

movement of management discourse into the military

cost-benefit analysis, game theory, zero-sum games (von Neumann)

RAND (Research and Development) Corp. founded 1946 by Air Force and Douglas Aircraft

Turing’s theory of digital computers as universal machines, able to solve any precisely formulated problem.

“Management theorists like Herbert Simon began to apply mathematical techniques to decision-making, producing theories of ‘administrative rationality’” (p. 114).

MANAGEMENT HISTORY becomes very important in reshaping military and in shaping models of the world and the mind in the world.

“The Rand thinkers inhabited a closed world of their own making, one in which calculations and abstractions mattered more than experiences and observations, since so few of the latter even existed to be applied… *Nuclear war existed only as a simulation, a game, a computer model*. To a remarkable extent the Cold War was actually prosecuted through such simulations” (p. 120). A NEW KIND OF EXPERTISE, VERY DIFFERENT FROM CAREER MILITARY PEOPLE

Herbert Simon and Allan Newell began attempting a simulation of human thought at Rand on the 1950s, defining thinking as the logical manipulation of symbols.

The Electronic Battlefield: “the new language interpreted the war using the categories of games, bargaining, production, and management” (p. 143).

INFORMATION PANOPTICON (compare Babbage)

Also assumed that the world was made of what Wiener might call *Manichean* opponents. A hostile world.

This way of viewing things also *changed the way the military hierarchy worked*. "Computerization supported [the] flattening [of management] by automating many tasks and permitting rapid, accurate, and detailed CENTRAL OVERSIGHT" (p. 131)

This all epitomizes CLOSED WORLD DISCOURSE: PAGE 143!

HOW DOES CYBORG DISCOURSE COME IN? "Computers linked other technologies to human beings by constituting systems — constituting them conceptually, practically, and metaphorically — as information processes" (p. 125).

Let's watch *Dr. Strangelove*. Identify the elements of closed world discourse. Count the closed worlds. Also, try to figure out for what each character stands for.

2001: The Closed World and the astronaut

OUR PRESENTATIONS BEGIN! USE EDWARDS

More on Artificial Intelligence; we'll start with Turing's piece on the Turing Test. And we're going to be looking at the formation of models of cognition alongside ideas about gender. Finish the Edwards. Read the Adam before the Halberstam. The Adam is much more historical and will give you more context, more stuff about Newell and Simon and some of the other players in the early history of AI — including philosophers like Searle and Dreyfus.