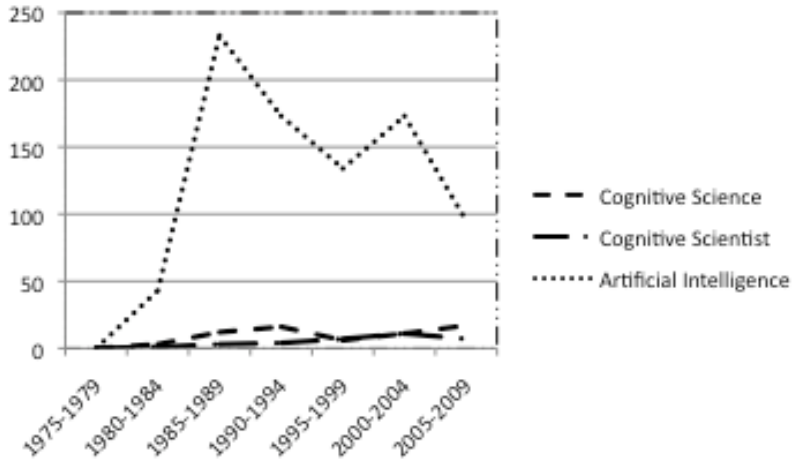
From economics to cognitive science to the modern synthesis

"All the aspects of knowledge--its creation, its storage, its retrieval, its treatment as property, its role in the functioning of societies and organizations--can be (and have been) analyzed with the tools of economics. Knowledge has a price and a cost of production; there are markets for knowledge, with their supply curves, and marginal rates of substitution."

--Herbert Simon, "The many shapes of knowledge", 1999



Post WWII: Cybernetics-- Weiner, Feedback; von Neumann: store and process

1948: Hixon Conference "Cerebral mechanisms in behavior"

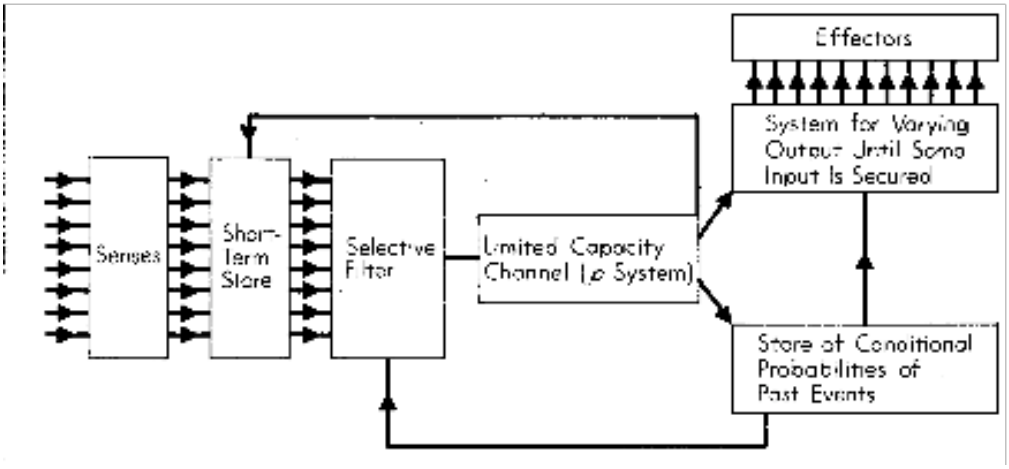
1950: Turing: Turing Machines and Turing Test

"incontroversial to say that machines can think"

1956: MIT: Symposium on Information Theory (Miller, Chomsky, Simon & Newell)

1956: Dartmouth Summer School (McCarthy, Minsky, Simon & Newell)

1958: Broadbent, *Perception & Communication*



1960: Miller et al, *Plans and the Structure of Behavior*

1972: Simon & Newell, *Human Problem Solving*

DENDRAL, ELIZA, STUDENT, SHRDLU

1972ff: Dreyfus, *What Computers Can't Do*

1976: Weizenbaum, *Computer Power & Human Reason*

1977: *Cognitive Science*, Don Norman

1980: Searle, "Minds, Brains, & Programs"

1987: Suchman*, Plans and Situated Actions*

Gardner's essentials

1. Representation

2. Computers

3. De-emphasize emotion, affect, history, culture

4. Interdisciplinary (philosphy, psychology, linguistics, anthropology, neuroscience, AI)

5. Western epistemological tradition

Toffler's future

paper wedding gowns; missing supermarket; portable playgrounds

female hitchhikers; demise of geography; loss of friends

collapse of hierarchy/beyond bureaucracy

"the impact on the knowledge explosion of the classic knowledge container, the book"

"within fifty years [from 1970] man will move onto and into the sea"