

## Chapter II

Academic Computer Science Emerges-- the applied technique becomes pure science, 1950-1980

Academic Computer Science started with a research emphasis rather than a training emphasis. It consisted of researchers who wanted to do things sufficiently "blue sky" that even a monopolistic technology company such as IBM or AT&T (Bell Labs) would not pay for them. Computer science education started with graduate programs, reflecting the interest of the founding researchers in rapidly furnishing themselves with a body of acolytes to expand on their ideas.

### A. Academic Research-- Return to Disciplines

In returning to academia, the emergent computer scientists defined themselves as members of disciplines, for example, mathematicians, psychologists, etc. They declared their interests to be essentially traditional ones for their fields, eg Herriot.

However, the emergent computer scientists reserved the right to attack traditionally intractable problems with computerized methods. Two major areas of interest were language and vision.

Specifically, this meant grasping the promise of the compiler as language machine, as well as engaging a whole body of "philosophy of vision." eg. Norwood Russel Hansen.

## Sources:

Alison Adam, "Construction of Gender in the History of Artificial Intelligence," IEEE Annals of the History of Computing, Fall 1996

contains references to various sources for early projects, eg. General Problem Solving System, mostly in the form of journalistic histories.

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The article in the Encyclopedia of Computer Science by N. V. Findler on "Artificial Intelligence" lists assorted items:

## Journals:

International Journal of Man-Machine Studies;

LC, from 1969,

Information Sciences;

LC from 1968

International Journal of Computer and Information Sciences;

LC from 1972

Artificial Intelligence;

LC from 1970

Behavioral Science;

LC from 1956

ACM Communications and Journal;

Computer Journal;

Kybernetic; Cybernetica;

IEEE transactions on Computers;

System Science and Cybernetics;

Information and Control; etc.

Books: B. Meltzer and D. Michie, Machine intelligence, 1967-72 (annual workshop proceedings); M. Minsky, Semantic Information Processing, 1968; etc.

Survey Papers, ie. contemporary bibliographies: M. Minsky, "Steps Towards Artificial Intelligence," 1961, Proc. IRE

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Other related topics in the Encyclopedia of Computer Science:

The articles in the Encyclopedia of Computer Science on "Arts Applications" and "Humanities Applications" (both by S. A. Sedelow [Sally Yeats Sedelow, U. Kansas]) are another source, since much of this covers the computer as artist. One interesting item is a 1957 article about musical composition by Frederick Brooks, destined to be the "father of the IBM System/360."

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Donald G. Fink, Computers and the Human Mind: An Introduction to Artificial Intelligence, 1966 Anchor Books (Doubleday & Company), Science Study Series, Garden City, NY.

The first eight chapters are a necessary introduction to computers, but chapters 9-12 deal with early "hard style" artificial intelligence, eg. Arthur Samuels' checkers player, Newell, Shaw, and Simon, language translation, Hiller's music composition program. This book is significant if nothing else for the sheer number of students who read and were influenced by it.

At a time when computers themselves were hard to come by, it was the most accessible material above the level of someone like D. S. Halacy.

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Anthony Oettinger's graduate syllabus, and I think, some others, with extensive reading lists in philosophy, psychology, etc.

1. Susumo Kuno and Anthony Oettinger, "Computational Linguistics in a Ph.D. Computer Science Program," CACM, December 1968, pp. 831-36.
2. Robert McNaughton, "Automata, Formal Languages, Abstract Switching, and Computability in an Ph. D. Computer Science Program," CACM, November, 1968, pp. 738-40, 46;
3. Bruce Arden, "The Role of Programming in a Ph.D. Computer Science Program," CACM, January, 1969, pp. 31-37;
4. G. Salton, "Information Science in a Ph. D. Computer Science Program," CACM, February, 1969, pp. 111-17
5. George E. Forsythe, "A University's Educational Program in Computer Science," CACM, January, 1967, pp. 3-11