

Stories of AAAI—Before the Beginning and After

A Love Letter

Edward A. Feigenbaum



Edward A. Feigenbaum.

■ This article provides a personal perspective, in three stories, on the origins of AAAI. In the first story, I explain the reasons justifying AAAI's existence. In the second story, I recount some of the controversy over the name *artificial intelligence*, and explain why it was chosen as the new society's moniker. In the third story, I note that AI has not suffered from the applied versus research scism that has affected other societies. Finally, in the fourth story, I mention some of the early issues of finance.

This is not a full memoir of the early days of the American Association for Artificial Intelligence, but only a few stories of the early days before and after the founding of AAAI. The memoir itself should be, and is being, written by Raj Reddy.

Raj was truly the "engine" behind the formation of the society. I was an enthusiast, and Raj harnessed my enthusiasm. Al Newell was a bit of a skeptic, but Raj converted and channeled Newell's skepticism to make AAAI a sound and strong organization from the beginning.

The First Story: Why AAAI?

As discussions began in the mid-to-late 1970s about a scientific society for AI, there was a resounding... (well, what shall we politely call it?) skepticism about the idea. Much e-mail, no action (and remember, we were among the few in the world that had e-mail at the time!).

Why did any of us want a society? The field already had a well functioning biannual conference, IJACI; and a fine journal, the *Jour-*



Herb Simon and Allen Newell.

Photograph courtesy, Carnegie Mellon University.

nal of Artificial Intelligence. The society enthusiasts thought and said these kinds of things:

Identity crisis: every worthy science deserves its own professional society.

Why not the Association for Computing Machinery? ACM of its time had a host of its own problems to solve, including what to do about the special interest groups (SIGs), which were themselves unstable at the time. ACM did not seem to be a comfortable home.

Why not IJCAI? Well, it wasn't a serious organization. It was a superb but small group of volunteers who came together on a relatively ad hoc basis to produce a conference every two years. But AI had greater needs to be visible and "represented" in the council of sciences.

Indeed, a *national* need existed (distinct from international science). There was a sentiment (a plague?) of anti-AI skepticism in some other subdisciplines of computer science and among some engineers: "What? Computers thinking? No, they just execute programs."

There were many manifestations of this. The British, of course, had their infamous "Lighthill Report." For American AI scientists, the most serious problems were continuing struggles to maintain credibility and funding at the Defense Advanced Research Projects Agency (DARPA) and the National Science Foundation (NSF). Some of us were *individual* spokespersons for AI, but we had no national organization helping us.

In any event, AI as a field of science and technology was growing up, and growing. It needed more than what IJCAI offered. It needed an annual conference, and an organization to manage that work and the exhibitions that accompanied the conferences.

Among AI scientists, why was there skepticism and inaction? Here are my remembered reasons:

Many of our scientists were of the independent streak that did not like the idea of being "organized." In fact, coming out of the counter-culture of the early 1970s, they had strong convic-



Ed Feigenbaum with Herb Simon at a National Conference on Artificial Intelligence.

tions about not being organized: "Those who wish to organize us wish to run us."

Moreover, a traditional society's main function was to publish a journal of record, and the AI field already had a good one (*AI Journal*).

There were other, more mundane, issues like dues, what-a-lot-of-work-this-will-be, and so on.

All in all, there were reasonable arguments made by the people who were somewhat antithetical to the idea of a society. It added up to inaction.

That is, until Raj Reddy decided that action would speak louder than words.

The Second Story: AAAI Might Have Been AACS

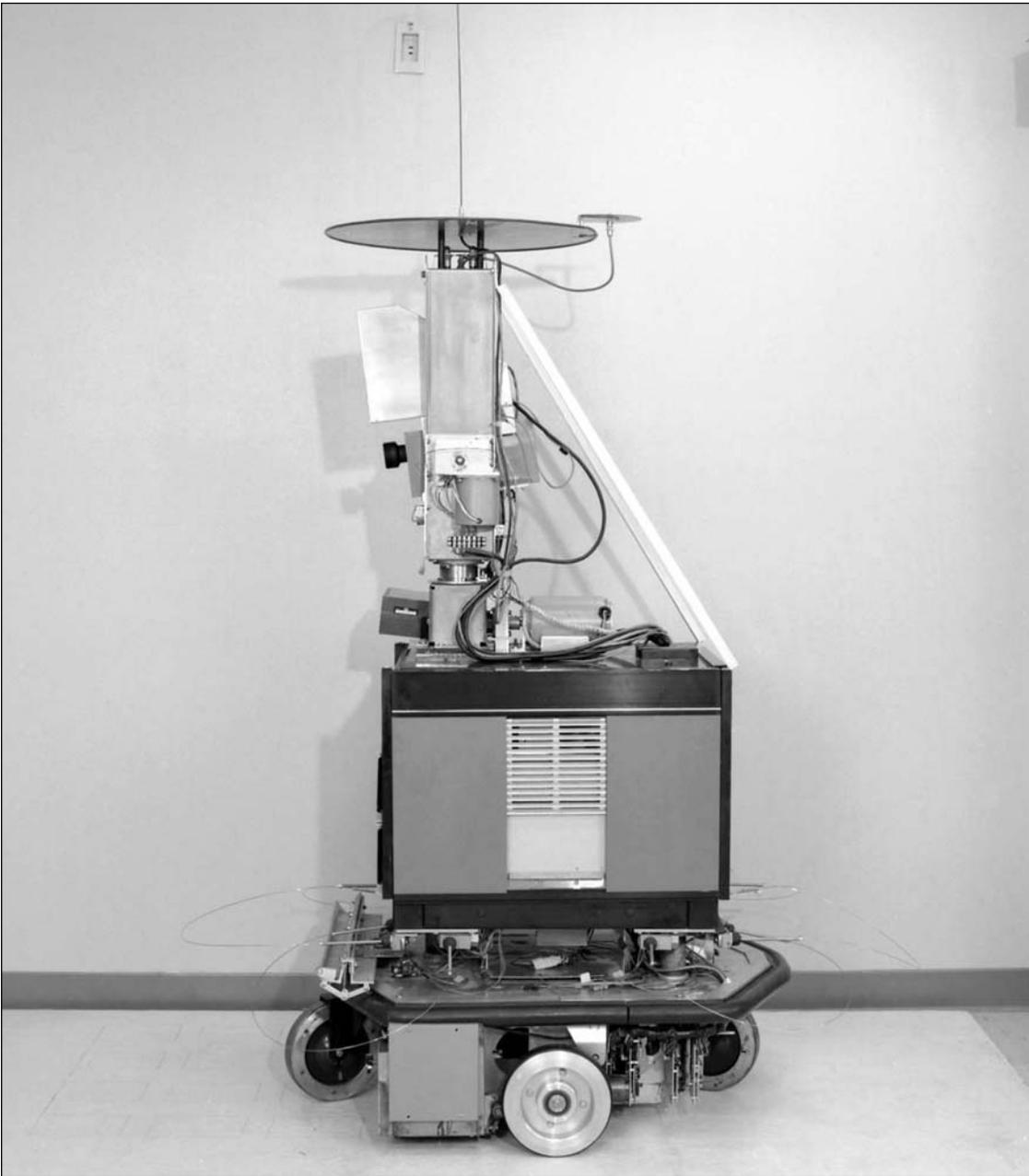
An alternate title for this story might be "We versus They." Or another title might be "Happily Married Folks Split over Their Long-Held Difference in Faith."

Another reason for the inaction had to do with the naming of the society, for the name would probably stick, and therefore AI scientists would be "stuck" with it. Much of the field called itself "artificial intelligence," and indeed next year we celebrate the fiftieth an-

niversary of the Dartmouth Conference that carried the AI name. The MIT and Stanford "Artificial Intelligence" Laboratories were famous names by the late 1970s. The anthology that Julian Feldman and I had edited, *Computers and Thought*, had labeled half of its collection "artificial intelligence."

Yet, there were other views. Cofounders of AI, Newell and Simon, used the label "complex information processing (CIP)" for their working papers. Their motive was to deemphasize the difference between "computers thinking" and "people thinking." The quest was for theories of intelligent information processing that were independent of whether "people did it" or "computers did it." They published many of their pioneering and key papers in journals of psychology. At Stanford, after being hosted by McCarthy's SAIL laboratory, I started my own group with the label "Heuristic Programming Project." Why?

By the late 1960s, the label "artificial intelligence" had become a lightning rod (to use one metaphor) for know-nothing critics; and a raw nerve (to use another metaphor) for others who did not want to be known as supporting or funding such a vague and presumably flaky thing as "artificial intelligence." I simply want-



Photograph courtesy, SRI International.

Shakey the Robot Did Locomotion, Vision, and Planning in Quasi Real Time..

ed to duck my head below the wall. “Heuristic programming” was what I actually did, and it sounded like perfectly normal modern science, like “linear programming” or “dynamic programming.” Many others in the AI field felt similarly. For example, AI’s natural language processing scientists began to call themselves “computational linguists.”

It was with this frame of mind that I tried to make a case for labeling the putative new society “Cognitive Science” (as in, for example, the American Association for Cognitive Science.) There was much discussion through e-mail, but

this time there was action, or rather reaction, that was decisive.

The reaction came from the “psychological models” subset of AI scientists and allied psychologists who were researchers in information processing modeling of human cognitive functioning. As an editor of *Computers and Thought*, in 1962, I had assumed that our field was one (scientific) faith that manifested itself as “artificial intelligence” (half the book) and “simulation of cognitive processes” (the other half of the book). By the late 1970s, that assumption was wrong. It turned out that there was a disci-



The AAI Office on Burgess Drive in Menlo Park.



Large Trade Shows and Healthy Attendance at the National Conference Ensured a Flow of Money to AAI for Many Years.

plinary line between the “psychologists” and the “computer scientists” that was not highly visible. But when an AI scientist (as I was by then perceived) suggested using the label “cognitive science,” members of the other (break-away?) faith quickly formed the Cognitive Science Society. That decisive action ended the discussion. Not all the discussion was by e-mail. I vividly remember (and there are alas few things in life I vividly remember) a blistering meeting at the Center for Advanced Study in the Behavioral Sciences, at which I was on the hot seat being blistered by my friends

Reddy and Newell thought about this for a short time, and then Reddy reported to me Newell’s choice. Here is my paraphrase: “Friends, we’ve lived with the term ‘artificial intelligence’ for many years, and we’re known by it, so let’s just live with it.” Thus, the AA of AI. Undoubtedly Newell discussed this at length with Simon, although Simon played little overt role in the founding of AAI, nor did the other cofounders of AI, McCarthy and Minsky.

The Third Story: But “The Enemy Is Us” (to Paraphrase the Famous Pogo)

By the time of the founding of AAI, application-oriented experimental approaches to AI had already achieved much visibility. Expert systems produced by university groups were widely discussed and received considerable research funding. The DARPA national Speech Understanding Project had been completed and had published an excellent and influential report. Shakey the Robot did locomotion, vision, and planning in quasi real-time. And many other projects were equally successful.

In fact, several startup companies had been formed, at approximately the time that AAI was being formed (such as AI Corp., Machine Intelligence Corp., Teknowledge, and IntelliGenetics, later called IntelliCorp).

But many in AI saw the field as more “theoretical” and, in the view of some, more “scholarly.” The societies they saw as role models for AAI, such as the American Physical Society and the mathematics societies, did not run conferences with large exhibitions or select venues with large exhibition halls and hotel housing for thousands of people.

This issue is a recurring theme in the sciences, not just AI. It is the issue of “big science” versus “little science.” It has split (or injured) many university departments and some disciplines. For example, it split the Stanford Physics Department in the 1950s and early 1960s over the desire of some of the eminent

physics professors to build and run a huge government-supported experimental facility, the Stanford Linear Accelerator.

As it happened, no schism in AI along the theoretical-experimental-applications line occurred. This was due in part to Newell's eminence as both a theoretician and an experimentalist; the very reasonable things he said; his statesmanship; and the AAAI governance structure laid out by Newell, Reddy, and a handful of colleagues. Nobody in the field felt threatened. Anyway, it appeared that not only fame but also fortune was to be ours.

The Fourth Story: Planning for AAAI's Financial Health and Independence

We wanted as many people as possible to join AAAI, at the lowest possible dues, with a modest entry fee for the annual national conference. (I thought of this, a little sadly, as I paid my \$595 to attend AAAI 2005). Perhaps this was the influence of Reddy's life story and his "tacit knowledge" of life in India! Reddy was a key shaper of the financial strategy of AAAI, and during my presidency (as second president), I was his key supporter.

Indeed, fortune had turned the smiling face of its Januslike head toward AI during the first several years of AAAI. AI had attracted the attention not only of big companies, such as Texas Instruments, IBM, Sperry, Fujitsu, Hitachi, Schlumberger, and many others; but it had also attracted the attention of the venture capital community. Dozens of small companies were started in the short span of two or three years. The government of Japan had launched its Fifth Generation Project, partly on an AI theme. This introduced the "challenge" of an international competition in our field, which in turn gave rise to government programs (such as DARPA's Strategic Computing program) and industrial consortia (such as MCC).

The attendance at AAAI national conferences was, for a time, huge—and for AAAI very lucrative. For a new organization to have such a flow of money so near its birth was almost unprecedented. Reddy, I, and our AAAI collaborators made a strategic decision to view this flow of money as the building of an endowment for AAAI. Our view was to keep expenses as low as possible and to use the endowment income to subsidize the dues and the conference attendance (especially of the young scientists).

The strategy worked for many years, even as pressures built up (as they inevitably do) to spend the money on a variety of things that are useful (but not of primal necessity).

BREAKING THE KNOWLEDGE SYSTEMS BOTTLENECK

At this time, the major bottleneck in the development of substantial commercial knowledge-based expert systems is the shortage of qualified knowledge engineers and the lack of appropriate software tools for developing and implementing such systems.

Drawing on a broad base of experience in the design and implementation of commercial knowledge systems, it has recently become possible for Teknowledge to help break the knowledge systems bottleneck. Teknowledge is developing a series of computer-aided Knowledge Engineering software tools that can be used effectively by qualified software engineers having no previous experience in Artificial Intelligence or Knowledge Engineering. These tools will enable industrial and commercial organizations to develop and implement their own large-scale knowledge systems.

Teknowledge System 1, the first in this series of professional Knowledge Engineering tools, will be available in mid-1984. A pre-release version is being offered early in 1984, on a limited basis, for those who wish to begin system development. In addition to the basic software, Teknowledge System 1 includes extensive training, maintenance, and the availability of applications engineering services to assist in system development efforts.

Teknowledge System 1 is designed to support the complete applications development cycle from initial prototyping to field operation. It does not require proficiency in a symbolic programming language (such as LISP).

Teknowledge is an international Knowledge Engineering company which designs, develops and supports knowledge-based expert systems and Knowledge Engineering tools for commercial customers. With the largest concentration of Knowledge Engineering talent in the world, Teknowledge is the leading supplier of commercial knowledge-based expert systems.

For information about Teknowledge System 1, please contact Margaret Copenhagen, Director of Product Marketing.

TEKNOLEDGE INC
525 University Avenue
Palo Alto, CA 94301
Phone: (415) 327-6600
Telex: 4990472TEK

TEKNOLEDGE

Teknowledge Was One of AI Magazine's First Advertisers.

This advertisement is from volume 4, number 4 (winter 1982).

As Andy Warhol would have predicted, we had our "fifteen minutes of fame," and soon there were no more "excess" funds to flow into the endowment. Or so I hear, because after my presidency, I steered clear of AAAI finances, leaving that to experts like Nielsen and Buchanan.

AAAI, it was a wonderful ride. It still is. Happy 25th birthday! I want to be around to celebrate your fiftieth, so I hereby resolve: to go on a diet, to do more exercise, and to pay more attention to Kurzweil's advice on life extension.

Edward Feigenbaum is a Kumagai Professor of Computer Science Emeritus at Stanford University. Feigenbaum earned his Ph.D at Carnegie Mellon University from 1956–59. In the 1960s and 1970s he pioneered the development of the expert systems field within AI and, in 1986, was elected to the National Academy of Engineering. In 1995, he received computer science's highest research honor—The ACM Turing Award. Feigenbaum was the second president of the American Association for Artificial Intelligence, serving from 1980–81.