

# The First AAAI President's Message

*Allen Newell*



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*Courtesy, Carnegie Mellon University*

■ In this first message to the members of AAAI, AAAI President Allen Newell answers the questions “what are we?” “why did we come into existence?” “how will AAAI conduct itself?” and ends with a few thoughts on the name “artificial intelligence.”

**B**irths are always interesting affairs. According to some, births are always traumatic—a shock to come from the womb to the world. The birth we give witness to here is that of a new society, the American Association for Artificial Intelligence—AAAI. It has not seemed to me traumatic, but rather almost wholly benign. In a world where not much is benign at the moment, such an event is devoutly to be cherished.

The proper topic for this initial message is talk about beginnings and circumstances, goals and aims, character and style. My premier duty as president of AAAI, it appears, will be to give a presidential address at the upcoming annual meeting. Specific precedents being absent, I need to give thought to what belongs in an AAAI presidential address. But one thing I already know: That talk should be devoted to our science, not our society. It should be substantive, not procedural. It should look inward at the state of what we know about intelligence and computers, not outward at our place in the larger society. It is in this message that earthly matters belong.

## What Are We?

We are a scientific society devoted to the study of artificial intelligence. Our incorporating charter, with the characteristic precision of legal documents goes no further than to record

the words “artificial intelligence” as an indicator of our proper object of concern. Of the semantics behind these terms, by its silence, it leaves it to us, the society, to determine.

That seems pretty undefined—artificial intelligence is to be what we make of it. Actually, it is not that bad. Sciences take care of themselves just fine. Whatever hilltop of scientific truth we happen to climb will suffer to be called artificial intelligence without complaint, even as Mt. Everest itself. Other hills of science we might have climbed, but didn't, will be left nameless, to await their eventual discovery in silence, but (I have no doubt) without pain. In fact, our difficulties are more likely to stem from the mesa effect than from multimodality.

Along another dimension, too, we are not so ill defined. For we are a society born into a community of societies. We are, in an important sense, what the American Physical Society, the American Mathematical Society, the American Anthropological Society, the Society of Experimental Psychologists, and on and on, will allow us to be. Because being a scientific society has grown to be a rather particular and special thing, it carries with it a rather special set of obligations—not onerous, but pleasant, yet nevertheless real obligations.

Scientific societies are for their science. They are to encourage its happening, to permit communication about it, to gather those who want to talk about it in one place, and in general to conserve, cherish, and celebrate its content. Scientific societies are not for their members, they are for their science. That is an important distinction. They are also not general purpose organizations. They are minimal and restricted, the better to perform their function.

Scientific societies are *not* professional societies. That is important too. There are professional societies in the world, and that is a good thing, for professions need defining, promoting, and defending. But professions are not sciences, though they may be based on sciences. Professions are related to service to society, and to the rewards and conditions thereof. They are concerned with closure, and with limits and quality control. They are legitimately for their members, being concerned with their welfare, their protection, their certification and their disciplines.

Professions based on sciences have cause to nurture their science. As a result, many societies become jointly professional and scientific societies. In fact, most of the societies familiar to members of AAAI are such combined societies: the Institute of Electronic and Electrical Engineers, the Association for Computing Machinery and the American Psychological Association. Though such amalgamation is proba-

bly necessary, it is a matter of repeated record that the two goals—for science and for professional—always sit uneasily in the same house, and that the warfare between them becomes a chronic irritant that is never resolved. Only professional scientific societies can propose unbundling publications so those who don't want to read the archival journals don't have to subsidize them with their dues. Such an act is *unthinkable* in a scientific society. In general, though exceptions are imaginable, professional societies tend to become bureaucracies; scientific societies tend not to. What is there to bureaucratize about? There are only a few functions to perform with minimum fuss; otherwise there is only the science to talk about or, occasionally, to celebrate.

I emphasize these differences because the role model of a society for most of those in AAAI will be these professional scientific societies. I want to make it clear that we are not one of these; we are purely a scientific society.

I have laid much emphasis on the term *science*. I had better add a postscript on the special nature of artificial intelligence. Artificial intelligence shares with computer science the general mixing of concern for application and concern for basic science. We do not distinguish sharply, i.e., occupationally, between AI scientist and AI engineer. Relative to the applied basic dimension, AAAI is squarely aimed at basic knowledge of what constitutes intelligent action and how is it possible for computers to exhibit it. It is not a society dedicated to the application of such knowledge to society. However, that is not the whole story. For the applications of AI play a fundamental role in making progress in our scientific understanding. This is not the forum to make that case; in fact, its understanding is sufficiently shared in our field that I don't have to. The distinction in AI between a laboratory experimental system and an application system has much of the flavor of the distinction in biology and medicine between *in vitro* and *in vivo*—between occurring in the test tube or in the living body. It is not a distinction of pure versus applied at all, but of what can be inferred scientifically because of the context in which the system operates. The point is that AAAI is a purely scientific society, but that includes an abiding concern with *in vivo* experiments.

### Why Did We Come Into Existence?

Note, I did not ask why we exist. Wherever, in our culture, a science is explored, a scientific society arises to nurture that exploration. AAAI

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The only material question is why AAAI came into existence in this spring of 1980. And this is a tricky question, like asking why a supersaturated solution finally crystallizes at one instant rather than a little earlier or later. It does have a macroscopic, general answer, but stripped to essentials the answer is simply. "The time was ripe." A more informative answer is in terms of social dynamics on a microscopic scale.

First, the supersaturated state: Work on artificial intelligence lives comfortably within the world of computer science, not perfectly, but comfortably. The strong concentrations of scientists in artificial intelligence reside in computer science departments, not entirely, but mostly. Thus, cultural institutions and facilities have been reasonably available, for example, the ACM, within which SIGART (the Special Interest Group for Artificial Intelligence) has grown up. In addition, the field is somewhat proud of its own anarchic image. For example, when a good thing came along, namely the International Joint Conference on Artificial Intelligence (IJCAI), it was handled in the freest possible fashion. At each of the first several conferences, a pickup group managed to meet and from that two or three new individuals emerged to bring the next conference into existence as tenuous a bit of organizational DNA as could be imagined. Only the threat of legal responsibility—for modest funds that accumulated, and against potential suits by potential conference goers forced the IJCAI into a more staid institutional mold. Such attitudes worked to promote supersaturation. Though there were occasional meetings to talk about a society for artificial intelligence, such as the public meeting in Boston at IJCAI5 in August 1977, nothing happened. Saturation was increased by the growth of other national AI societies, the Society for the Study of Artificial Intelligence and Simulation of Behavior (in Britain), the Canadian Society for Computational Studies of Intelligence, and several subgroups within existing societies in other countries. Crystals were beginning to come out of solution.

The precipitating nucleus for AAAI was the need for an annual conference for artificial intelligence in the United States. The IJCAI, the one well established conference for AI, is committed to a conference every other year with alternate conferences to be outside the North American continent. Thus, a conference occurs in the US only once every four years. Of such numerology is social change fabricated. The need for more frequent US conferences was

clearly felt by many scientists in AI. Equally clearly, national conferences imply a national organization. And here we are. Exactly so.

Well, not quite exactly so. Given a need, the question seems always to arise of why this form rather than some other one. Why wasn't some other institutional device used to meet the need? There are answers of a sort, and I will give them in a moment. However, one reason the metaphor of a precipitating saturated solution appeals to me is its suggestion that there need be no answer to this question. There is no choice about what form the crystal takes, only the option for when it crystallizes—though sometimes the option for how perfect a crystal and how big.

Briefly stated, the other alternatives were (1) the IJCAI, (2) a national copycat of the IJCAI, (3) SIGART, and (4) the newly formed Cognitive Science Society. The IJCAI is international and genuinely so. Making it the vehicle for national meetings in *all* nations would produce a classic example of killing a solution by generalizing it. As for a national copycat, mimicking the early freewheeling IJCAI—"if it's Tuesday, this must be conference generation day"—seemed a little much, given that a conference should happen every year.

SIGART was perhaps a real option. I suspect it was our (mildly) wild ways, and our urge to be free and in full control of our destinies, that determined for an independent society. That the ACM is a very large professional scientific society, somewhat bureaucratized, also weighed. There is little surprise in this. The scientific landscape is dotted with small, limited scientific societies growing up under the shade, though not the wing, of these large organizations (to mix metaphors more than a little).

The final option, the Cognitive Science Society, was also real. That society has itself precipitated in the last two years, in the same general corner of science as AAAI, with many of the same precipitating factors, and even many of the same participants. As it came into existence, there was some thought, and a little hope, that it could save as the appropriate societal home for AI. I confess to having been of that mind. But it became clear at the First Annual Cognitive Science Conference held at La Jolla in the summer of 1979 that the Cognitive Science Society has firmly set itself on the path of being interdisciplinary. That did not mix with being a focus for a single one of its participating disciplines, namely, AI. This illustrates a general point about organizations that is worth making. Divergencies of fundamental goals create permanent stress—they cause permanent strain in organizations. Profession ver-

sus science, international versus national, interdisciplinary versus disciplinary—they all produce strain. Newborn societies are tender and fragile organizations. They cannot stand much strain. Later on, when old and tough, such strains can be tolerated, some even permanently. Thus the professional scientific societies grow and prosper. They scratch the irritant, but live with it, and sometimes even turn it to creative uses. But new organizations cannot do that. Thus, quite simply, it was necessary for the prospering of both the Cognitive Science Society and AAAI to grow distinct organizational identities.

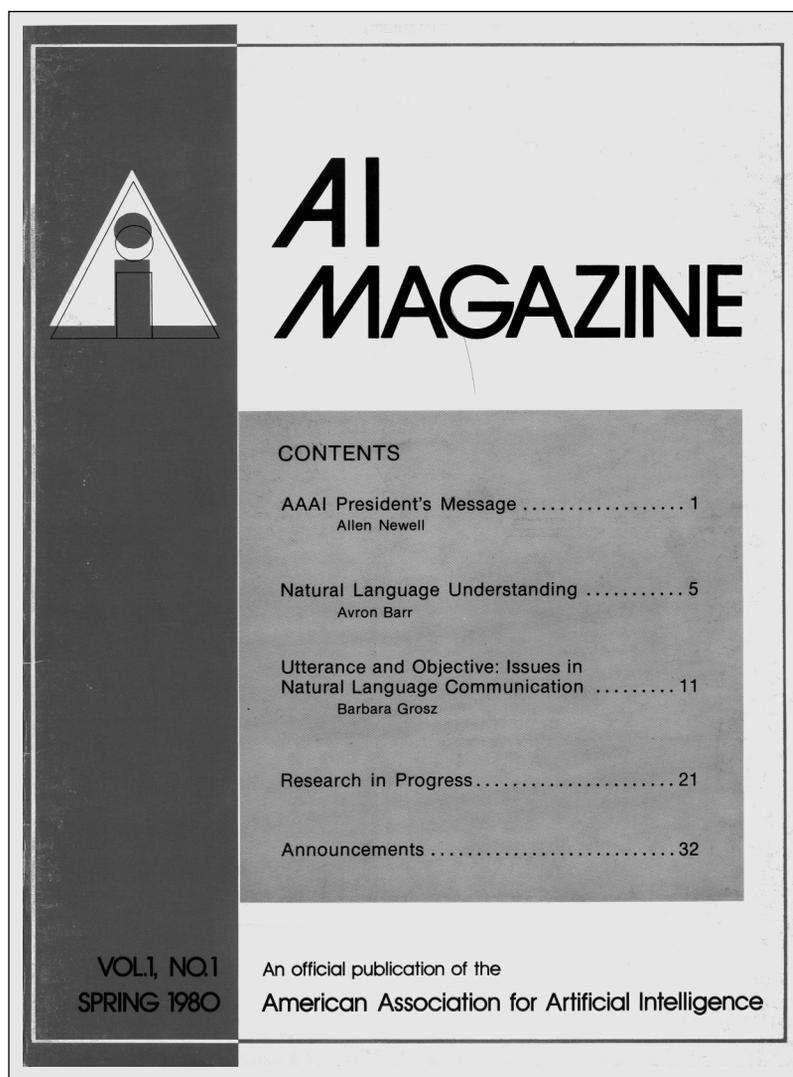
So there are the reasons why not this or that alternative. They are reasonably accurate, as much so as my knowledge, limited perception, and a few paragraphs permit. As I said initially, the emergence of AAAI happened easily and without essential trauma, despite some modest potential for it inherent in the complex organizational landscape I've just sketched.

The one part of the birthday tale I haven't told is about the people. Societies are *sui generis*. They pass from nothing to something by an act of social will, in which particular people take to themselves the prerogative of forming themselves to be a scientific society for whatever (here, for artificial intelligence). Some set of people have to feel the calling and to make the inner decision at a particular point in history. For AAAI the time was the recent IJCAI, held in Tokyo in August 1979. The people were almost entirely US participants on the IJCAI program and conference committees (including some who served prior IJCAIs)—a fact of mild significance, as I'll note in a moment. Their names appear as the founding council, whose formation by an act of self selection is required to get from nothing to something, societywise. I was not one of them, so I can point out our (AAAI's) collective debt to them for being the founders.

It is necessary to take one more step in the narrowing social microdynamics of how AAAI got started. For it finally comes down to Raj Reddy, Chairman of the IJCAI Board of Trustees and General Chairman of the IJCAI in Tokyo, who took the initial personal act of decision that really started precipitation, and who carried all of us before him, until the AAAI was safely crystallized. The story of AAAI's origins comes safely to rest at this point, and need be spun out no further.

## Style

How will the AAAI conduct itself? What will be its attitudes toward doing this and that? That is a matter for the future, so I can hardly say. All



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I can reflect is the current position and velocity.

The first watchword is *cooperation*—cooperation with all the others that are trying to nurture artificial intelligence. That follows, of course, from the fact that AAAI is for the science and therefore interested simply in making it prosper, not in accruing to any particular society this or that function. This would seem to go without saying, but matters of turf and competition have been known to exist among societies.

This orientation toward cooperation can be abundantly illustrated already. First, a little research will thaw that many of the people active in AAAI are as actively involved in the other societies. Witness first the start from those who have labored (and continue to labor) for the IJCAI. But also Ed Feigenbaum, the AAAI president-elect, and Raj Reddy, whose role in AAAI was already noted, are members of the Council of the Cognitive Science Society. Roger Schank,

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a member of the AAAI Council, is one of the prime movers in the Cognitive Science Society. Lee Erman, who is on the AAAI Council and Chairman of its Publications Committee, is also the current Chairman of SIGART.

There are other specifics. The IJCAI meets in North America every fourth year. On that year there will be no annual meeting of the AAAI—we all be attending IJCAI. A high quality archival journal already exists for our field, *Artificial Intelligence*, which is, by the way, international. There appears to be no need at present for an additional scholarly journal, given that journal, the journal *Cognitive Science* and the newly started *IEEE Transactions on Pattern Analysis and Machine Intelligence*. AAAI has no plans for publishing another regular scholarly journal. It does not feel that, because it is a society, it has to have its own scholarly journal. There is no intention that the *AI Magazine*, of which this is the premier issue, will compete with the *SIGART Newsletter*. There is here conceivably a potential problem. But intensive discussions have occurred (and continue) between those involved in the *AI Magazine* and those involved in the *SIGART Newsletter*. There are important distinct functions to be performed by each publication that the other doesn't provide. The positive reasons for publishing the *AI Magazine* are set out elsewhere in this issue by Alan Thompson, its editor, so I need not repeat them. Just to mention one on the SIGART side, many people in computer science, who already are members of the ACM, wish to have some contact with artificial intelligence, but are not prepared to join a separate society to do so.

As a second aspect of style, we will innovate—not for the sake of innovation (I trust), but because problems need to be solved in the easiest and best way possible. For instance, we hope to find ways to exploit the computer and computer networks. We would hardly expect less of ourselves.

A concrete example is already at hand. It happens not to involve any technological innovation. As anyone knows who has been on a program committee, setting the program for a national meeting is a lot of effort and hassle, with requirements for quality control and quality discovery, under tight time constraints, all done by onetime volunteers, who are generally dispersed, especially the referees. Our experiment is to assemble a large program committee (15 this year) in one place for an entire weekend, to do the total job all at once, from reading the submitted extended summaries to putting together the program. As I write this (21 May), the event has just occurred. It took only about 14 hours (times 15 people of course) for 200

submissions. The assessment of the committee is that the reviewing was more even, the program as optimal as would have been produced by more extensive refereeing, the inevitable miscarriages probably less, and the comments to the authors will be more informative, in part because more consistent. The submission deadline was 1 May 1980 and it appears we will make our notification deadline of 1 June, a gap that is laudably short. That is only a partial (subjective) report, only a single trial, and the results won't emerge until meeting time in August. We shall see, then. My purpose in recounting the story is to note the matter of style.

To turn to a slightly different aspect of style, I suspect we will retain a bit of our freewheeling ways. We will be antibureaucratic; more concerned with getting the necessary thing done than with procedure; more concerned with minimizing the effort required than with formalities. In a word, more concerned with the science than with the organization.

The expression of such attitudes may seem platitudinous, fit only for such president's messages as this. Interestingly, they are not wholly so. An enormously powerful movement, with deep ethical foundations, is running strong in our society currently. It goes by many names. *Egalitarianism* is one. *Power to the people* is another, more strident but well recognized. I needn't describe it here, only evoke it. It has many facets, both large and small. It has been present during the gestation of both the AAAI and the Cognitive Science Society. I recall several voiced concerns at the Boston meeting on organizing a society lot AI about proper procedures to assure that all would be equal. The public meeting at La Jolla last summer on the organization and plans for the Cognitive Science Society was filled with such concerns—about how to avoid an elite taking over the organization and running it for their own purposes.

Back to basics. Scientific societies are for their science, not for their members. A scientific society is not a power base for doing anything. The members of a scientific society want to do science, not be involved in organizations, even such benign ones as scientific societies. The problem for scientific societies is how to get people who wish to do science to devote a little energy to doing what's necessary for the society to function. (May that everlastingly be their problem!) Thus, whoever will volunteer and contribute, let them do so.

An earlier paragraph, in noting how cooperation will be assured, described the multitude of common participants in all the societies touching on artificial intelligence. A too deep

concern with the problems of power might see this as an example of *interlocking directorates*, as that term is used in the rhetoric of power. As anyone connected with scientific societies can tell you, it is no such thing. Instead, it is an example of the uneven distribution of social conscience and the susceptibility to arm twisting for the common weal.

Now I am enough of a sociologist to realize, in the cold light of morning, that scientific societies do distribute some rewards. For instance, to pick an example prominent in the discussions at La Jolla, they do determine who gets to give papers. Here, indeed, there operates an ethic of *fairness*. But even more important is the fact that a society of scientists wants to hear good science and new science. So the fundamental force that shapes our scientific meeting is to find those scientists that have good things to say. It is to encourage young scientists (the powerless you might say?) to contribute, because they are the source of progress and hold the future of the science in their hands. Above all, it is to produce quality, for only so will the science prosper.

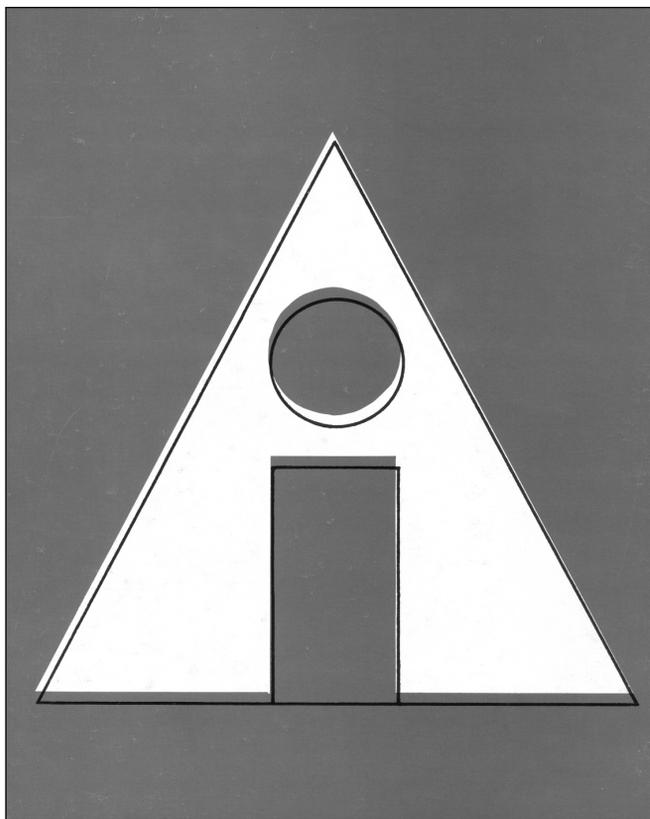
And, if being sociological is permitted, let's return to the proposition that new societies are fragile organizations. They cannot easily suffer the strain of being used for other than their central purpose, which is to promote the science. To see them as an arena for other types of concerns, even so laudable a one as the egalitarian ideal, is to do the society a disservice.

Thus, our freewheeling attitude in AAAI is based squarely on a trust that all involved are dedicated to the scientific ethic (otherwise, why would they be hanging around?). Given that trust, we can proceed freely. In the nature of the world, trust can always be misplaced, but both better and sweeter to have trusted....

## Last Thought

The society has taken the name Artificial Intelligence. As all good AI'ers know, this name, introduced by John McCarthy in the 1950s, has been controversial for quite awhile. It is often remarked that some of the controversy that swirls around our field is due to our name—the suspicion of people outside AI, including some in computer science, that our enterprise is not a legitimate scientific enterprise. It is said to evoke the controversy, or at least to abet it. If we had a good name, like biology or geology, then the wisps of controversy would significantly subside.

I do not believe it. I believe that there are unsettling aspects both about understanding the nature of intelligence and about discovering



*The First Issue of AI Magazine Contained No Advertising.*

The back cover reproduced what appears to be simply a slight variation of the IJCAI logo.

how to make computers exercise intelligence. Such issues are troubling wherever they occur. Witness in psychology the issue of measuring intelligence. Psychology's good name does not help it there. Nor does biology's, when it comes to genetic engineering (or even evolution—after all these years!), kindred issues in that they touch on the place and nature of us humans within the universe. In short, I believe that the controversies have their natural cause in the type of knowledge our science reveals. They must be dealt with on the basis of substance and truth.

So cherish the name *artificial intelligence*. It is a good name. Like all names of scientific fields, it will grow to become exactly what its field comes to mean.

**Allen Newell** (1927–1992) was a researcher at the RAND corporation and later a professor at Carnegie Mellon University's School of Computer Science. An early AI pioneer, Newell contributed to the information processing language and two of the earliest AI programs—The Logic Theory Machine (1956) and, with Herbert Simon, the General Problem Solver (1957.) Newell was awarded the A. M. Turing Award by the Association for Computing Machinery in 1975. Newell was AAAI's first president.