## AI Topics A Responsibility to Celebrate AI Responsibly

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■ The debut of the AI in the News column elsewhere in this issue of AI Magazine created a good opportunity to introduce the professional community to the AI Topics web site, 1 home of the AI in the news virtual page.<sup>2</sup> Although AI Topics is designed for the lay public, it serves a much larger audience.

fter a year of planning, the AI Topics web site went online in 1998 with the **▲**goal of providing students, teachers, journalists, and others with a basic understanding of what AI is and what AI scientists do. Much of the genetic code for this web site, however, was actually written when the American Association for Artificial Intelligence (AAAI) came into existence. In the 1980 President's Message delivered by AAAI's first president, Allen Newell, one finds many of the responsibilities, principles, and protocols that have become part of the very fiber of AAAI. Not surprisingly, some of these elements were inherited (Newell 1980, p. 3):

[W]e are a society born into a community of societies. ... 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.

As a number of factors began to converge in 1997, AAAI started to consider how it should respond to the public's growing interest, fascination, and curiosity about AI. No doubt the increased presence of computers in homes, schools, and offices was helping to set the stage by affording a platform on which more and more people could come face to face with the steady stream of AI-powered software that was being made available. Also, friendlier interfaces and free internet access from public libraries and other institutions were making it ever easier for the public to go online. Add to this mix the simplicity and immediacy afforded by e-mail, and one can begin to understand why the volume of mail from the public to the AAAI staff and officers was gradually approaching critical mass.

With e-mail as their preferred means of communication, the public displayed an interest in practically every facet of AI. Although each and every letter received is unique,<sup>3</sup> patterns did emerge, and it can fairly be said that then, as now, the questions have tended to touch on some combination of four general themes:

What is AI: I picked AI as the topic for my ninth grade science project, and I need to know who discovered it and how it works. You must send me the answers as soon as you can because I have to hand it in at the end of the week.

What has AI accomplished: I'm writing an article about how technology is making it easier to run a business. Can you tell me about some actual AI applications? Also, do you know how much revenue is generated by business software that uses AI?

What are the ethical and social implications of AI: Do you think that a machine can have a mind and feelings, and if so, does that mean that they'll have rights too?

What career options does the field of AI offer: I'm about to graduate from high school, and I really like building robots. What should I study in college and what types of jobs are there?

The initial wave of questions also gave rise to one question that never had to be voiced: **Why** should AAAI even respond to unsolicited correspondence from the general public? That this issue was never debated is testimony to AAAI's assimilation of the many traditions of scientific societies that Allen Newell spoke of and that *AI Magazine*'s first editor, Alan M. Thompson, acknowledged in his *Welcome to AI Magazine* (Thompson 1980, p. i):

As a major scientific society, the AAAI has a responsibility for promoting its field as well as informing its members of the latest technical developments. ... [T]he editorial committee chose to assign to AI Magazine the task of providing AAAI members and the public as well with a broader perspective on the research activities within AI.

Having now outlined **the need** and acknowledged **the responsibility**, the next question was one of form for, as Newell (1980, p. 2) remarked, "Given a need, the question seems always to arise of why this form rather than some other one." The simple answer is that we explored our options and picked the one that was, to use his words again, "the easiest and best way possible" (Newell 1980, p. 2). Because *AI Magazine* was already serving a different purpose very well, it was neither the simplest nor the best way to reach the lay public.

With the help of Carol Hamilton, executive director of AAAI, we explored the possibility of organizing a network of volunteers who could respond to the questions arriving at the AAAI office. What we soon learned was that it was far easier to enlist volunteers than it was to get them to promptly respond to the questions we assigned to them. We then considered updating a general page of frequently asked questions (FAQs) for AI, such as the one that Carnegie Mellon University was then offering, but decided against recruiting volunteers to rewrite and maintain answers. Although we certainly were aware of the material written by members of the AI community and published for a wide audience (for example, McCarthy [1966]; Duda and Shortliffe [1983]; and Feigenbaum, McCorduck, and Nii [1988]), there were not enough of them, and much of the material was only available in large research libraries. Another idea we investigated involved creating a variety of teaching modules for science teachers to make it easier for them to bring AI topics

into the classroom, but we were timid about moving into K–12 curriculum design and overcoming the tight constraints on teachers' use of classroom time. Moreover, these modules, as well as practically every other approach we considered, would require many people to make commitments to assume the never-ending burden of keeping everything current.

However, it was during the fact-finding forays and benchmarking exercises for these and the other options we explored that we became ever more impressed with the amount of good material pertaining to AI that could freely be accessed on the web. Such resources came in all shapes and sizes and included virtual encyclopedias and magazines, what-we-do pages posted by AI labs, student projects, descriptions of commercial products, and materials posted for university courses. Soon we came to realize that there were enough really good resources out there to serve as the foundation on which a web site could be built. Our standard for determining what constituted a really good resource was Scientific American, a magazine that represented our paradigm of clear exposition. Part of the secret for its effectiveness was mentioned in a review of Gerard Piel's new book, The Age of Science: What Scientists Learned in the 20th Century (Basic Books, 2001) (Graham 2001):

The distinguishing characteristics of Piel's science journalism were a conviction that science is both objective and a social good, a refusal to talk down to his audience and careful, even lavish illustrations and photographs. His ideal reader was a scientist seeking knowledge outside his or her own field. He often enlisted scientists as authors, coaxing them with meticulous editing to find ways of explaining their recent work to intelligent people with other backgrounds. A nonscientist (he was an undergraduate in history at Harvard). . .

When Piel and his colleagues created Scientific American over a half-century ago, he correctly saw the need for a magazine that would transcend the specialist science journals and offer overviews for educated lay people of developments in the individual scientific disciplines.

It is worth pausing at this juncture to acknowledge the importance of making understandable scientific information available to the lay public and how it eclipses both the science of AI and the present moment. In *Closing the Knowledge Gap between Scientist and Nonscientist,* Takashi Tachiban's 1998 contribution to the *Science* series, Essays on Science and Society, he looked back over almost 40 years (Tach-

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iban 1998, 778-779) and observed.

In his classic work Two Cultures and the Scientific Revolution [(Cambridge University Press, 1959), originally a Rede Lecture presented at Cambridge University (1959)], C. P. Snow wrote that the chasm between scientists and literary intellectuals was so vast that they could not communicate with each other. For example in physics, Snow found the mid–20th century literati to be as ignorant about science as had been their Neolithic ancestors. And this situation that Snow lamented nearly four decades ago has only grown worse. The current level of basic scientific knowledge is so low that it is difficult to interest even the brightest layman or nonscience student in what modern science is doing. I border on despair at my inability to keep them interested long enough to correctly understand both a specific research project, and its aims. The chasm between scientist and nonscientist has widened to become a gulf. And it is the task of science and society to narrow that gulf through an intellectual shift of tectonic plates.

Modern scientists can no longer expect to live their lives in proud isolation because most significant scientific research requires substantial funding. ...

C. P. Snow was talking mainly about intellectuals. But, today the reactions of ordinary people and the mass media matter more. Since politicians are easily swayed by their perceptions of public opinion, key to promoting wise political decisions about scientific matters is a sound understanding of science among the general population and the media that feed, reinforce, and mobilize its views.

Further evidence that these issues have not gone away can be found in the House Committee on Science's 1998 Report to Congress: Unlocking Our Future—Toward a New National Science Policy.<sup>4</sup>

One of the ironies of our modern age is that although our society depends on science as never before, what scientists do remains an enigma to most people. As any nonscientist who has tried to wade through a scientific journal knows, the language of science is virtually incomprehensible to the layman. While these journals are not written for a general audience—nor should they be—they are perhaps the clearest example of the widening chasm between scientists and the rest of society.

If we are to maintain public appreciation and support for our scientific enterprise, a way to translate the benefits and grandeur of science into the language of ordinary people is sorely needed. Scientists have wonderful stories to tell, yet too often they get told poorly, if at all. Educators and journalists have a role to play in communicating the achievements of science, but scientists must recognize that they, too, have a responsibility to increase the availability and salience of science to the public.

The online availability of understandable resources seemed to address the question of appropriate form. However, it raised two new questions for us: Could a web site fulfill our responsibilities, and would it be acceptable to build the site with materials that AAAI did not author or otherwise create? Once again, guidance could be found in Newell's President's message (1980, p. 3):<sup>5</sup>

The first watchword is cooperation—cooperation with all the others that are trying to nurture artificial intelligence....

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 could hardly expect less of ourselves.

Thus freed from pressures that might have led to creating all new text and excited by the potential of a web site, we shifted our focus from creating resources to creating a means to get the right resource to the right person. Underlying this approach was the realization that although the vast universe of online information contained many stellar resources, there was considerable redundancy and misinformation, not to mention space junk and the occasional flaming comet. Moreover, the volume of material presented substantial problems for laypersons who just wanted to read concise, accurate descriptions. The decision was then made to mediate the relationship between the information seeker and the information by developing a safe and comfortable environment where what was sought could simply be found. Making it a reality entailed (1) identifying readable overview articles that are readily available (almost all on the web) about major topics and some of the specialized topics that are mentioned in the popular press; (2) organizing the information in a structure that is meaningful to nonprofessionals, with ample cross-

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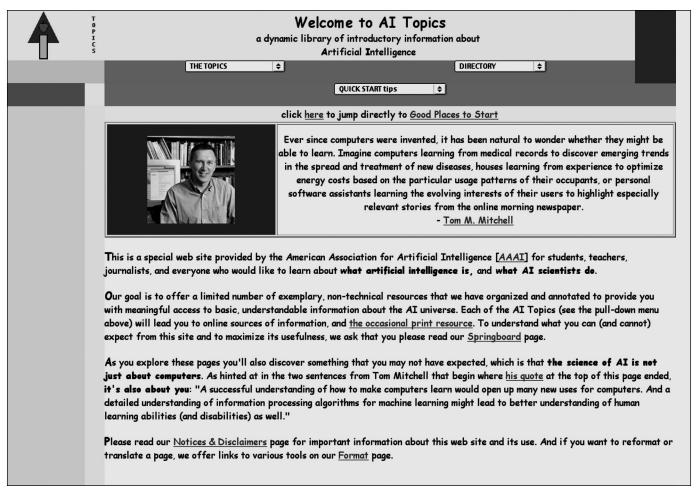


Figure 1. AI Topics Home Page (Top Portion).

referencing and redundancy in the indexing; (3) providing additional items that make AI fun and interesting and encourage further study; (4) maintaining contact with the users by both direct means (inquiries, feedback) and indirect means (using data from the server) to assure that the site remains responsive to their needs; and (5) finding someone to do it!

Actually, it wasn't just someone—it was someone to do it all. Locating and sorting through the understandable information that could be found online in diverse forms and in obscure places was only the beginning because it then had to be packaged so that it could effectively be utilized. In addition, it was this need to objectively organize the material for a lay audience that tipped the scale in favor of finding a trained librarian who, unfettered by a technical background, could bring a fresh approach to building and structuring the collection. The other side of this coin, however, is that this individual would have some scientific naïveté; so, it was critical that scientists oversee the effort because they are sensitive to the specialized terminology and flame issues in the field.

Without boundaries, one person could not be expected to organize the entire universe of introductory AI resources online for all segments of the lay public. Thus, to help with the process of staking out borders, three decisions were made: (1) the primary target audience would be English-speaking high school students from around the world; (2) material would come from stable sources that are available primarily online without charge; and (3) use and enjoyment of the site should not be dependent on high-speed connections, the newest hardware, or the latest software.

High school students were the ideal primary audience because they are the future of AI and have adapted well to the web. High school teachers and journalists were selected as the secondary audience because they nurture the interests of the primary audience. Notwithstanding having defined these focus groups, the web site serves a much broader audience of students and inquisitive laypersons that

includes undergraduates and graduate students not in AI as well as the parents and even the younger siblings of high school students. However, the fact remains that although one can find a page of resources collected especially for older students in the site,<sup>6</sup> and another special collection for educators,<sup>7</sup> there is no single page expressly dedicated to parents.

Also, the decisions to focus on material available on the web and to keep the site "low-tech" were made with the primary audience in mind. It does little good to point students to texts that can only be found in a local library when they are often without access to such a facility.<sup>8</sup> Likewise, because it cannot be assumed that students who come to the site from around the globe will have the latest computer equipment or an optimum internet connection, we keep the site itself simple and basic (although we do point to video clips, interactive demos, and the like).

Another way that we defined boundaries was to introduce our *springboard approach*. At its heart, it is the recognition and honest acknowledgment of (1) what we can reasonably accomplish; (2) what can reasonably be expected from any web site and, specifically, this web site; and (3) what we can reasonably expect from our visitors. As we explain on the Springboard—How to Use This Site page:<sup>9</sup>

AI Topics seeks to provide information that can be understood by those who are beginning to learn about artificial intelligence. Because much of this audience has little or no technical background, the information must be general in nature and will often come from non-scientific publications. We have used our best efforts to strike a balance between scientific exactitude and a presentation that is not daunting. Furthermore, AI Topics is a resource to be utilized as a starting point, or springboard, rather than as a collection of blackletter dogma. In fact, given that the field of artificial intelligence is diverse, dynamic, and evolving, we want you to understand that we simply cannot stay current with all of the developments and resources, nor are we able to represent all viewpoints....

AI Topics is a springboard in the sense that it can launch you on your way to more resources. It is our hope that by providing some basic information, we can equip you to further explore AI in more depth on your own. By using keywords, project names, articles and authors, and other terms found in these pages, you can frame a fruitful search request using any of the popular search engines as well as

various online databases and your library's online catalog....

... With one webmaster to maintain more than 100 web pages, there is simply no way that every page and every topic can be kept 100% current. From the pedagogical perspective, we don't want to give the impression that our resource base is functionally complete lest someone infer that the presence or absence of a particular resource is of significance. [This is also covered on our page of Notices along with other related information.]

This approach is consistent with our decision to present material about AI fairly, but favorably. In particular, we chose to celebrate AI's numerous definitions and approaches rather than present a false picture of a unified whole, present the state of the art as an achievement as well as an invitation to imagine what awaits over the horizon, welcome differing viewpoints as possibilities rather than as conflicting positions, recognize responsible criticism as a mirror for self-examination, and acknowledge that multiple access paths and index terms are not necessarily duplicative.

How these principles and guidelines become woven into the fabric of the AI Topics site can be illustrated by looking at the site from the perspective of the virtual AI in the News page. <sup>10</sup> This page consists of a collection of news nuggets distilled from recent news articles appearing in the popular media and consist of an excerpt from the article, its URL, and pointers to related pages within AI Topics. A typical, though in this case fictional, nugget would look something like:

November ##, 2001: Face-Recognition To The Rescue? By Arthur Paige. XYZ News Bureau / available from Ourtown Gazette. "Using artificial intelligence technology similar to what enables a robot to recognize an image from different angles and under various conditions, the ABC Company developed a system that can be used in airports to screen passengers.... Many people are concerned that such systems, as well as similar systems that use voicerecognition or fingerprints ... are unreliable and pose a threat to our civil liberties." >>>Image Understanding, Vision, Robots, Speech, Pattern Recognition, Ethics and Social Implications, Law Enforcement,

and our biometric toon.

Initially, a distinction must be made between the nugget and the article from which it was taken because each has a role independent of

the other. Once we've captured a nugget, we

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AI in the News AI Overview Agents Applications Cognitive Science Education **Ethics and Social Implications Expert Systems FAQs** Games and Puzzles History **Interfaces** Machine Learning Natural Language Philosophy Reasoning Reference Shelf Representation Resources Robots Science Fiction Speech Systems and Languages Turing Test Vision Special Pages

*Table 1. The Current Set of Topics.* 

Note: Exploring the site will give you a much better sense of its scope than lists can. We do not list all the 100+ subtopic pages underneath these in the AI Topics site or show the hundreds of index entries.

Another way that we encourage further study is by not offering the answer.

can reliably integrate it into the site, unlike the article itself that we have no control over and that might soon migrate into the publisher's fee-based archive or even vanish.11 Nevertheless, during their accessible lifetimes. These items typically provide a wonderful source of basic, understandable information and often include exciting illustrations, charts, and photographs. However, as we explain, even when the link that we provide to the article has died, the nugget lives on because we almost never remove an item from the web site. In the case of news stories, once an item has been posted on the news page for a month or two, it is moved to our permanent news archive collection. In addition, rather than simply delete other resources that have appeared within AI Topics, we warehouse them in our Page Archive or cemetery of Dead Links.

Standing alone, the nuggets provide a stage from which we can launch a number of initiatives. First, we can use them to introduce the site's topics (see table 1 for the current set of topics) and subtopics in the context of something concrete and not intimidating. In contrast to our site map and index that list what for many are simply strings of abstract concepts, the news page allows the visitor to make a connection between something familiar and the related page(s) within the site.

On another level, the collection of nuggets serves as evidence that the science of AI is alive and well and contributing to actual, real-world applications—even if some are controversial. However, this, too, is an important function of the news page. Allen Newell recognized that AI like other sciences, "touch[es] on the place and nature of us humans within the universe," and he "believe[d] that the controversies have their natural cause in the type of knowledge our science reveals" (Newell 1980, p. 4). He cautioned, however, that "they must be dealt with on the basis of substance and truth" (Newell 1980, p. 4). Thus, provided that the source is responsible, reference to such articles is part of a healthy dialogue about important issues engendered by our science. Moreover, we place the issues within a larger context by pointing visitors to the Ethical and Social Implications page and overviews of relevant technical topics.

Viewed holistically, the string of nuggets on the news page conveys a sense of momentum and excitement that reinforces AI's vibrancy. Also contributing to this effect is that the page is updated several times a week.12 Thus, one can read articles foreshadowing the competition for the Loebner Prize and then return to the site a few days later to find articles about the outcome. Sometimes the fact that two events have become linked in this string of nuggets results in a very powerful experience, as was the case when articles about the RoboCup rescue competition held in Seattle in August 2001 were soon followed by articles about some of these same competitors (both human and robotic) arriving at Ground Zero in New York City to lend assistance in the wake of the tragedy of September 11, 2001.

The ability to add nuggets to the news page several times a week, or sometimes several times a day, is just one of the ways that AI Topics can quickly accommodate current events. AI Topics can also easily be modified to address changing circumstances. The field of biometrics offers a good case because although it has been around for quite some time, the events of September 11, 2001, propelled it into the spotlight. Because the term biometrics began to

appear more and more often in news articles mentioning AI techniques, we added the term to the site's A-Z Index with pointers to related pages and a cross-reference to the index term surveillance. We also created a special collection of resources about biometrics that we placed on the Image-Understanding page because most of the boundary lines in AI Topics are drawn in the sand and not in cement, we have the flexibility to cut and paste the resources to the Pattern-Recognition page if such repositioning would be justified at some future time. To some extent, however, it is a moot point because the relevant pages are linked by pointers among themselves so that someone reading about biometrics on the Law Enforcement page can follow the pointer to the Image-Understanding page, home of the biometric collection that contains links to Pattern Recognition, Law Enforcement, and other pages.

It is also quite common for us to post several pointers to the same news story throughout the site. Thus, one can follow a link from a news nugget to the Law Enforcement page only to find the same nugget that provided the link to that page. We do this multiple posting because people can arrive at the Law Enforcement page by any number of paths, many of which might not include a stop at AI in the News. Although the circularity, repetition, and cross-referencing might be redundant, it does increase the chances of people finding what they're looking for as well as offering opportunities to explore tangents.

Because redundancy is a concept worth revisiting, it should not go unnoticed that much of the redundancy within the site is a direct result of indirect feedback. As discussed earlier, inquiries from the public were an impetus for creating AI Topics. These questions continue to be an umbilical cord to our audience and enable us to keep the site fine tuned.<sup>13</sup> When, for example, we receive an inquiry asking about AI applications in a specific field such as law enforcement, two issues are immediately raised: (1) do we currently offer resources about this subject and, if not, should we and (2) if we already offer relevant resources, why couldn't the person find them. This exercise has resulted in countless additions to the A–Z Index, lots of cross-referencing, and even several new pages of subtopics.

Because our list of objectives also includes making AI fun and interesting, we obtained the humorist's version of the poetic license and began to create cartoons. One of these cartoons is our biometric toon that plays off the ability of AI-powered biometric systems to identify people by their gait, voice, or appearance. The cartoon, Biometrics 101,14 is posted on our toons page and depicts a duck prancing adjacent to a block of text that reads: "If it walks like a duck and sounds like a duck and looks like a duck, then it must be a duck." Beneath the cartoon is a brief description of biometrics extracted from, and linked to, a good overview article, all of which is followed by a link to our collection of resources addressing the intersection of AI and biometrics. In this way, we hope to take the interest created by the cartoon and channel it to resources for further study.

Like the cartoon, the format of the AI in the News page is structured to encourage further study. Seeking to build on the energy created by a person's interest in any given news nugget, we entice this person to continue exploring the main topic of the article or other subjects raised therein by providing links to pages within AI Topics and the article itself. The captivating nature of the specific examples makes AI in the News the perfect centerpiece of our response to any student who sends an inquiry along the lines of, "I picked AI as the topic of my term paper and I need to find something to write about." Not only does the news page offer the student a parade of ideas to choose from, but each nugget includes everything he/she needs to get started.

Another way that we encourage further study is by not offering **the answer**. Although we are more than happy to help students, we will not do their work for them. Also, most questions do not have the simple, definitive answer that many students are looking for. Moreover, were we to take a position regarding, for example, Al's

single greatest achievement, which seems to be a popular topic for school reports, the site would appear to be, or possibly become, a bully pulpit. However, our recognition of, and respect for, the fact that both AAAI, as well as the science of AI, embraces a diverse collection of viewpoints results in a nonjudgmental stance that fits neatly with this egalitarian principle and the *springboard approach*.

AI in the News has also encouraged us to embark on some new initiatives. For example, when it became apparent that the movie A.I. was generating a steady stream of prerelease media coverage about the movie and the science, we created the AI: The Movie page. 15 The page serves as both a special substantive portal into AI Topics and a place where we can assemble and organize a collection of news items occasioned by this well-publicized event. As evidence that the page was effective, the movie page is featured on the official Warner Brothers A.I. web site;16 the AI Topics site received a glowing review (Leslie 2001) in Science that specifically referenced the movie page just one week before the movie's June 29, 2001, release in the United States; and the AI Topics site administrator reported that the movie page received approximately 3380 hits in June 2001 and 3500 hits in July 2001.

The news page has also propelled us into two new initiatives outside the web site. The first is the electronic newsletter, AI Alert, which is now distributed approximately twice every month to AAAI members. AI Alert consists of an eclectic subset culled from the virtual AI in the News page and provides the professional community with a glimpse of AI as seen from the outside looking in. AI Alert consists of an eclectic subset culled from the virtual AI in the News page and provides the professional community with a glimpse of AI as seen from the outside looking in. The periodic view from this perch provides not only a reminder that one's family and friends, as well as potential funders and future students, might see AI in quite a different light but also an invitation of sorts. As explained by Norman Augustine in his article, "What We Don't Know Does Hurt Us-How

Scientific Illiteracy Hobbles Society, for the *Science* series, Essays on Science and Society (Augustine 1998, p. 1640–1641):

To a not inconsiderable segment of the public, the word "science" conjures up images of Chernobyl, Bhopal, Thalidomide, Challenger, and the atomic bomb. Too often science is perceived as the cause of problems rather than the solution, as something to be avoided rather than something to be embraced.

As part of his solution, he suggests (Augustine 1998, p. 1641):

[L]iving as we do in a "sound bite" world, scientists must learn to communicate far more effectively with nonscientist audiences. In my judgment, this remains the greatest shortcoming of most scientists and engineers today. The time has arrived when scientists will have to come down from the Ivory Tower and enter the arena of real-world debate, bubbling controversy, and—brace yourselves—politics.

The other initiative we've been encouraged to explore involves giving the news nuggets a presence in the print medium. Our first foray appears elsewhere in this issue of *AI Magazine* as the AI in the News column. In contrast to the e-mailed AI Alert, the magazine column provides a more permanent, although much less extensive, record. However, in spite of its size, we expect that this page of mininuggets has much to offer those who read it now as well as those who will come upon it in 20 years.

The AI Topics site is intended to be a window into the science of AI and to partially address AAAI's responsibility to explain what we do. Your suggestions, as well as any resources that you'd like to contribute, are important to its success. Even more important is your participation in ongoing discussions about AI, for which we hope the site will provide useful input.

## Acknowledgments

AI Topics could neither have been launched nor have survived this long without the ongoing help and support provided by Carol Hamilton, Mike Hamilton, Richard Skalsky, and others. We also owe a debt of gratitude to Karen Peterson, who, as the web site's first librarian and developer, helped establish the directions and standards for the site.

## **Notes**

- 1. www.aaai.org/aitopics.
- 2. Some of the material in this article previously appeared in Buchanan, B. G., and Glick, J. 2001. AI Topics—Organizing Online Knowledge Sources about AI for the Lay Public. *ACM Intelligence* 12(3): 25–30.
- 3. A selection of actual e-mails we've received can be found on the Mailbox page at www.aaai.org/aitopics/html/mailbox. html.
- 4. House Committee on Science. 1998. A Report to Congress: Unlocking Our Future—Toward a New National Science Policy. Preface to Chapter V (Sustaining the Research Enterprise—the Importance of Education) Part C (Communicating Science). Available at www.access.gpo.gov/congress/house/science/cp105-b/science105b,pdf or www.house.gov/science/science\_policy\_report.htm.
- 5. Newell's use of the term style relates to "How will the AAAI conduct itself?" and "What will be its attitudes toward doing this or that?" (Newell 1980, p. 3).
- 6. Resources for students. www.aaai. org/aitopics/html/ resources. html.
- 7. Resources for educators. www.aaai.org/aitopics/html/resourcED.html.
- 8. We use the word *access* in its broadest sense to include both the predicament of needing something at 2 AM and the library is closed and the situation that "M," an eighth-grade student, described for us in an e-mail message:

Hello,

I am doing a science project on a topic of my choice and I chose to do AI, which is something I am very interested in and I was just wondering if you could send me some information about it or maybe give me some webpages to go to. You see I live in Yellowknife, N.T, Canada and so I appart [sic] from the web I am very restricted to resources. If you could send my [sic] some info. it would be a great help. Please Reply.

- 9. www.aaai.org/aitopics/html/springbd. html.
- 10. www.aaai.org/aitopics/html/current. html.
- 11. However, because the same article might appear in several publications, both online and in print, a person can use the citation we provide to try to track down its other incarnations. It is also not uncommon for a reprint of the article to find its

- way onto the web site of the lab or company featured in the article.
- 12. In an unsolicited e-mail message, "J" told us: "Just wanted to let you know that I check the "news" section of your website frequently and I appreciate how current you keep it. Excellent work."
- 13. In the bottom corner of every page in AI Topics is a link to the Inquiries—Feedback—Contact Us page to remind the audience that we're only an e-mail away.
- 14. www.aaai.org/aitopics/html/toons.ht ml #biomet.
- 15. www.aaai.org/aitopics//html/aimovie. html
- 16. aimovie.warnerbros.com.

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