

## NEWS

Welcome once again to AI Update! Here, I attempt to provide useful summary, occasional commentary, and sometimes practical pointers to some of the more interesting news items connected to the practice artificial intelligence. If you notice such a news-worthy item, please send me a note at [dblank@brynmawr.edu](mailto:dblank@brynmawr.edu). Otherwise, I'll have to make things up.

## Geoffrey Hinton Wins First David E. Rumelhart Prize

The Glushko-Samuels Foundation and the Cognitive Science Society have announced that Geoffrey E. Hinton has been chosen as the first recipient of the David E. Rumelhart Prize for contributions to the formal analysis of human cognition. Hinton was chosen for his many important contributions to the analysis of neural networks, elucidating the nature of representation, processing, and learning in the brain.

In a landmark early book with James Anderson (*Parallel Models of Associative Memory*, 1981), he pioneered the use of distributed representations and described how they can be used for semantic knowledge representation. With Terrence J. Sejnowski ("Optimal perceptual inference," 1983), he introduced the Boltzmann Machine, an important neural network architecture for finding globally optimal solutions to difficult constraint satisfaction problems, and with Sejnowski and Ackley ("A learning algorithm for Boltzmann machines," 1985) he proposed a learning algorithm for use in such networks. With David Rumelhart and Ronald Williams ("Learning representations by back-propagating errors," 1986), he introduced the back-propagation learning algorithm and made clear how it could be used to discover useful representations capturing the underlying structure of a body of

structured propositional information.

He has gone on from this important early work to make many further contributions to the field of neural networks, including studies of mixtures of experts and Helmholtz machines. His publication list includes more than 100 articles on these and a wide range of other topics. Beyond these contributions, Hinton is an outstanding mentor and advisor: 18 graduate students have earned the Ph.D. degree under his supervision.

Hinton is currently Director of the Gatsby Computational Neuroscience Unit at University College London, where he leads an outstanding group of faculty, post-doctoral research fellows, and graduate students investigating the computational neural mechanisms of perception and action with an emphasis on learning. His current main interest is in unsupervised learning procedures for neural networks with rich sensory input.

Geoffrey Hinton will receive the prize and deliver the first Rumelhart Prize Lecture in Edinburgh, Scotland at the Annual Meeting of the Cognitive Science Society, to be held August 1-4 in Edinburgh, Scotland. Information on this year's meeting is available at [www.hcrc.ed.ac.uk/cogsci2001](http://www.hcrc.ed.ac.uk/cogsci2001).

The prize will consist of a certificate, a citation of the awardee's contribution, and a monetary award of \$100,000. When originally estab-

lished in August of 2000, the prize was to be awarded biennially for outstanding contributions to the formal analysis of human cognition. Upon reviewing the pool of individuals nominated to receive the prize, the Glushko-Samuels Foundation, in consultation with the Governing Board of the Cognitive Science Society, came to the conclusion that an annual prize is warranted. With the aid of the Prize Selection Committee, the foundation determined that there exists a large pool of outstanding candidates representing each of the approaches to the formal analysis of human cognition identified in the prize announcement: mathematical modeling of human cognitive processes, formal analysis of language and other products of human cognitive activity, and computational analyses of human cognition using symbolic and non-symbolic frameworks. Awarding the prize annually should facilitate the timely recognition of major contributions arising within each of these approaches.

The recipient of the second David E. Rumelhart Prize will be announced at the Cognitive Science Society Meeting in Edinburgh, with the second prize lecture to be given at the following meeting of the society at George Mason University in July, 2002. You can read more about the David E. Rumelhart Prize at [www.cnbc.cmu.edu/derprize](http://www.cnbc.cmu.edu/derprize).

## Mapping AI Debates

Can computers think? The question of whether computers will ever replace the human brain may be one of the most important of our time as it deals squarely with who we are as humans. But the question, and surrounding debate, often dives into the arcane and bizarre (can you say “zombies”?)

For those who do not study the debate, there has been no easy way to follow either the history or its current status. Robert E. Horn, author of “Mapping Hyper-text,” the late 1980’s

work on organizing Web-based information, has come up with a solution via a communications approach. Leading a group of “information cartographers” Horn has produced a set of maps that are designed to “revolutionize argumentation and philosophical debate.”

“We originally conceived of these maps only as a teaching tool,” explains Horn, who is a visiting scholar at Stanford University’s Program on People, Computers, and Design at The Center for the Study of Language and Information. “But as they neared completion we realized that we had created both a remarkable intellectual history of the fifty-year-old debate and a clear picture of where the argu-

ments stand today.”

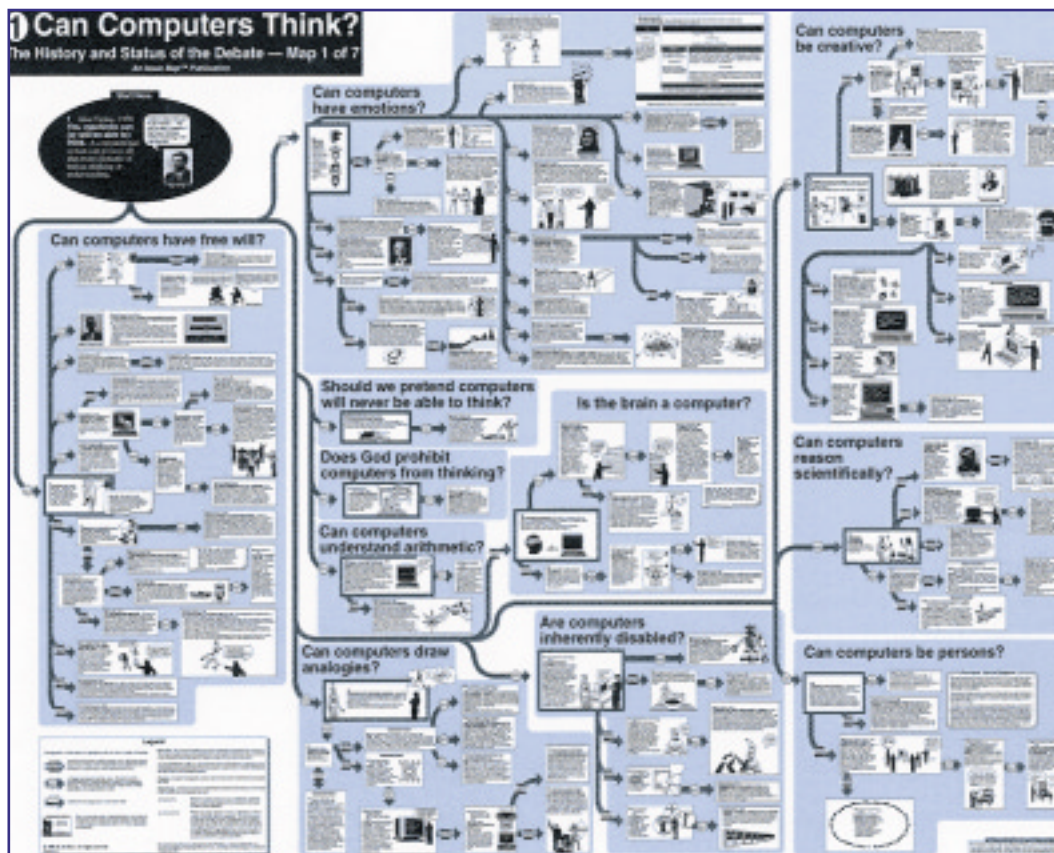
“Can Computers Think?” is a set of seven posters measuring 3 x 4 feet each and with text and graphics showing both the topical and chronological organization of the debate. Horn’s maps display arguments beginning with Alan Turing’s 1950 claim that computers would be capable of thinking, and move through over 800 individual claims, rebuttals, and counterrebuttals. Each map plots an average of 100 major claims, representing the nearly 400 cognitive scientists, philosophers, AI researchers, and mathematicians, who have weighed into the argument in a significant way.

Several hundred icons and illustra-

tions and about 60 photographs help the reader navigate, providing landmarks and visual representation of the arguments. A small handbook contains a complete bibliography, an author index, an introduction to the new map making methodology, an in-depth exploration of the cartographic metaphor, a discussion of eleven major criteria for argument selection, and frequently asked questions.

In 1950 Turing wrote in the journal, *Mind*: “I believe that at the end of the century the use of words and general educated opinion will have altered so much that one will be able to speak of machines thinking without expecting to be contradicted.” “Turing

*continued on page 8*



Can Computers Think? This is one of seven posters available from Robert E. Horn and the people of MacroVu, Inc. If you have wall space in the AI Lab, this makes a nice, if not expensive, wall covering.

## A Tool for Intelligent Conceptual Modeling

ICOM is an advanced CASE tool which allows the user to design multiple extended Entity-Relationship diagrams with inter- and intra-schema constraints. Complete logical reasoning is employed by the tool in order to verify the specification, infer implicit facts, devise stricter constraints, and manifest any inconsistency.

The intention behind ICOM is to provide a simple, freeware conceptual modeling tool that demonstrates the use of, and stimulates interest in, the novel and powerful knowledge representation based technologies for database and ontology design. The designers of ICOM are interested to cooperate with researchers and companies considering the opportunity to incorporate these technologies in their tools. A new version of ICOM for designing UML class diagrams is under development.

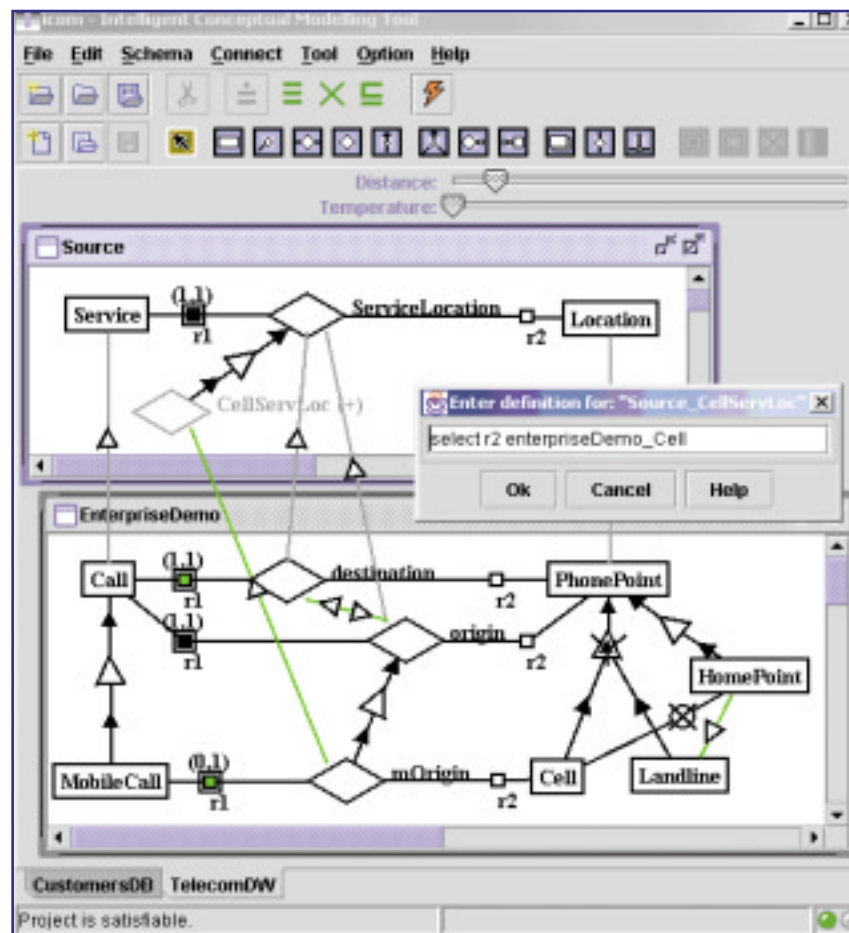
### Mapping AI Debates

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would be surprised,” says Horn. “Anyone looking at the maps can see that the debate is far from settled.” But the debate will no doubt continue long after we actually have generally intelligent machines. Of course, then I’m sure those machines will have something to add to the debate.

“Can Computers Think?” is the first in the series of the Mapping Great Debates project started in 1995 by MacroVU, Inc. The set of seven maps retails for \$99 and is available from the publisher by calling (206)780-9612. For more information, visit their Web site at [www.macrovu.com](http://www.macrovu.com).

To find out more about ICOM you will find a quick online guided tour giving a flavor of the capabilities of ICOM. visit their web page at [www.cs.man.ac.uk/~franconi/icom/](http://www.cs.man.ac.uk/~franconi/icom/). There



The Intelligent Conceptual Modeling Tool. A simple, free modeling application that runs on Windows and Linux. ICOM uses reasoning to verify a specification. Although it is freeware, the source code is still proprietary.

## Panel on Scientific Boundaries for Review Report: Phase 2

The Center for Scientific Review (CSR) at the National Institutes of Health (NIH) is continuing the second phase of the initiative recommended by its Panel on Scientific Boundaries for Review (PSBR). Phase 2 involves the design of study sections within each of the integrated

review groups (IRGs) proposed in the Panel’s phase 1 report.

Phase 2 PSBR activities began with a focus on the proposed Hematology IRG. The PSBR report recommended that a Hematology IRG be established to consider applications ranging from basic

## Microsoft: Open Source is un-American

In May, Microsoft began a broad campaign against the “open source movement.” In a speech defending Microsoft’s practices, Craig Mundie, a senior vice president at Microsoft, argued that any open source-type software “poses a threat to the intellectual property of any organization making use of it.”

Mundie’s speech comes on the heels of earlier comments coming out of Redmond, WA, home of Microsoft, that open source software is un-American. CNET.com quotes Jim Allchin, Microsoft Windows Operating System chief as saying, “I’m an American, I believe in the American Way. I worry if the government encourages open source, and I don’t think we’ve done enough education of policy makers to understand the threat.”

“Open source is an intellectual-property destroyer,” Allchin contin-

ued in CNET’s interview. “I can’t imagine something that could be worse than this for the software business and the intellectual-property business.”

Okay, we understand that every copy of Windows that is replaced with Linux or BSD means less

“Open source is an intellectual-property destroyer”

money for Microsoft. We also understand that their goal is to make as much money as possible. But I have two serious issues with their campaign against open source software

that I think readers of this column should consider.

The first issue is Microsoft’s implicit next step: educate the policy makers to understand the threat of open source software. This implies to me that Microsoft will start throwing their weight, and money, at (and to) politicians in order to have them create laws against using open source software.

Although I can’t imagine how they could make such an argument, imagine such laws were created banning open source-like software in, say, government institutions. This would be a nightmare for scientists and academics working with such “open” software projects. But this does appear to be Microsoft’s goal, and Microsoft doesn’t hesitate at blurring well-defined distinctions like “open source” and the GNU Public License.

Linus Torvalds, the originator of Linux, sums it up this way: “When Mundie wants you to think about all the work that companies have done in order to get patents, he also wants you to forget about all the work done by people like Einstein, Rutherford, Bohr, Leonardo da Vinci and a lot of other people who have done a lot more for humanity than most companies have ever done.”

Many have recently claimed that academics and open source go hand-in-hand. In fact, Dan Gazelter, a professor of biochemistry at Notre Dame University, draws the following, compelling conclusion: scientists are obligated to use open-source software, and, of more importance, the future of an increasingly computerized scientific enterprise may well depend on it.

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### Panel on Scientific Boundaries for Review Report: Phase 2

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through clinical studies focusing on blood cells and their diseases as well as studies on the coagulation system and its pathology. Currently, there are two Hematology study sections within the Cardiovascular Sciences IRG, more narrowly focused on both basic and applied aspects of the blood system including blood formation or destruction, leukemogenesis and red cell disorders, transfusion medicine, hemostasis, thrombosis, stem cell transplantation and gene therapy, using cellular, biochemical, immunological, and molecular approaches to normal and pathological processes. Basic applications in this field on clotting, pro-

teases, and vascular biology currently are widely distributed among several other IRGs.

Plans for developing the next three proposed IRGs (Muscle, Bone, Connective Tissue, and Skin; Oncological Sciences; and Biology of Development and Aging) are progressing. Steering Committees have been formed and SSB Team meetings will be convened in the next few months. You can check the CSR homepage at [www.csr.nih.gov](http://www.csr.nih.gov) periodically, as various areas of specific scientific interest may be included in developing IRGs. The Panel’s phase 1 report can be accessed at [www.csr.nih.gov/EVENTS/summary012000.htm](http://www.csr.nih.gov/EVENTS/summary012000.htm).

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## ACM Symposium on Applied Computing

For the past sixteen years the ACM Symposium on Applied Computing (SAC) has been a primary forum for applied computer scientists, computer engineers and application developers to gather, interact, and present their work. Next year the tradition continues in Madrid, Spain, March 10-14.

Of special interest is the Special Track on Agents, Interactions, Mobility, and Systems (AIMS). One of AIMS key features of consideration is the “social rationality” principle, which is often utilized instead of the “individual rationality” principle. Under social rationality, agent preference for actions account for group utility. Examples of naturally occurring and human-made multi-agent systems are e-commerce, complex space missions, the game of soccer, and ant colonies.

The study of multi-agency is thought to provide benefits for

businesses including: tools and techniques for modeling existing organizations and their dynamics by modeling the interactions among individuals; approaches to modeling and engineering electronic societies that extend automation in service of

mankind; and new tools for distributed knowledge-ware.

While considered by some to be an interesting approach to the development and implementation of large complex systems, mobile and multi-agent systems (MMS) are not uncontroversial. There are those who view them as just a fad

that in the long run will not be able to bring a significant breakthrough in the development of large complex systems. Also, there are those who believe that these systems are just a repackaging of old ideas, and claim that while nothing particularly new is being brought to the table, there is potential in this approach from the application developer’s viewpoint.

However, SAC is extending invitations to the critics of the MMS approach who can scientifically demonstrate why the MMS framework will not lead to realistic breakthroughs. They are also interested in submissions from researchers of foundations of MMS and developers of niche applications. SAC welcomes papers that approach MMS-related issues from different perspectives (e.g. decision theory versus belief, desire, and intention.)

The meeting is designed to bring together those interested in any aspect of multi-agency and agent mobility including: e-commerce, shopbots, robotics, defense, manufacturing, aerospace system architectures, and software engineering to name but just a few. While SAC is open to submissions dealing primarily with the theoretical considerations, it should be stressed that this track appears in the context of a conference devoted to applied computing. Thus, they may be biased toward submissions that are more applied in nature. More information about SIGAPP and past SACs can be found at [www.acm.org/sigapp](http://www.acm.org/sigapp).

Seattle between August 4 - 10, you can query the Man himself about Truth, Justice, and the American Way; Bill Gates is schedule to give the keynote address entitled “AI in the Computing Experience: Challenges and Opportunities” on Tuesday, August 7. Let’s hope that Microsoft provides more opportunities than challenges.

To find out more about developing and using Linux and open source software in education, see the Simple End User Linux Web site at [www.seul.org/edu](http://www.seul.org/edu).

Multi-agent systems  
are not  
uncontroversial

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### Microsoft: Open Source is un-American

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You can see a recent presentation of Gazelter on these ideas and the Open Science Project at [www.openscience.org/talks/bnl/](http://www.openscience.org/talks/bnl/).

The second issue I have with Microsoft’s party line is the assumption that their practices somehow embody the American entrepreneurial spirit. Maybe you agree with that point of view, and that’s fine. But let’s let that All American Competition decide rather than making laws banning one of the players from the game.

If you are going to AAAI-IJCAI in

NSF has a new FAQ about its Faculty Early Career Development (CAREER) Program, at [www.nsf.gov/cgi-bin/getpub?nsf0197](http://www.nsf.gov/cgi-bin/getpub?nsf0197). The updated program announcement is at [www.nsf.gov/cgi-bin/getpub?nsf0184](http://www.nsf.gov/cgi-bin/getpub?nsf0184).

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Want to be a reviewer for NSF proposals? Contact a program officer and volunteer. You can send a resume, aimed at the subject area you wish to review—but a simple letter, email message, or phone call may be sufficient. A Ph.D. is not required, though it may help. Other federal agencies may also be looking for reviewers; contact program officers directly, or look through the Federal Register for calls for reviewers via the search engine at [www.access.gpo.gov/su\\_docs/aceds/aces140.html](http://www.access.gpo.gov/su_docs/aceds/aces140.html).

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Bijan Parsia is writing an introduction to Prolog and the RDF resource description language, on O'Reilly's XML.com Web site. Part one can be found at [www.xml.com/pub/a/2001/04/25/prologrdf/index.html](http://www.xml.com/pub/a/2001/04/25/prologrdf/index.html). Subsequent parts will use SWI-Prolog.

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The debate about self-archiving of scientific literature has surfaced in many places: in the April 26 issue of Nature, with the article [www.cogsci.soton.ac.uk/~harnad/Tp/naturenew.htm](http://www.cogsci.soton.ac.uk/~harnad/Tp/naturenew.htm), and an online discussion at [www.nature.com/nature/debates/e-access/index.html](http://www.nature.com/nature/debates/e-access/index.html). One of Stevan Harnad's position papers is [www.cogsci.soton.ac.uk/~harnad/Tp/nature3.htm](http://www.cogsci.soton.ac.uk/~harnad/Tp/nature3.htm). Science magazine is also running an online debate, at [www.sciencemag.org/cgi/eletters/291/5512/2318a](http://www.sciencemag.org/cgi/eletters/291/5512/2318a) and [www.sciencemag.org/cgi/eletters/291/5512/2318b](http://www.sciencemag.org/cgi/eletters/291/5512/2318b). See also the American Scientist September Forum at [amsci-forum.amsci.org/archives/september98-forum.html](http://amsci-forum.amsci.org/archives/september98-forum.html).

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Since 1995, the archived CEUR Central European workshop proceedings have been online including knowledge representation and management, ontology management, medical image processing, and data warehousing. See [sunsite.informatik.rwth-aachen.de/Publications/CEUR-WS/](http://sunsite.informatik.rwth-aachen.de/Publications/CEUR-WS/).

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IEEE Transactions on Evolutionary Computation is seeking articles. Six issues per year, with mean time for first review of just over three months.

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For machine learning approaches to shallow parsing see the Journal of Machine Learning Research. Authors are encouraged to use one of the CoNLL workshops data sets at [lcg-www.uia.ac.be/conll2000/chunking](http://lcg-www.uia.ac.be/conll2000/chunking) or [lcg-www.uia.ac.be/conll2001/clauses/](http://lcg-www.uia.ac.be/conll2001/clauses/).

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For information on neural networks, other computational intelligence methods, and related applications see TASK Quarterly Journal, from the Polish Neural Networks Society at [www.task.gda.pl/quart](http://www.task.gda.pl/quart).

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Information Science Journal is seeking material for its first issue, on or before May 2002. Humanitarian health care using computer automation may be a special focus.

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The SIAM Working Group on CSE Education has released a study of model CSE programs, including Stanford, Texas-Austin, Illinois-Urbana, Purdue, ETH Zurich, and the Royal Institute of Technology in Stockholm. See [www.siam.org/journals/sirev/43-1/37974.html](http://www.siam.org/journals/sirev/43-1/37974.html). A list of CSE graduate degree programs can be found at [www.siam.org/world/compsci/cplsci.htm](http://www.siam.org/world/compsci/cplsci.htm). See also [www.cra.org/cra-bulletin/4.19.01.html](http://www.cra.org/cra-bulletin/4.19.01.html).

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IEEE is publishing "The Woman's Guide to Navigating the Ph.D. in Engineering and Science" by Lazarus, Ritter, and Ambrose. See [www.cra.org/cra-bulletin/4.19.01.html#ie](http://www.cra.org/cra-bulletin/4.19.01.html#ie).

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The Center for Women and Information Technology (CWIT) offers news and career resources for women (and girls) in IT. See [www.umbc.edu/cwit](http://www.umbc.edu/cwit).



Women's Work helps women get started in online work or setting up their own businesses. See [www.wwork.com](http://www.wwork.com).



The Online Women's Business Center is a training ground for entrepreneurial women. See [www.onlinewbc.org](http://www.onlinewbc.org).



"Pacific NW Professionals—Women" is an online community where female professionals in the Pacific North West discuss jobs, contracts, networking, Web production, marketing, content development, graphic design, technical writing, high tech, and other Internet-related businesses. Subscribe with a message to [NW\\_Woman-subscribe@yahoogroups.com](mailto:NW_Woman-subscribe@yahoogroups.com).



SimpliFind searches the Internet for concepts and contexts rather than keywords. Simpli.com says it uses "a robust search technology rooted in principles of cognitive science, psychology, linguistics, and computer science." See [www.simpli.com](http://www.simpli.com).



The Haystack project attempts to bring adaptive information retrieval techniques (such as Harvest or Content Routing) to ordinary users, creating individual but interacting personal information repositories ("haystacks"). See [haystack.lcs.mit.edu/introduction.html](http://haystack.lcs.mit.edu/introduction.html).



You know that the Web is getting big when there are search engines to find search engines! Complete Planet helps with finding databases and search engines for online research projects. See [completeplanet.com](http://completeplanet.com).



Difee offers a simple, uncluttered collection of search engines at [www.difee.com](http://www.difee.com).



A dozen meta-search engines are described in the tutorial at [www.indiana.edu/~librcsd/search/meta.html](http://www.indiana.edu/~librcsd/search/meta.html).



Effective Searching is a collection of special-purpose search engines. See [home.ncia.com/~slarsson/search.html](http://home.ncia.com/~slarsson/search.html).



Specialized Search Engines is another place to start your online research. See [www.infinisource.com/special-search-engines.html](http://www.infinisource.com/special-search-engines.html).



The Invisible Web is a search engine for finding special-purpose search engines. See [www.invisibleweb.com](http://www.invisibleweb.com).



The Lookup Center is another portal for accessing specialty searches: telephone numbers, dictionaries, quotations, encyclopedias, Web searches, maps, zip codes, package tracking, etc. You can find it at [www.installationsplus.com/lookup.htm](http://www.installationsplus.com/lookup.htm).



PeopleSpot.com is a library service for researching people, past or present. See www.peoplespot.com. The MapPlanets geographic search engine and Internet community lets you link your Web site with any of 800M locations on Earth. Find it at www.mapplanet.com.

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Northern Light also offers a GeoSearch capability for finding U.S. and Canadian businesses. See www.northern-light.com/geosearch.html.

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Karnak is a "persistent" search engine where you can save search queries and run them later to find new sites. See karnak.com.

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The following links have many of the events of interest to those working on Multi-agent systems: www.AgentLink.org/happenings/other-events.html, and www.multiagent.com/Conferences/index.html.

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Computists International provides the main source of this column's news tidbits. You can find The CI-Freebies at www.egroups.com/group/CI-Freebies, which is now a Yahoo! Group.

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