

New Age E-Journals, Indexes, and Services

Gerry McKiernan

In this *Sci-5* column, we profile five innovative electronic journals, indexes, or services that “transcend the limitations of paper.” While it is common for many publishers to use the Internet to disseminate only electronic analogs of their print counterparts, an increasing number have gone beyond such conventional practice to provide innovative features, functionalities, and content in their online offerings. In an effort to reduce the burden caused by the scattering of potentially relevant literature in an ever-increasing number of electronic journals, some publishers, for example, have created the *virtual journal*, a topical e-journal without original content that consists entirely of select articles chosen from other electronic sources. Recognizing the fundamental nature and benefit of the digital environment, other journal publishers encourage authors to embed molecular structures within text to empower readers to manipulate

Gerry McKiernan, AB, MS, is Associate Professor, Science and Technology Librarian, and Bibliographer, Iowa State University Library, Ames, IA (E-mail: gerrymck@iastate.edu).

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<http://www.haworthpress.com/store/product.asp?sku=J122>

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3-D virtual objects or offer novel functionalities that enable readers to customize the structure and layout of articles. While still other publishers have chosen to integrate their Web-based publications, databases, and services into an interconnected and dynamic whole.

CITE: McKiernan, Gerry. 2002. "E is for Everything: The Extra-Ordinary, Evolutionary [E-]Journal," *The Serials Librarian* 41 nos. 3/4: 293-321.

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WHAT? *Astronomy and Astrophysics* [SOM Index]

WHERE? <http://simbad.u-strasbg.fr/A+A/map.pl>

WHEN? 1994-2000

WHY? The Strasbourg Data Centre (CDS) of the Strasbourg Astronomical Observatory, France, collects and organizes a variety of astronomical data and information, notably bibliographic data for a variety of astronomical publications (e.g., *Astrophysical Journal*, *Astronomical Journal*, *Astronomy and Astrophysics*, and *Astronomy and Astrophysics. Supplement*).

HOW? "The CDS bibliographical map is a tool for organizing astronomical text documents into a meaningful map for exploration and search. The system is based on the Kohonen Self Organizing Map (SOM) algorithm that automatically organizes documents into a two-dimensional grid so that related documents appear close to each other and general topics appear in well defined area." The SOM graphical WWW interface "allows the visualization of the document distribution" . . . [and] shows the localization of documents related to given topics . . . The map is clickable and provides links to the documents . . ." Presently, the SOM map provides access to 10,321 articles from the journal *Astronomy & Astrophysics* for the period 1994-2000.

"The SOM map is presented as a density map, which represents graphically the areas containing papers of similar content and the number of documents in these areas." By clicking on the image, the user can select one node of the map to obtain information about the articles located at this node. The number of documents and the keywords describing them are displayed within a right-side frame. The user can also access a detailed 'semantic' map and/or the article record (e.g., title, author(s), abstract) as well as link to other services of CDS, notably access to the NASA Astrophysics Data System (ADS), which includes links to document full text, if available.

To use the interface and retrieve relevant articles, users select an appropriate node on the semantic map; in turn the keywords associated with the node are listed in a right-side frame. A hyperlinked entry indicating the number of documents containing any of the selected keywords is displayed above the keyword listing in the right-hand frame. Upon selecting the hyperlinked number, entries for those records are displayed in the left-side frame where the SOM map had originally appeared.

In selecting the hyperlinked bibliographic code for any entry in the listing, the full record is displayed in this same frame, replacing the list. The basic record includes standard bibliographic data as well as a link to the corresponding record within the ADS service. The ADS record offers access not only to the document full-text in a variety of formats, when available, but also includes separate links to the references in the source documents, and to a listing of works that cite it, if available. In addition, the ADS service provides links to related documents in the ADS database with 'Similar Abstracts' and 'Also-Read Articles' functionalities.

The *Astronomy and Astrophysics* index database can also be searched using a keyword text query option.

WHO? Centre de Données astronomiques de Strasbourg (CDS), France

CITE: Phillippe Poinçot, Soizick Lesteven, and Fionn Murtagh. 1998. "A Spatial User Interface to the Astronomical Literature," *Astronomy & Astrophysics. Supplement Series* 130: 183-191. Available at: <http://www.edpsciences-usa.org/articles/astro/pdf/1998/10/ds1464.pdf> [27 October 2002].

Phillippe Poinçot, Soizick Lesteven, and Fionn Murtagh. 2000. "Maps of Information Spaces: Assessments from Astronomy," *Journal of the American Society for Information Science* 51 no. 12 (October): 1081-1089.

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WHAT? *Internet Journal of Chemistry*

WHERE? <http://www.ijc.com/>

WHEN? 1998-Present

WHY? The *Internet Journal of Chemistry* (IJC) is an electronic-only e-journal with the primary aim of publishing "the results of high-quality research in all areas of chemistry." As an electronic-only journal, a concurrent aim of *IJC* is to fully utilize the inherent potential of the Internet and the World Wide Web to create an "enhanced chemical publication" that empowers authors as well as readers.

HOW? To facilitate the publication of *IJC* as an enhanced journal, authors are required to submit their manuscripts in the latest version of the HyperText Markup Language (HTML). PostScript, TeX, or other word processing software or formats, are not accepted.

To enable readers to better understand the concepts and research presented, *IJC* contributors are encouraged to incorporate animation in their submission; clips can be submitted in one of the common video formats (e.g., MPEG (Moving Picture Experts Group) (i.e., .mpg), SGI Movie (i.e., .movie) or Apple QuickTime (i.e., .qt or .mov). Authors can also embed molecular structures in appropriate file formats to empower readers to manipulate, resize, rotate, and magnify these three dimensional virtual objects using applicable software. In general, authors are encouraged to utilize any and all Internet tools that will enhance reader interaction and comprehension, notably Chemscape Chime™, the chemical structure visualization plug-in that allows hypermolecules to be embedded directly within an HTML document. Recognizing the value and potential interest of some readers, *IJC* also encourages submissions that include data sets as supplemental files.

IJC offers a number of options for reader customization of select features, functionalities, and content, including:

- Interactive features size and style. Readers may change the size of the area allotted for the display of hypermolecules as well as specify the display style (e.g., wire frame, ball-and-stick, spacefill, etc.);
- Units conversion. Within *IJC*, temperature, energy, and length base units can be converted into other base units (e.g., Celsius to Fahrenheit) on-the-fly by the reader;
- References. Within the body of an article, readers may choose among five options for the link style for a reference. Within the reference list, readers can display the journal title in full or as a standard American Chemical Society (ACS) journal abbreviation, or display the order of author names in standard (e.g., J.A. Smith) or inverted order (e.g., Smith, J.A.);
- Layout. Of all available customization options, the configuration choices for page layout are the most varied. Readers may choose from a 'classic' format or one that provides for individual article browsing; a 'classic' format with references in an independent window; or one that provides for individual article browsing with references in independent windows, among others;
- Margin notes/annotations. Within *IJC*, readers may annotate individual sections of an article with personal annotations. Annotations may be displayed and read in a lower frame beneath the article or displayed in an independent window.

As part of its commitment to be at the “forefront of Internet technology,” those involved with the management of *IJC* plan to continually develop new resources that will enhance its utility. They anticipate the development of text and structure search utilities, adoption of the Chemical Markup Language (CML), active participation in the development of browser plug-ins, Java scripts, and external and related applications.

In October 1999, SPARC (Scholarly Publishing and Academic Resource Coalition), an initiative of the Association of Research Libraries (ARL), announced the *Internet Journal of Chemistry* as a ‘Leading Edge Partner.’

WHO? Steven M. Bachrach, Dr. D.R. Semmes Distinguished Professor of Chemistry, Department of Chemistry, Trinity University, San Antonio, Texas.

CITE: McKiernan, Gerry. 2001. “The *Internet Journal of Chemistry*: A Premier Eclectic Journal,” *Library Hi Tech News* 18, no. 8: 27-35.

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WHAT? NEC Research Institute ResearchIndex

WHERE? <http://citeseer.nj.nec.com/>

WHEN? 1997-Present

WHY? The NEC Research Institute ResearchIndex is a Web-based indexing service that can identify and index citations found within Web-based electronic publications without human intervention. In addition to indexing electronic journals, ResearchIndex can automatically index non-journal Internet-based literature including reports, conference papers, preprints, and other types of gray literature. It offers users the opportunity to view the textual context of a cited work and provides access to the full text of any incorporated source document. Access to related and similar work in the ResearchIndex corpus is also provided.

HOW? Autonomous citation indexing (ACI) significantly reduces the time and effort required to identify and index Internet documents and their associated citations by completely automating the citation identification and indexing process. ACI technology is the foundation of ResearchIndex also known as CiteSeer.

The ACI system uses search engines such as AltaVista, HotBot, and Excite to identify publications for citation indexing. In addition, electronic discussion lists and newsgroups are also monitored. In addition to searching obvious publication sites, the ACI also searches for any Web page that contains such words as ‘publication,’ ‘papers,’ or ‘postscript.’ To process these and other electronic publication formats, the ACI system downloads selected documents and con-

verts these, where necessary, to ASCII text, and stores these into a separate database.

Once a section or citation is identified, the ACI system extracts individual citations, delineating these by citation identifiers, vertical spacing, indentation, or font. The ACI system identifies such elements as author, title, year of publication, and source publication using an invariant first heuristics method, a technique that makes use of the relatively uniform syntax, position, and composition found in most citation formats.

In the current version of ResearchIndex, users can search the indexed source documents ('Search Documents') or search "citations made by indexed documents" ('Search Citations'). The former offers a keyword search by any word, phrase, or name, while that latter allows for a keyword search by a cited author (e.g., 'Berners-Lee'), publication title (e.g., 'Authoritative Sources in a Hyperlinked Environment'), or source ('Journal of the ACM'). By default, the results of a citation search are displayed in reverse chronological order by year ('citations weighted by year'). For such searches, each entry is linked to a separate record that provides an excerpt of the document text in which a cited work is noted ('Context'), as well as links to the document full-text in a variety of full-text formats (e.g., 'PDF,' 'PS.gz,' 'PS') and to documents related to the citing document.

Currently, the ResearchIndex is limited to the literature of computer science.

WHO? Steve Lawrence (NEC Research Institute), Kurt Bollacker (now Long Now Foundation/ALL Species), C. Lee Giles (now Pennsylvania State University and NEC Research Institute).

CITE: McKiernan, Gerry. 2000. "ResearchIndex: Autonomous Citation Indexing on the Web," *International Journal on Grey Literature* 1 no. 1: 41-46.

Steve Lawrence, Kurt Bollacker, and C. Lee Giles. 2000. "Digital Libraries and Autonomous Citation Indexing," *IEEE Computer* 32, no. 6: 67-71. Available at: <http://www.neci.nec.com/~lawrence/papers/aci-computer98/aci-computer99.pdf> [26 October 2002].

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WHAT? TheScientificWorld

WHERE? <http://www.thescientificworld.com/>

WHEN? 2000

WHY? *TheScientificWorld* is “an integrated scholarly Web portal to services, resources, and products intended to enhance and accelerate the research efforts of science professionals.” Within its dynamic and interlinked system, individuals are able to:

- access a free bibliographic database;
- retrieve the full-text of indexed publications;
- search or browse an integrated multidisciplinary electronic journal;
- electronically prepare, submit, and publish a peer-reviewed paper;
- request personalized e-mail alerts to the latest scientific and clinical research findings, news, and funding opportunities;
- search, browse and locate the most modern methods and protocols in the life sciences;
- search or browse forthcoming meetings;
- prepare, submit and review funding proposal applications online;
- procure equipment, supplies or biological materials online; and
- access major Web references, resources and tools.

HOW? Among its many resources, *TheScientificWorld* offers the following:

Publications

TheScientificWorldJOURNAL is “a single unified environment for the publication of all high-quality science,” drawn from several dozen scientific disciplines within the life, biomedical and environmental sciences. *TheScientificWorldJOURNAL* accommodates original research reports and short communications, critical and summary reviews, methods and protocols, as well as commentaries, columns, professional society news, book and Web site reviews, and letters.

Directions in Science contains “non-technical articles written by leading scientists that place recently published ‘hot papers’ in a wider context and promote interdisciplinary collaboration and exchange of ideas.”

dynamicREVIEWS provides “topical scientific reviews incorporating online dynamic linkage to constantly updated scientific and literature databases. The *dynamicREVIEWS* include graphical interfaces that enable intuitive navigation of the linkage between the published scientific literature and the very latest scientific findings deposited in various external scientific databases . . .”

Collections offers “thematic databases of topical peer-reviewed articles, short reports and abstracts emanating from meetings of scientific societies and other professional scientific organizations.”

Database Products

sciBASE “provides free searching and viewing of bibliographic data and abstracts to a unique collection of the world’s premier databases of scientific, technical and medical research literature. *sciBASE* contains more than 30 million records of documents published since 1965 in more than 30,000 journals and 100,000 conference proceedings. *sciBASE* records are linked online to full-text articles from many publishers of journals in the life sciences and environmental sciences.”

methodsBASE “is a unique online resource that enables scientists to search, browse and locate the most up-to-date methods and protocols in the life sciences. *methodsBASE* contains more than 190,000 classified and indexed records describing current and classic experimental procedures selected from scientific journals, as well as books, conference proceedings, U.S. patents and websites. . . . [I]n addition, integration with *sciBASE* allows online linkage to cited published articles.”

worldMEET is “a searchable database of over 6,000 records of worldwide scientific conferences, symposia, workshops, and business and science events through the year 2012. Users can search for, and be alerted to, upcoming events based on title, classification, date, organization, author, exhibitor, sponsor, and location,” as well as access event Websites.

Alerting Services

scienceTRACKER is “a user-defined alerting service [that] notifies subscribers . . . [of] new, relevant research published in over 30,000 journals and in recent conference proceedings. In addition, subscribers can be alerted to forthcoming scientific events in their field.”

FundingALERT is a “service alerts users to new science funding opportunities. An average of 200 new funding opportunities are detailed each week. Content sources include: federal, state and local government agencies, U.S. foundations and other non-profit foundations, and R&D corporations.”

WHO? TheScientificWorld was founded by Jeffrey G. Hillier, PhD, the company’s current President of Information Services, who formerly served as Senior Vice President of CRC Press and as Managing Director of Elsevier Biomedical Press; and by Eric Tomlinson, PhD, DSc, the company’s Chief Executive Officer, who formerly served as the CEO and President of GeneMedicine, Inc., and as Worldwide Head, Advanced Drug Delivery Research, Ciba-Geigy Pharmaceuticals.

CITE: McKiernan, Gerry. 2000. “TheScientificWorld: An Integrated, Scholarly Knowledge Network,” *Library Hi Tech News* 19 no. 2: 21-29.

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WHAT? *Virtual E-Journals in Science and Technology*

WHERE? <http://www.virtualjournals.org/>

WHEN? 2000

WHY? ‘Virtual journals’ offer access to “all the papers on a given topic that appear in a wide range of premier physics-related journals users” and provide users “with quick, convenient access to information in cutting-edge fields.”

HOW? There are presently five *Virtual E-Journals in Science and Technology*:

- *Applications of Superconductivity*
- *Biological Physics Research*
- *Nanoscale Science & Technology*
- *Quantum Information*
- *Ultrafast Science*

Each of the virtual journals presents an online collection of relevant papers from a broad range of source journals in the physical sciences. Articles are selected from all the journals published by American Physical Society (APS) and the American Institute of Physics (AIP), journals issued by participating publishers in the AIP Online Journal Publishing Service (OJPS), and also *Science*, and *Nature*. Publishers and journals from which relevant papers are selected include:

American Physical Society

Physical Review Letters
Physical Review A
Physical Review B
Physical Review C
Physical Review D
Physical Review E
Physical Review Special Topics—Accelerators and Beams
Reviews of Modern Physics

American Institute of Physics

Applied Physics Letters
Chaos
Journal of Applied Physics
Journal of Chemical Physics

Journal of Mathematical Physics
Journal of Physical and Chemical Reference Data
Low Temperature Physics
Physics of Fluids
Physics of Plasmas
Review of Scientific Instruments

American Association for the Advancement of Science

Science

Nature Publishing Group

Nature

Acoustical Society of America

Journal of the Acoustical Society of America
Acoustics Research Letters Online

Optical Society of America

Journal of the Optical Society of America A
Journal of the Optical Society of America B
Journal of Optical Technology
Optics Express

SPIE–The International Society for Optical Engineering

Journal of Biomedical Optics
Journal of Electronic Imaging
Optical Engineering

Russian Academy of Sciences (published by MAIK/Nauka)

Acoustical Physics
Astronomy Letters
Astronomy Reports
Crystallography Reports
Doklady Physics
Journal of Experimental and Theoretical Physics (JETP)
Optics & Spectroscopy
JETP Letters
Physics of Atomic Nuclei
Physics of the Solid State

Plasma Physics Reports
Semiconductors
Technical Physics
Technical Physics Letters

Most of the articles appearing in the *Virtual Journals* series are linked to the full-text within the Online Journal Publishing Service platform (OJPS); for these, direct links to all available full-text formats are included in Tables of Contents and abstracts. For the journals that have full-text residing on other platforms, such as *Science*, links to the Source Journal Abstract must be followed in order to access document full-text. For users affiliated with institutions that hold subscriptions, access to selected articles will be seamless. Subscribers also have the ability to search across all issues of the virtual journal. For journals for which there is no current subscription, users are provided an opportunity to purchase an online PDF version of the article.

A free e-mail alerting service is currently available for four of the *Virtual Journals*. Subscribers may choose to receive the table of contents alerts for newly published issues in either ASCII text or HTML format. Alerts in the HTML format are linked to abstracts and full text.

WHO? The American Institute of Physics (AIP) and the American Physical Society (APS) have jointly developed the series of *Virtual Journals* in the physical sciences. Editors who are expert in the particular fields select articles appearing in the series.

CITE: McKiernan, Gerry. 2002. "E is for Everything: The Extra-Ordinary, Evolutionary [E-]Journal," *The Serials Librarian* 41 nos. 3/4: 293-321.

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NOMINATIONS

Members of the science and technology community are invited to nominate quality science and technology Web sites and resources for potential review in *Sci-5*. Of greatest interest are sites with uncommon but useful content, and those with innovative features and functionalities. Nominations should be sent to Gerry McKiernan (gerrymck@iastate.edu).