The Charleston ADVISOR

Critical Reviews of Web Products for Information Professionals

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Project Euclid: Mathematics and Statistics Journals

Date of Review: May 15, 2004

Composite Score: ★★★★ 7/8

Reviewed by: Gerry McKiernan
Parks Library, Iowa State University
152 Parks
Ames, Iowa 50011
<gerrymck@iastate.edu>

Pricing Options

The Project Euclid environment supports four different access and distribution plans for journal full-text content from its partner publishers:

- *Euclid Prime:* an aggregation of selected journals available via subscription from Project Euclid
- *Euclid Select:* journal titles available via individual subscription from Project Euclid
- *Euclid Direct:* individual journal titles whose access is controlled by publishers
- *Open Access:* journal titles with no access restrictions

Pricing for the Euclid Prime collection varies with the nature of the subscribing institution or organization and the size of its potential user population (Table 1).

Through the Euclid Select option users can subscribe to individual electronic journal titles (Table 2). A discount is offered on individual e-journal titles to subscribers of the Euclid Prime collection.

Through its Euclid Direct program, Project Euclid also provides electronic access to a number of journals not included in either its Euclid Prime or Euclid Select options. Subscription rates for these Euclid Direct journals are established by their respective publishers, and interested subscribers should contact the publisher directly (Table 3). In select cases, a publisher may offer access to individual articles on a pay-per-view basis (Figure 3). Regardless of the pricing options for full-text access, Project Euclid offers free searching and access to the table of contents and abstracts for all journals in its collection.

Product Description

Launched in May 2003, Project Euclid: Mathematics and Statistics Journals On-line <http://projecteuclid.org> is (as described on its home page, Figure 1)

> a user-centered initiative to create an environment for the effective and affordable distribution of serial literature in mathematics and statistics. [It has been] … designed to address the unique needs of independent and society journals through a collaborative partnership with scholarly publishers, professional societies, and academic libraries.

Specifically, the mission of Project Euclid is "to advance scholarly communication in the field of theoretical and applied mathematics and statistics" and to provide

> advanced functionality, without sacrificing … intellectual or economic independence or commitment to low subscription prices. Full-text searching, reference linking, interoperability through the Open Archives Initiative, and long-term retention of data are all important components of the project.

GENERAL CONTENT

Four options are available for accessing the full text of Project Euclid journals: Euclid Prime (EP), Euclid Select (ES), Euclid Direct (ED), and Open Access (OA).

While the Euclid Prime aggregation (EP) "provides access to a growing collection of electronic scholarly journal content in mathematics and statistics," the Euclid Select (ES) option provides access to "a group of journals available from Project Euclid on a title by title basis." Through Euclid Direct (ED), electronic access is provided "to a number of journals not included in the models above. These journals control their own electronic subscriptions under various terms" (Table 3). Lastly, one journal, the *Annals of Mathematics*, is currently provided on an Open Access (free-of-charge) basis. A compendium of the "access terms" of each journal incorporated within Project Euclid is available <http://projecteuclid.org/Access>.

Table 1 **2004 Prices for the Euclid Prime Collection. The Euclid Prime collection offers low-priced subscriptions for a range of institutional subscribers.**

Academic Libraries	1–2,000 FTE	$950
	2,001–5,000 FTE	$1,250
	5,001+ FTE	$1,450
Community College Libraries	1–1,500 FTE	$ 800
	1,501–4,000 FTE	$1,000
	4,001+ FTE	$1,300
Public Libraries (population served)	less than 250,000	$ 800
	less than 500,000	$1,000
	greater than 500,000	$1,300
K–12 School Libraries	Flat rate	$ 350
State Libraries	Flat rate	$1,450
Government Agencies	1–50 employees	$ 950
	50–250 employees	$1,250
	250+ employees	$1,450
Special Libraries (not-for-profit)	1–10 employees	$ 950
	11–50 employees	$1,250
	51+ employees	$1,450
For-profit CorporationLibraries	1–10 employees	$1,900
	11–50 employees	$2,500
	51+ employees	$2,900

Consortia: Contact a Euclid subscription agent.

Journal	Electronic Only		Add-on to Print	
	Price	Discounted Price*	Price	Discounted Price*
Bulletin of Symbolic Logic *Journal of Symbolic Logic*	$475	$428	$75	$68
Bernoulli	$303	$273	Print subscribers: International Statistical Institute	
International Statistical Review	$174	$157		

*Discounted price available to Euclid Prime subscribers.

Table 2 **2004 Prices for the Euclid Select Program. Through the Euclid Select program, institutions can subscribe to select individual e-journals.**

As of mid-May 2004, Project Euclid offered access to 33 currently available or forthcoming journal titles that included:

Abstract and Applied Analysis [EP]
Advances in Applied Probability [ED]
Advances in Theoretical and Mathematical Physics [EP] (Forthcoming)
The Annals of Applied Probability [ED]
Annals of Mathematics [OA]
The Annals of Probability [ED]
The Annals of Statistics [ED]
Asian Journal of Mathematics [EP] (Forthcoming)
Bernoulli [ES]
Bulletin of the Belgian Mathematical Society-Simon Stevin [EP]
Bulletin of Symbolic Logic [ES]
Canadian Applied Mathematics Quarterly [EP]
Communications in Analysis and Geometry [ED] (Forthcoming)
Communications in Information & Systems [EP] (Forthcoming)
Communications in Mathematical Sciences [EP] (Forthcoming)
Current Developments in Mathematics [EP] (Forthcoming)
Duke Mathematical Journal [ED]
Experimental Mathematics [EP]
Homology, Homotopy and Applications [EP] (Forthcoming)
International Statistical Review [ES]
Internet Mathematics [EP]
Journal of Applied Mathematics [EP]
Journal of Applied Probability [ED]
Journal of Differential Geometry [ED]
Journal of Symbolic Logic [ED]
Journal of Symplectic Geometry [EP] (Forthcoming)
Kodai Mathematical Journal [EP]
Methods and Applications of Analysis [EP] (Forthcoming)
Michigan Mathematical Journal [ED]
Notre Dame Journal of Formal Logic [EP]
Review of Modern Logic [EP]
Revista Matemática Iberoamericana [EP]
Statistical Science [ED]

Table 3 **Publishers participating in Euclid Direct (listed here with their associated titles) control access to their electronic journals within Project Euclid.**

Publisher	Titles
Applied Probability Trust	*Advances in Applied Probability* *Journal of Applied Probability*
Duke University Press	*Duke Mathematical Journal*
Institute of Mathematical Statistics	*The Annals of Applied Probability* *The Annals of Probability* *The Annals of Statistics* *Statistical Science*
International Press	*Communications in Analysis and Geometry*
Lehigh University	*Journal of Differential Geometry*
University of Michigan, Department of Mathematics	*Michigan Mathematical Journal*

Although there are notable exceptions—for example, *Michigan Mathematical Journal* [volume 1 (1952)–present]—in general access is provided to the most recent volumes of individual journals. In a few select cases, access is provided only to a current volume (e.g., *Journal of Applied Differential Geometry*). Project Euclid has encouraged all participating publishers to digitize their respective backfiles. In the case of the Euclid Prime, it is Project Euclid policy "to make all backfile[s] from publishers participating in this plan available on an Open Access basis after 5 years" (Teresa Ehling, e-mail communication, 14 May 2004).

Selected journal Project Euclid journals are indexed in the Thomson ISI Web of Science (ISI Web of Knowledge) <http://isiwebofknowledge.com/>. Based on the ISI Journal Citation Reports (2002) <http://www.isinet.com/products/evaltools/jcr/>, *Statistical Science* (1.475), *The Annals of Applied Probability* (.889), and *International Statistical Review* (.688) are among the journals in the field of "Statistics and Probability" that have significant "impact factors," while the *Annals of Mathematics* (1.905), *Duke Mathematics Journal* (.909), and *Journal of Differential Geometry* (.478) are among those in the field of "Mathematics" with bibliometric impact.

From the Project Euclid home page, users can Browse Journals from List, access alphabetical listings of journals by title, publisher, or disciplines, perform a Quick Search, or access an Advanced Search function (Figure 1).

While Project Euclid currently provides access only to published articles, there are plans to also include "unpublished pre-prints, published articles from journal back issues, and digitized monographs" <http://projecteuclid.org/Dienst/UI/1.0/Help>.

BROWSING

Individual Project Euclid journal titles can be browsed by selecting from a pull-down menu located beneath the Quick Search query box

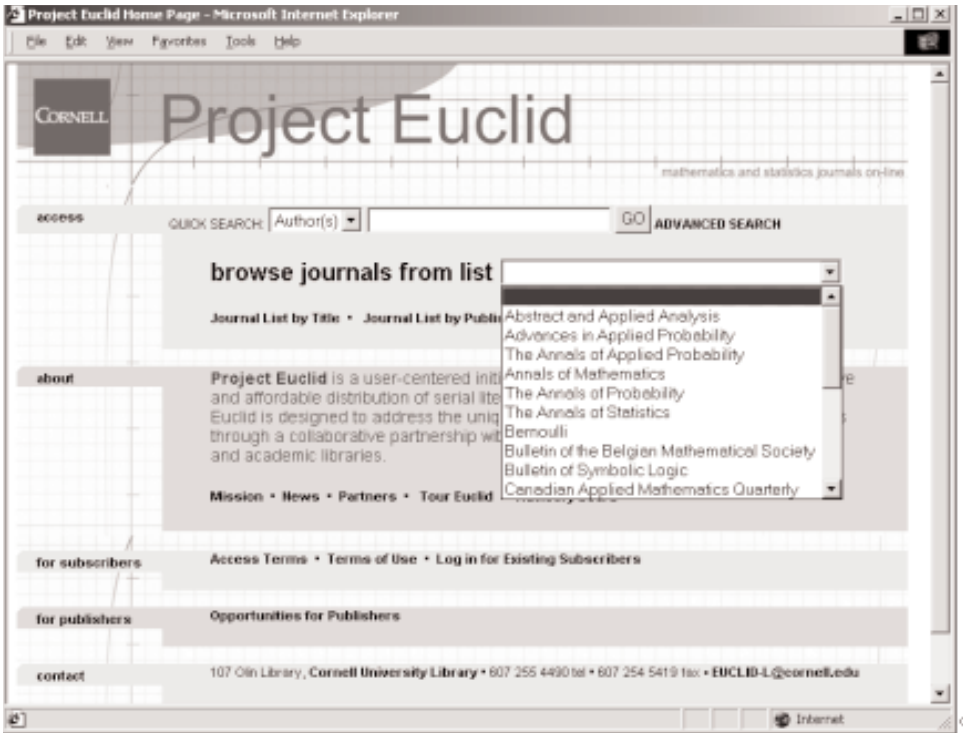

Figure 1 **Project Euclid home page showing listing of select journals from a pull-down menu ("browse from list").**

(Figure 1). Upon selection, the journal page for the title is displayed with an associated table of contents (Figure 2). The journal page may provide a scope or historical note on the coverage of the title above the table of contents, as well as links to the following options: Past Issues, Search the Journal, Editorial Board, For Authors, and Subscriptions on the left side of the page. In addition, there may be, for example, links to the home page of an associated professional society and its other organizational publication(s), or instructions on Viewing Abstracts with MathML (Figure 2, left).

From the Project Euclid home page, users can also browse a listing of journals alphabetically by title <http://projecteuclid.org/Dienst/UI/1.0/TitleShort>, as well as by publisher <http://projecteuclid.org/Dienst/UI/1.0/PubSort>, and by discipline <http://projecteuclid.org/Dienst/UI/1.0/DisSort>. In the latter two groupings, the following information is provided for each current title:

Journal title: e.g., *Journal of Applied Mathematics*
Publisher: e.g., Hindawi Publishing Corporation
ISSN: e.g., 1110-757x (print)
Discipline(s): e.g., Applied Mathematics
Full text available in Euclid: e.g., 2001—2003
Euclid URL: e.g., http://ProjectEuclid.org/jam

From within each listing, each currently available title is hot-linked to its respective journal page.

Browse Results

Upon accessing a journal page, subscribers are presented with a table of contents for the journal's current issue. Each entry includes the article title, author(s), and pagination, and offers the option of viewing an abstract (in HTML) or the full text (View PDF) (Figure 2). In general, an abstract page (Figure 3) provides basic bibliographical data (i.e., author name(s), title, source, year, a hot-linked, abbreviated journal title, volume, issue, and pagination), a full abstract, and, where assigned, Mathematical Subject Classification (MSC) codes <http://www.ams.org/msc/>. (The MSC is a classification system used to categorize the mathematical literature to expedite its identification and use <http://www.ams.org/msc/usemsc.html>). In general, article abstracts will also include "freely assigned terms … selected by an author or by the publishers."

Where available, users can display the full text of the article by selecting the format of interest from a pull-down menu ("Download the full text in the following format"). A variety of formats may be available (PDF, Screen Optimized PDF, PostScript, etc.). The abstract page also includes a Euclid identifier and a Digital Object Identifier (DOI) <http://www.doi.org> for the article (Figure 3, bottom). In addition, "using an automated process, Euclid extracts and parses article reference sections and builds links where possible, creating a 'References' section … [found in the bottom half of] the article abstract page" (Figure 4). Cited "References" can include entries as well as seamless links to records within Mathematical Reviews (via MathSciNet <http://www.ams.org/mathscinet>) and/or Zentralblatt MATH <http://www.emis.de/ZMATH/> for subscribers to these two major mathematics indexing and abstracting services.

If the cited reference is within the Project Euclid collection (e.g., "Project Euclid: euclid.ndjfl/1040136918"), it will also be included and hot-linked to the associated Project Euclid article abstract page (Figure 4). In certain instances, a link will be provided to an author-archived version of a cited reference or will include a hot-linked DOI that provides access to the abstract of a cited article in a third party e-journal collection (e.g., ScienceDirect).

SEARCHING

Query Terms

In Project Euclid "each word is considered an individual term and by default is combined by an AND operator with any other term in the same query box." A phrase search can be executed by enclosing a set of terms in quotation marks (e.g., "weak derivatives"), while a term can be truncated by using an asterisk (e.g., "derivative*"). Searching is not case-sensitive, and diacritical marks are ignored (for example,

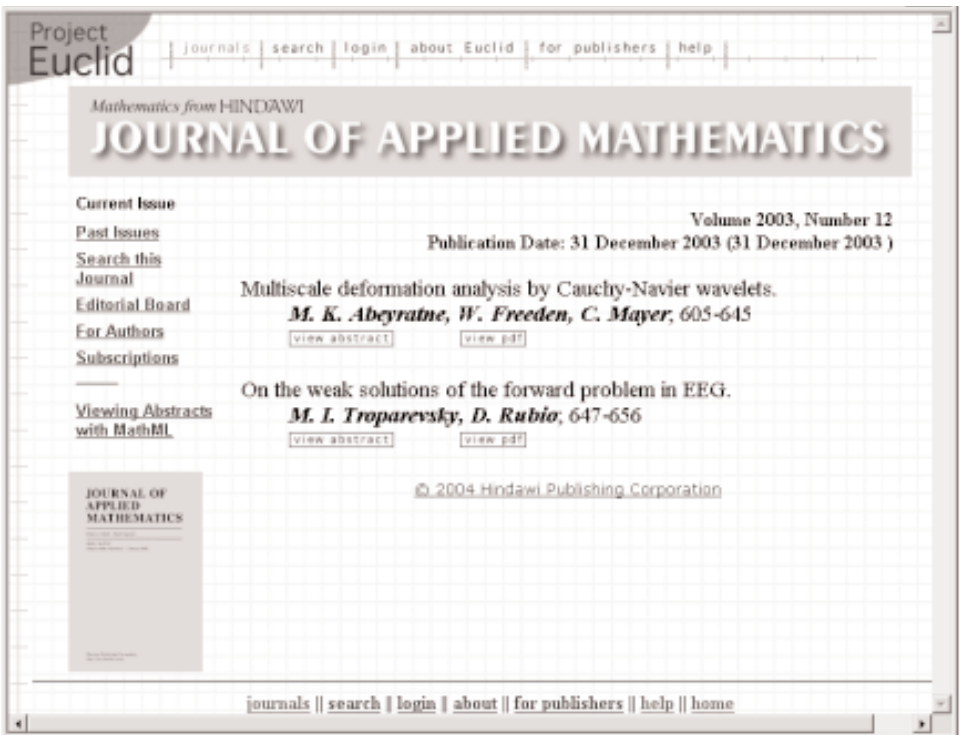

Figure 2 **Screen print of journal page for the Journal of Applied Mathematics showing table of contents for current issue as well as links to standard journal information and access options.**

"Muller" will find "Müller"). Within a query box or single field, words can be combined using the Boolean operators AND or OR.

Quick Search

Users can implement a Quick Search to search by Author(s) (the default), search the Abstract or Subject fields, or perform a Keyword search by selecting one of these options from a pull-down menu. They can also search AllFields or journal FullText using the same search menu. Users can search a subject using an alphanumeric code (e.g., "14N15") from the Mathematical Subject Classification (MSC); a keyword search allows users to search for "freely assigned terms (uncontrolled vocabulary) selected by an author or by publishers." MSC codes and/or keywords are not provided for all Project Euclid journals. All fields, except the document full text, can be searched using an AllFields option, while "all the words from every page of the source document" can be searched using the FullText option.

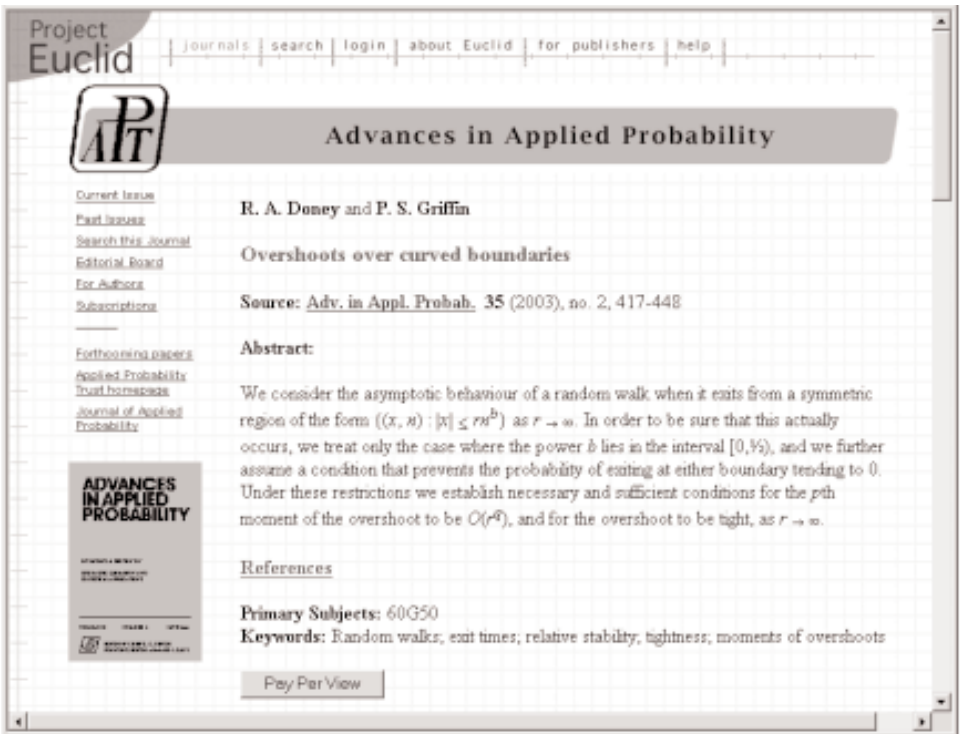

Figure 3 **Sample abstract page for an article in Advances in Applied Probability showing link to "References," as well as an assigned Mathematical Subject Classification code and keywords.**

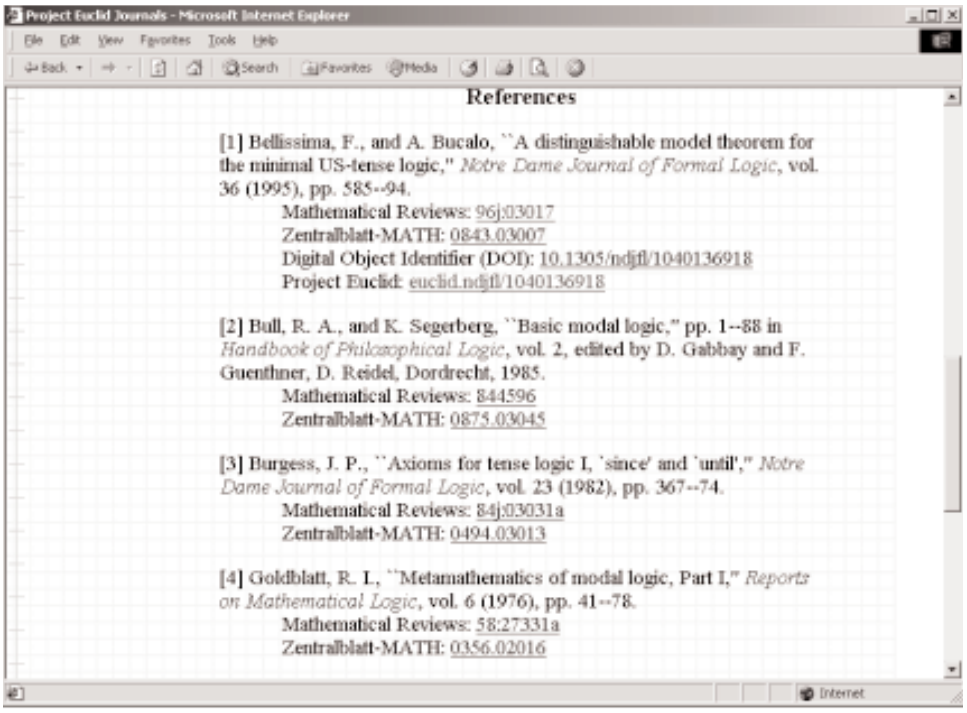

Figure 4 **Sample "References" listing from a select Project Euclid journal abstract page showing entries and links to external and internal electronic resources.**

Advanced Search

The Advanced Search option in Project Euclid allows users not only to search the same fields as offered in a Quick Search but also to search these fields individually or in combination by accepting the default—"author(s)"—and/or by selecting other fields of interest using a pull-down menu. The fields can be combined using a Boolean AND (default), or Boolean OR. The user can search the entire Project Euclid collection (default), or limit the search to one of more specific journals by selecting from a separate pull-down menu (Figure 5).

Search Results

Upon execution, a Quick Search query will display results in relevancy order ("sorted by rank") (Figure 6), while an Advanced Search will display results in order by date (most recent first) as a default. Alter-

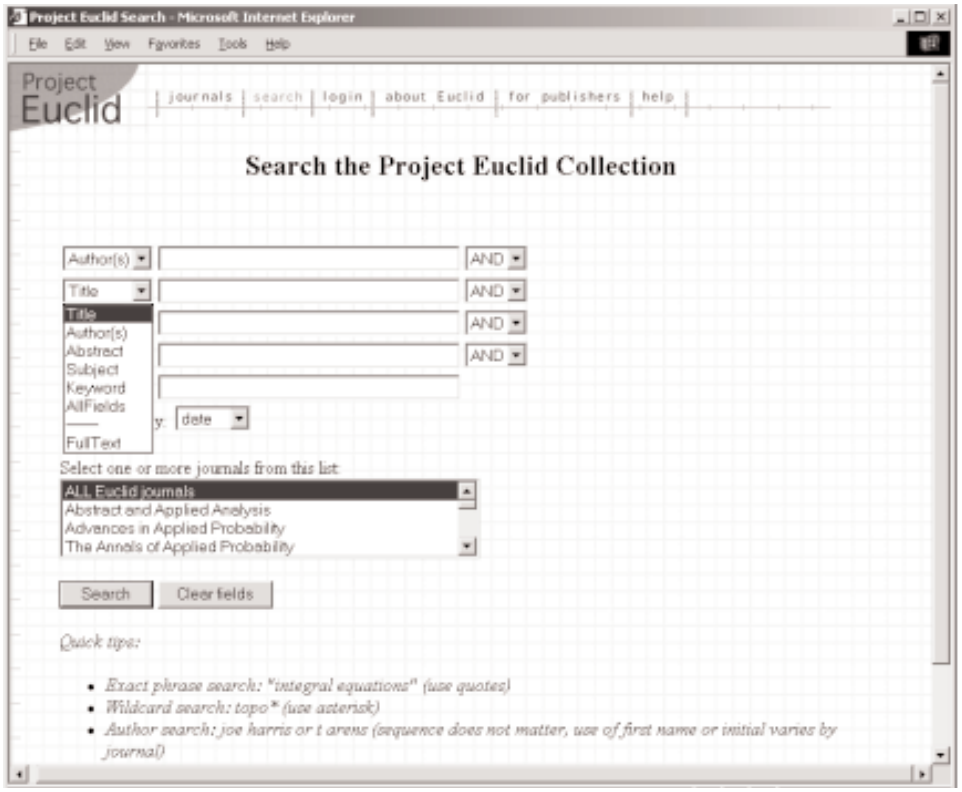

Figure 5 **Screen print of the Project Euclid "Advanced Search" page.**

Figure 6 **Search results in a Project Euclid "Quick Search" are displayed in relevancy order.**

nately, users can presort the results by Author, Journal, or Title, by selecting the option of interest from a Sort Results By pull-down menu from within the original Advanced Search query page (see Figure 5).

Search result entries will include the full name of the author(s) (e.g., "M.A Toumi") in bold font, the full article title in italics (e.g., "Calculus in O-algebras with positive squares"), the source (the abbreviated journal title—e.g., "Bull. Belg. Math. Soc. Simon Stevin"), and the volume, year, issue and article pagination (e.g., "11 (2004), no. 1, 1–13"). As previously noted, the abbreviated journal title is hot-linked to the associated Project Euclid journal home page. Currently, search results are limited to a maximum of 500 records (Figure 6).

FEATURES AND FUNCTIONALITIES

Project Euclid offers a number of useful access, display, and linking features and functionalities <http://projecteuclid.org/Dienst/UI/ 1.0/ About?type=demo&area=about> that include:

- Reference Linking
  As noted, Project Euclid uses an automated process to extract and parse article citations, "build" links where possible, and creates a "References" section found within many, but not all, article abstract pages (Figure 4).
- Forward and Backward Linking
  Where appropriate, articles can be linked to subsequent corrections (forward linking), and the correction to its original article (backward linking).
- Cross Linking
  Project Euclid encourages and facilitates building cross-links to Mathematical Reviews (via MathSciNet <http://www.ams.org/ mathscinet>) and Zentralblatt MATH <http://www.emis.de/ ZMATH/>. The former service is "the database of bibliographic information and reviews created and maintained by the American Mathematical Society," while the latter is "the world's most complete and longest running abstracting and reviewing service in pure and applied mathematics" (Figure 4).
- Digital Object Identifiers (DOI)
  Acting as a publisher's agent, Project Euclid registers article Digital Object Identifiers (DOI) <http://www.doi.org> with CrossRef <http://www.crossref.org/>, "a collaborative reference linking service that allows the user to click on a citation and be taken directly to the target content."
- MathML
  Project Euclid supports the use of MathML in its abstracts. MathML is "intended to facilitate the use and re-use of mathematical and scientific content on the Web, and for other applications such as computer algebra systems [and] print typesetting …" <http://www.w3.org/Math/whatIsMathML.html>.
- Multilingual Article Data
  Project Euclid allows multiple versions of titles and abstracts.

In addition, Project Euclid is compliant with the Open Archives Initiative Metadata Harvesting Protocol (OAI-PMH) (OAI-2.0) <http://www.openarchives.org/>. Among the Open Archives Initiative Service Providers that harvest records from Project Euclid are Euler <http://www.emis.de/projects/EULER/>, my.OAI <http://www.myoai.com>, OAIster (University of Michigan) <http://www.oaister.org>, and Scirus (Elsevier) <http://www.scirus.com>.

In addition, MathSciNet provides direct links to Project Euclid article abstracts from a search results page through its Article button. Such links are created using the Idlookup technology developed by the Project Euclid project <http://projecteuclid.org/Dienst/UI/1.0/About?type=demo&area=about>.

USER ASSISTANCE

To assist users in accessing and navigating its collection, Project Euclid offers a Tour of Project Euclid Functionality and Features <http://projecteuclid.org/Dienst/UI/1.0/About?type=demo&area=about> that provides concise but sufficient details about Journal Home Pages—Current Table of Contents, Euclid Article Abstract Pages, Linking to Euclid, as well as Examples of Linking into Euclid. In addition, a Help page

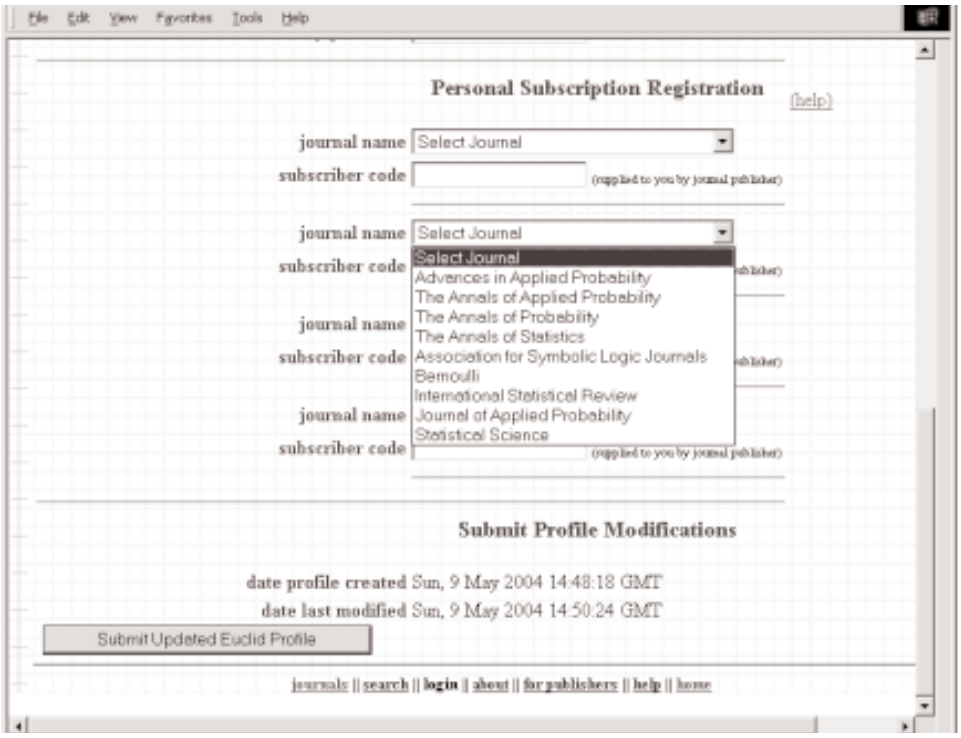

Figure 7 **Project Euclid allows users to create a "Euclid Profile" that allows them to register personal journal subscriptions to the site's component serials.**

is also available and provides brief, clearly written instructions on Searching in Euclid and Browsing Journals as well as concise information about Document Record Pages, and Browser Support and OAI Support. While located on all other pages, the Help link ironically is not found on the Project Euclid home page to provide guidance for a Quick Search.

USER SERVICES

Project Euclid allows users to create a Euclid Profile that allows them to register personal journal subscriptions to the site's component serials (Figure 7). In the future, there are plans to enable users to set interface preferences and to register for an e-mail alerting service.

PRESERVATION

In mid-April 2004, Cornell University Library announced receipt of a $450,000 grant from the National Science Foundation (NSF) to "create a system for the long-term preservation and dissemination of digital mathematics and statistics journals." " … In addressing the myriad questions surrounding how best to develop and maintain digital archives, librarians at Cornell will collaborate … with colleagues at the Göttingen State and University Library in Germany. At the same time this project will serve as a model for similar efforts in other disciplines within the library and publishing communities" <http://alumni.library.cornell.edu/news/news_story.cfm?id=42)>.

PARTNERS AND FUNDING

Project Euclid is a nonprofit initiative of Cornell University Library. The Andrew W. Mellon Foundation has provided principal funding for the project. In addition, a generous equipment grant from Sun Microsystems to Cornell University Library also provided support for this project. Project Euclid is a SPARC Scientific Communities partner <http://www.arl.org/sparc/core/index.asp?page=c5> and has been endorsed by the American Mathematical Society Library Committee, The European Mathematical Society, American Statistical Association, and the Society of Industrial and Applied Mathematics.

ADVISORY BOARD

A Project Euclid Advisory Board serves as "a policy-making body to provide strategic and fiscal planning for the project, as well as advocacy to the stakeholders and communities served by Project Euclid." In addition to Sarah E. Thomas, its chair and Carl A. Kroch University Librarian, Cornell University Library, Project Euclid board members include:

Keith Dennis, Professor of Mathematics, Cornell University;

Arthur Jaffe, Landon T. Clay Professor of Mathematics and Theoretical Science, Harvard University;

Richard Johnson, Enterprise Director, SPARC;

Gregory Lawler, Professor of Mathematics, Cornell University;

David R. Morrison, James B. Duke Professor of Mathematics and Physics and Chair, Duke University;

Richard Shore, President of the Association of Symbolic Logic, Professor of Mathematics, Cornell University; and

Jennifer Younger, Edward H. Arnold Director of Libraries, University of Notre Dame.

TECHNICAL REQUIREMENTS

Project Euclid has been tested with Internet Explorer 5.XX (and higher) as well as Netscape 4.XX (and higher). More recent releases of Internet Explorer and Netscape provide more comprehensive support for Unicode characters (e.g., accented characters and mathematical symbols). Project Euclid uses JavaScript, as well as cookies for authentication, and both must be enabled for the site to operate properly.

ONLINE USAGE STATISTICS

Project Euclid can provide institutional subscribers with download and page view statistics originating from their institutions. Although usage data is readily available for Euclid Prime, institutions that also subscribe to other journals, can contact Project Euclid for this data.

In providing its statistics, Project Euclid has followed the specifications of the COUNTER Code of Practice (Release 1, December 2002) <http://www.projectcounter.org/about.html>.

> Launched in March 2002, COUNTER (Counting Online Usage of Networked Electronic Resources) is an international initiative designed to serve librarians, publishers and intermediaries by facilitating the recording and exchange of online usage statistics.

Critical Evaluation

By providing access to more than 30 significant mathematical and statistics journals within a common framework, Project Euclid has clearly realized its primary goal of addressing "the unique needs of independent and society journals through a collaborative partnership with scholarly publishers, professional societies, and academic libraries". Through its range of access and distribution plans (i.e., Euclid Prime, Euclid Select, Euclid Direct, and Open Access) and the associated varied subscription and pay-per-view options, it has achieved its goal of providing low cost access to its component journals. The low subscription pricing for a range of subscribers is particularly noteworthy.

While it currently provides access to only one Open Access title (*Annals of Mathematics*), Project Euclid is to be commended for utilizing the Open Archives Initiative Metadata Harvesting Protocol (OAI-PMH) (OAI-2.0) that allows its article metadata to be harvested by such OAI Service Providers as Euler, OAIster, and Scirus, as well as for its plans to offer Open Access to backfiles of journals older than five years. The project is also to be commended for its announced collaborative preservation program that will seek to "create a system for the long-term preservation and dissemination of digital mathematics and statistics journals."

Providing low-cost access to a major digital collection while concurrently offering user-friendly browse, search, and display functionalities, are also particularly notable, as are the free search and access services for abstracts and article citations. The option of browsing alphabetical listings of journals by title, publisher, or disciplines offers users practical options for accessing the Project Euclid component journals. The organization of the collection by journal site and a Table of Contents framework provides readers with a familiar browse interface common to most e-journal collections. Alternatively, the hot-linking of the abbreviated journal title within an article abstract page provides a convenient pathway to the corresponding Project Euclid journal page.

The inclusion of Mathematical Subject Classification (MSC) codes, where assigned, as well as "References" within the abstract page is also noteworthy, as is the inclusion and linking of cited "References" to entries in Mathematical Reviews and Zentralblatt MATH, and to the corresponding abstract in a Project Euclid journal, or to other source abstracts or articles, where available. The accommodation of MathML within its component journals is also notable.

RECOMMENDED ENHANCEMENTS

While exceptionally user-friendly, the search, browse, and display features and functionalities of Project Euclid could be significantly enhanced by extending particular current options.

For example, it would be beneficial to provide separate browseable indexes of hot-linked author names as well as keyword terms and phrases. From within such browseable indexes, users should have the option of selecting items and pasting entries of interest into an appropriate query form. It would also be beneficial if a searchable and browseable interactive version of the Mathematics Subject Classification were integrated within Project Euclid that would allow users to readily search or browse the collection by codes of interest.

In addition to providing access to the journal home page from a hot-linked abbreviated journal from an article abstract page, it would be useful to hot-link author names, keyword terms and phrases, and MSC codes within an abstract page to enable users to easily perform a comprehensive search of the Project Euclid collection within this context.

In addition to linking extracted cited references from within an article abstract page to their corresponding records in Mathematical Reviews and Zentralblatt MATH, and to the corresponding abstract for a Project Euclid article, if available, all cited works in the original full text should have similar links to these external and internal sources.

In the near term, all journal articles that currently lack appropriate MSC codes and/or keywords should have these assigned to permit comprehensive searching and browsing within the entire Project Euclid collection. In addition to providing citation counts found within links to Mathematical Reviews and Zentralblatt MATH records for a given Project Euclid article, when available, citation counts within the Project Euclid corpus should be provided for individual Project Euclid articles, where available, as should links to the abstracts of the citing sources.

Overall, an effort should be made to implement features and functionalities that more fully exploit the inherent potential of the digital environment. The availability of a similarity search feature ("Similar Pages," "Find More Like This," "Find Similar Abstracts," etc.) as offered by most internet search engines and select e-journal collections and databases would greatly expedite the identification of other potentially relevant Project Euclid articles. In addition, a collaborative filtering function ("Readers Who Viewed The Article You Are Currently Viewing Also Viewed The Following Other Articles") would allow users to directly and indirectly identify articles related to one currently under consideration.

POTENTIAL POSSIBILITIES

As a focused collection, Project Euclid would be an ideal platform for implementing supplemental or alternative access and navigation, such as the clustering of results as made available within the Institute of Physics Publishing (IOPP) e-journal service <http://www.iop.org/EJ/>, the TopicMap option offered in the HighWire Press collection <http://highwire.stanford.edu/>, or the self-organized maps provided for Astronomy and Astrophysics <http://simbad.u-strasbg.fr/A+A/map.pl> and the Astrophysical Journal <http://simbad.u-strasbg.fr/ApJ/map.pl>. To generate its clusters, IOPP has selected Vivísimo Clustering Engine <http://vivisimo.com>, a technology that "uses sophisticated algorithms to cluster articles into meaningful topic categories …" (McKiernan, 2004: 96). Within the HighWire Press e-journal collection, users can browse specific topics or subtopics by using a TopicMap, a special Java applet designed to display standardized topics and subtopics in a graphical form that provides a "sense of context" while navigating a large, tree-structured database (Figure 8). TopicMap is based on the Star Tree SDK for Java, licensed from Inxight Software, Inc. <www.inxight.com> (McKiernan, 2004: 100–101). The Kohonen SOM is an algorithm that automatically organizes documents into a

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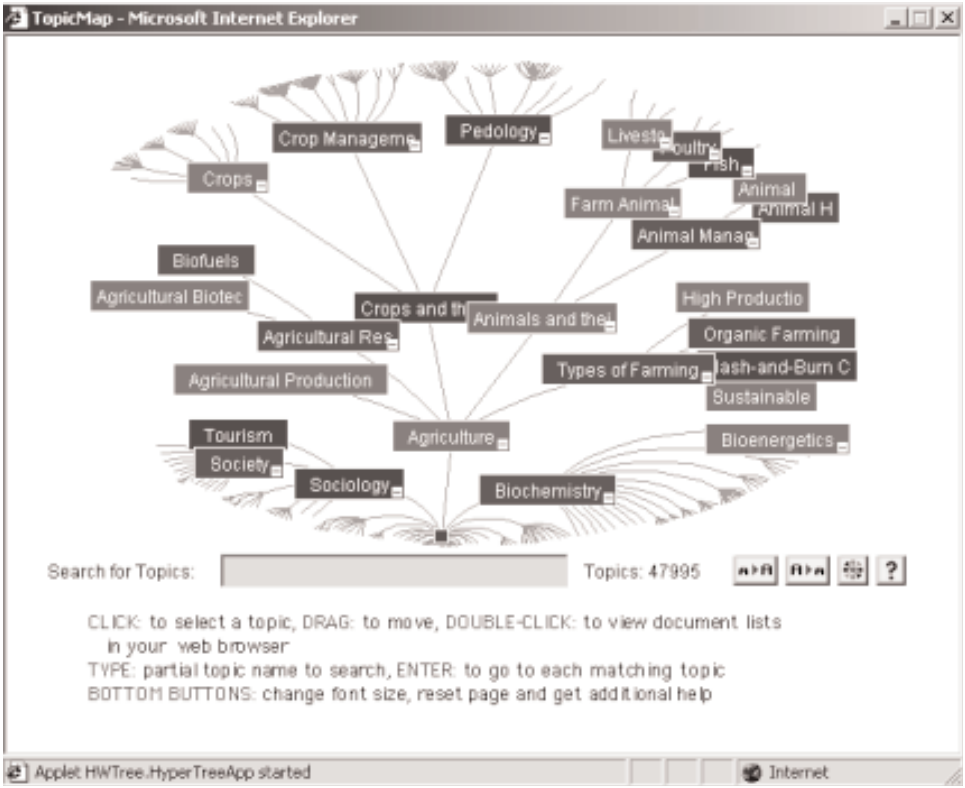

Figure 8 **Screen print of a sample TopicMap from the HighWire Press electronic journal collection.**

two-dimensional grid so that related documents appear close to each other and general topics appear in well-defined areas. The SOM visualization is presented as a density map that graphically represents papers of similar content (McKiernan, 2004: 92).

Contract Provisions

Reasonable use of on-line journal content within Project Euclid allows users, with appropriate access rights (see Project Euclid Access Terms)

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Project Euclid: Mathematics and Statistics Journals Review Scores Composite: ★★★★ 7/8

The maximum number of stars in each category is 5.

Content: ★★★★★

By providing current and forthcoming access to more than 30 significant mathematical and statistics journals within a common framework, Project Euclid has clearly realized its primary goal of addressing "the unique needs of independent and society journals through a collaborative partnership with scholarly publishers, professional societies, and academic libraries." Through its range of access and distribution plans and its associated varied subscription options, Project Euclid has achieved its goal of providing low cost access to its component journals.

Searchability: ★★★★ 1/2

In addition to providing free search and access to abstracts with article references, Project Euclid offers a variety of user-centered browse, search, and display functionalities. While exceptionally user-friendly, the search, browse, and display features and functionalities of Project Euclid could be significantly enhanced by extending particular current options. For example, it would be beneficial to provide separate browseable indexes of hot-linked author names as well as keyword terms and phrases, and a searchable and browseable interactive version of the Mathematics Subject Classification (MSC). In general, an effort should be made to implement features and functionalities that more fully exploit the inherent potential of the digital environment, notably a citation count feature with links to source documents within the Project Euclid collection, a similarity feature, and a collaborative filtering functionality that would allow users to readily identify relevant and related papers in the Project Euclid collection.

Pricing Options: ★★★★★

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HighWire Press, Stanford University, for permission to use a screen print of a TopicMap from the HighWire Press e-journal collection.

About the Author

Gerry McKiernan currently serves as a Science and Technology Librarian and Bibliographer at Iowa State University (ISU) with specialization in selected fields of Engineering. Gerry formerly served as the Coordinator of the Science and Technology Section of the ISU Reference and Instructional Services Department and as an Information Services Librarian and Reference Librarian with specialization in the life and physical sciences. Before joining ISU in April 1987, Gerry served as the Museum Librarian of the Carnegie Museum of Natural History in Pittsburgh, Pennsylvania and as an Assistant Librarian with the Library of the New York Botanical Garden in the Bronx, New York, his hometown.

Gerry is a member of the editorial board of *Science and Technology Libraries*, for which he writes an original column titled "SCI-5." and is also a contributing editor for *Library Hi Tech News*, for which he writes an original column titled "eProfiles." He has been the contributing editor for the "News from the Field" column for the *Journal of Internet Cataloging* since 1997, and a member of the editorial board

Contact Information

Project Euclid
Teresa Ehling
Director of Electronic Publishing
Cornell University Library
107 Olin Library
Ithaca, NY 14853-5301
Phone: (607) 255-4490
Fax: (607) 254 5419
E-mail: <EUCLID-L@cornell.edu>
URL: <http://projecteuclid.org/>

of *The Serials Librarian* since Fall 2002. He is the Curator of CyberStacks <http://www.public.iastate.edu/~CYBERSTACKS/>, a virtual science and technology reference collection, and compiler of several Web registries and clearinghouses. Among his more recent projects are *All That JAS: Journal Abbreviation Sources* <http://www.public.iastate.edu/~CYBERSTACKS/JAS.htm>, *IDEALS: A Registry of Emerging Innovative Augmented Digital Library Services* <http://www.public.iastate.edu/~CYBERSTACKS/IDEALS.htm>, and *LiveRef: A Registry of Real-Time Digital Reference Services* <http://www.public.iastate.edu/~CYBERSTACKS/Liveref.htm>. His current research interests include Open Archives Initiative Data Providers and Service Providers, and alternative peer review practices and philosophies <http://www.public.iastate.edu/~gerrymck/APR-1.ppt>. ■