Chapter 4

Journal Publishing: A Context
4.1. Introduction

Scholarly journals as an important media for scholarly communication have a
tradition of purpose and structure dating back to several centuries, with little change.
Despite the combined effects of price inflation and fluctuations of currency exchange that
libraries weathered in the 1970's and 1980's, the basic construct of journals and
subscriptions has remained stable. In fact, the journal has continued to flourish in a world
of scholarly publishing that is increasingly global and conglomerate. In contrast to this
tradition-laden history, the rapid change stimulated by information technologies in the
1990's has been remarkable and unprecedented (Bonn, et al, 1999).

Development of the Internet and communication networks has affected scholarly
journals almost in every aspect. The Internet offers much lower cost of reproduction and
distribution than print, the current system of journal pricing seems to be expensive. Each
of these factors is helping push journals from paper to electronic media (Varian, 1997).

4.2. Definition and Types of Electronic Journals

There is no unique definition for electronic journals. According to one of
definitions “e-journals are serial publications available in digital format” (Harrassowitz,
2002). Rich and Rabine define electronic journal as a “periodical literature that is made
available as an individual title via an electronic medium, typically the World Wide Web”
(Rich and Rabine, 2001). Electronic journals could be accessed through gopher, ftp,
telnet, e-mail or discussion lists, but today they are mainly accessed through web.

Electronic journals can be electronic journal only or an electronic equivalent of
the print version. Kling and McKim (1997) distinguished at least four kinds of e-journals:

**Pure Electronic Journals** – journals whose text is originally distributed only in
digital form. Examples include the Electronic Journal of Communication, the
Journal of Digital Information, the Internet Journal of Archaeology, and the
Journal of Electronic Publishing.
Electronic Print Journals – These journals are primarily distributed electronically, but may have very limited distribution in paper form. Examples include the Journal of Artificial Intelligence Research and the Electronic Transactions on Artificial Intelligence.

Print Electronic Journals – These journals are primarily distributed in paper form, but which are also distributed in electronic form. Examples include Science, Physical Review, and thousands of other scientific journals.

Print + Electronic Journals – that are initiated with parallel paper and electronic editions that may be widely distributed. The American Chemical Society's Organic Letters is an example.

4.3. Publication Speed

Historically, Henry Oldenburg produced the first issue of a scientific journal, the Philosophical Transactions of the Royal Society of London, in 1665 (Schaffner, 1994).

In 2001, Ulrich's International Periodicals Directory listed over 160,000 periodicals and serials published in the United States and throughout the world. However, this list includes the proceedings of annual conferences and annual reviews, as well as journals. Nonetheless, the number of scientific journals and abstract journals published worldwide is usually estimated to be over 100,000 and the number of journals has grown steadily and rapidly during the second half of the 20th century (Tenopir and King, 2000). On the other hand, information scientists, such as Eugene Garfield, who have used citation data to examine the likely use and impact of journals, have found that only a small fraction of the journals in any field are widely cited, and that the majority of journals are rarely cited, if at all.

The first electronic journal appeared during 1970s. They were not available to a larger number of users; this is one of the reasons why they were not widespread. (Tenopir, 2000). With the appearance of Internet and PCs the number of electronic journals rapidly grew. Until 1995 this number is rather low, but then it starts to rise (Hitchcock, et al, 1996). Today, most of the electronic journals appear as parallel version
of its print counterparts. All the major publishers publish electronic journals and offer them as special services or databases e.g. ScienceDirect (Elsevier), SpringerLINK (Springer).

Okerson (2000) reviewed the history of journals and discusses a few electronic journals of the early 1990s. She also provided a timeline from 1991 to 1999 and indicated the number of electronic journal titles that were listed in two directories. The number of titles grew from 27 in 1991, through 3634 in 1997 and then to 8000 titles in 1999.

Association of Research Libraries (ARL) is also documented the rise in the number of electronic journals published in 1990s. The number of electronic journals listed in the 1991 directory was 27. The first significant increase in the number listed was a jump from 45 in 1993, to 181 in 1994. In 1995 the number rose to 306, in 1996 the number listed surged to 1093, and it surged again in 1997 to 2459 (Association of Research Libraries, 1997).

The present study reveals that (See Table 1.1 and Table 1.2) total number of electronic journals published by top fifteen commercial and top fifteen society/university publishers in 2003 is 5,941 titles.

UK scholarly journals publishing report in 2006 estimated that around 20,000-25,000 peer-reviewed scholarly journals actively being published worldwide. The volume of journals has grown consistently at a compound annual growth rate of 3-4% over the past one hundred years. An estimated 60% (12,000-15,000 titles) of all journals are published online (most are also published parallely in print). This figure is reported to be as high as 90% for English-language journals emanating from US/UK-located publishers. Around 10% of peer-reviewed scholarly journals are published under some form of open access model (UK Scholarly Journals Report, 2006). The Figure 4.1 shows the growth of electronic journals from 1991 till 2006. The number of e-journals in 1991 was just 27. It rose to 181 in 1994, and 2,459 in 1997. An estimated number of e-journals by 2000 was about 4,200 and it raised to nearby 7,000 by 2003. The number of scholarly e-journals by 2006 is estimated to be nearly 13,000.
The popularity of the World Wide Web helped to stimulate the growth of electronic journal publishing in the mid 1990s, but much of the growth since 1996 can be attributed to the electronic debut of many commercial publishers. The growth in parallel publishing, which may be defined as the publication of an electronic version of a traditionally print journal, has greatly increased the number of scholarly journals available electronically and may possibly have affected the attitudes of acceptance toward journals in this format. Together, these changes could have a dramatic affect on the use of electronic journals within the scholarly community. There are so many libraries who provide access to electronic journals. For example, in India in addition to Indian Institute of Science (IISc), the Indian Institute of Technology at Kharagpur also provided access to electronic journals (http://www.library.iitkgp.ernet.in/usr/elib/trial.htm).

4.4. Format of Electronic journals

One of the important issues in electronic journal publishing is format of publishing. Throughout the 20th century, librarians have faced and surmounted the challenges posed by new formats of materials, from print to microforms, audio-visual materials, CD-ROM, computer software, and machine-readable data files. Beginning in the mid-1990s, electronic journal access through the Internet has made librarianship more challenging.
While the traditional format of paper journals is relatively limited, in electronic environment there are many more possibilities. The most important digital formats are listed below: ASCII text, PostScript, PDF, HTML, SGML, XML, RTF, Excel, MS Word, WordPerfect, TeX, LaTeX, Realpage, and etc. But the most commonly used formats are PDF, HTML and XML. So, a brief explanation regarding these three formats is given here.

4.4.1. PDF (Portable Document Format)

PDF stands for Portable Document Format and it is a document file format. It was originally designed by Adobe to solve font incompatibility problem on different computers. The idea was to make a PDF document look the same on any computer with a free PDF viewer. It was developed by Adobe as a means of distributing digital documents for reading and printing without loss of formatting. Now, it is a common way of distributing documents because PDF files can be read on any computer as long as the user has Adobe Acrobat Reader, which is free software. This software is available for all types of computers. The attraction of PDF for authors is that the reader will see the document formatted in the same way as the author. This makes some sense for paper, where the size is standardized; but it does not make sense for screens, which come in many sizes and resolutions. However, it is not useful for on-screen reading. The fixed formatting of PDF documents means that it never fits well on the screen.

4.4.2. HTML (Hyper Text Markup Language)

Hyper Text Markup Language (HTML) is a language to specify the structure of documents for retrieval across the Internet using browser programs of the World Wide Web. HTML is an application of the Standard Generalized Markup Language (SGML), which is the International Standard (ISO 8879) for text markup. The principle is that text markup concentrates on structure rather than appearance, making the files more useable and leaving the visual details to the end-user software. HTML was invented by Tim Berners-Lee while at CERN, the European Laboratory for Particle Physics in Geneva. HTML code allows users to format a page with text and images so users can display it on
the World Wide Web. They do not need to have previous programming knowledge, and they do not need special programs to code HTML.

4.4.3. XML (Extensible Markup Language)

Extensible Markup Language (XML) provides a foundation for creating documents and document systems. XML operates on two main levels: first, it provides syntax for document markup; and second, it provides syntax for declaring the structures of documents. XML is clearly targeted at the Web, though it certainly has applications beyond it. Users who have worked with HTML before should be able to learn the basics of XML without too much difficulty. XML’s simplicity is its key selling point, perhaps even its strongest feature. XML is a mother tongue for other languages. XML is easy to maintain. It contains only data and markup. It can be said that XML is a simple dialect of SGML designed for use on the World Wide Web or in intranets. XML-tagged data can provide high precision searching in Web environments, and allow users to interchange reusable text over the Internet and through intranets. Since there are now a wide variety of XML tools available, XML is also preferable in environments where the advantages of SGML and XML are desired and the features of SGML that are not supported in XML are not needed.

4.5. Publishers Preferred Formats

Publishers have different policies for electronic journal delivery and choose different formats. The present study focuses on the top five commercial and the top five society publishers. Therefore the preferred formats by these publishers in 2003 are studied here. These publishers are:

I - Commercial Publishers

1. Elsevier

In 2001, Elsevier embarked on an ambitious project to digitize all of its journals back to volume one, issue one. ScienceDirect’ backfile articles are presented in fully searchable PDF format, supported by citations, abstracts and references in re-keyed
HTML. Users can cross-search backfile articles against the other journal contents, abstract databases and reference works on ScienceDirect. Article full-text is available in PDF and HTML format. It may be noted that to view a journal article in PDF format, users should use Adobe Acrobat Reader, which can be downloaded free of charge from Adobe.

2. Taylor and Francis Group

Most Taylor and Francis Group journals are available online. It should be noted that when accessing journals online a collection of custom fonts may be required for the correct display of special characters, such as Greek letters and mathematical symbols and first they should be downloaded. Taylor and Francis Group publish over 750 of their journals online, with the articles available in PDF format, and free searching for all users. The complete articles are available free with institutional subscriptions (and in some cases to personal and society subscribers too) and via a document delivery charge for all other users. In addition to the PDF, the content pages and abstracts are available in HTML. Taylor and Francis Group have some online database like Educational Research Abstracts (ERA). ERA is a comprehensive database comprising specially selected high-quality abstracts, which cover the current international research in education. The product is backed by an online document request feature, which supports PDF and RealPage delivery formats.


Kluwer Journals includes all journals from Kluwer Academic Publishing, beginning with 200 journals that are already in electronic format and extending to the complete list of 750 titles. The bibliographic data of all journals is searchable and each record links to a PDF image of the full text document. Data coverage is from 1997 to present with back issues added, as they become available. Article full-text is available in PDF format.
4. Blackwell

Blackwell Science Synergy is an online journal service for Blackwell Science and Munksgaard. The service provides different levels of access to journal content to different types of users through the Internet. For example, paid subscribers can access full articles while guest users can access just the article abstracts. Article full-text is available in both HTML and PDF formats.

5. Springer

SpringerLINK is a searchable online electronic library containing tables of contents, abstracts and full text for Springer journals. Format for delivery of full articles differs from journal to journal. The most widely used format is the PDF. Other formats include Postscript, TeX and HTML. Full texts are available for some journals from 1994 to the present.

II - Society Publishers

1. Oxford University Press

Most of the Oxford University Press's journals are available online to subscribers to the print copies, at no additional cost in 2003. Information on the content and formats available for each title is available as a printable list of all Oxford journals (HTML). Users can also search across its online collection or browse by title or subject using the option on the side bar. Journal articles are available in PDF.

2. Cambridge University Press

Cambridge Journals Online (CJO) provides electronic access to an increasing number of Cambridge University Press journals. Each journal has its own home page providing contents from current and back issues, subscription information, and instructions to authors. Articles are available in PDF format.
3. MCB University Press (Emerald)

MCB University Press (Emerald) journals are grouped into topical suites. In addition to browsing individual journal contents and abstracts, citation and full-text searches can be performed across the entire database. Full text is available from 1994 for most titles, with many abstracts extending back to 1989. Articles are available both in HTML format and Acrobat Portable Document Format (PDF).

4. IEEE

IEEE journals, conference papers and standards from 1988 to the present are included in the IEEE/IEE Electronic Library Online, now called IEEE Xplore. IEEE Xplore provides full-text access to IEEE and IEE transactions, journals, magazines and conference proceedings published since 1988 and all current IEEE standards. Generally, article full-text is available in PDF format. There are two societies of the IEEE which format their journals differently from the other societies. The IEEE Signal Processing Society centers figure captions instead of making them left-justified. The IEEE Computer Society has a very different format. To format them correctly, ieee.cls requires “plug-in” modules. The class file ieee.cls supports almost all IEEE journals, but some need special “plug-in” files to be formatted correctly. All IEEE Conferences also need plug-in files (at this point, there are only two supported conferences.

5. American Psychological Association (APA)

American Psychological Association’s (APA) journals are among the most widely circulated, most frequently cited, and most often used publications in the behavioral and social sciences. The bibliographic literature references are accessible via a number of resources from APA, including the PsycINFO database, PsycARTICLES, and the printed index “Psychological Abstracts.” Articles published from 1988 to the present are available online in the PsycARTICLES database. All members have free access to the online articles of American Psychologist, plus the previous 3 years of any other journal that you have also subscribed to in print. Article full-text is available in PDF format.
4.6. Electronic Journals: Technical issues

Electronic journals are a media for communication in digital environment. Presence of electronic journals needs infrastructures technological improvement in networking and computer and software. There are lots of technological improvements in electronic journals publishing. Some important technical issues in electronic publishing are DOI, DOI-X, CrossRef, Citation /Reference Linking, OpenURL, SFX and MetaLib. A brief explanation of these items has been given here in order to have better understanding of technical issues in electronic journals publishing.

4.6.1. DOI

The Digital Object Identifier (DOI) is a system for persistent identification and interoperable exchange of intellectual property on digital networks. It provides an extensible framework for managing intellectual content in any form, at any level of granularity and in any digital environment. The International DOI Foundation, a non-profit organization, manages development, policy, and licensing of the DOI system to registration agencies (http://www.doi.org). By integrating an identifier into a DOI, the identifier becomes actionable as a standard hyperlink and can function in DOI applications across different platforms. A variety of different identifier systems become readily interoperable when incorporated into DOIs. DOIs may be assigned to ISBN entities (books) to achieve this; DOIs may be used to identify related entities or linked material in any form.

4.6.2. DOI-X

DOI-X is a prototype metadata database designed to support DOI lookups. The prototype is intended to address the integration of metadata registration and maintenance with basic DOI registration and maintenance, enabling publishers to use a single mechanism and a single quality-assurance process to register both DOIs and their associated metadata. The DOI-X data format was specified in an XML Document Type Definition (DTD) and accompanying “rules document.” The rules document provided DTD documentation and specific constraints that could not be expressed in XML (e.g.,
ISO date format; limitation of journal titles to 256 characters; etc.). The DTD was designed to capture in discrete records the metadata about the full-text of a journal article, an abstract, or a bibliographic record.

4.6.3. CrossRef

CrossRef (http://www.crossref.org) is a publisher collaborative that operated by the Publishers International Linking Association, Inc. (PILA). At the beginning of 2000, the world's leading scholarly publishers joined to form the non-profit, independent organization, Publishers International Linking Association, Inc. (PILA), which operates CrossRef. CrossRef’s general purpose is to promote the development and cooperative use of new technologies to facilitate scholarly research. The specific CrossRef mission is to be the citation linking backbone for all scholarly information in electronic form. CrossRef is a collaborative reference linking service that functions as a sort of digital switchboard. It holds no full text content, but rather effects linkages through Digital Object Identifiers (DOI), which are tagged to article metadata supplied by the participating publishers. The end result is an efficient linking system through which a researcher can click on a reference citation in a journal and access the cited article.

4.6.4. Citation/Reference Linking

Caplan (2001) defines citation or reference linking as “the ability to go directly from a citation to the work cited, or to additional information about the cited work,” whether the source and accompanying destination are journal articles, Web sites, conference proceedings, entries in A&I databases, or even a link sent via e-mail from one colleague to another. In the scholarly electronic publishing community, citation or references linking tries to solve the obstacles and problems associated with linking among and between journal articles and bibliographic entries. A link is the specification of a relationship between a data source and destination where both the source and destination may expand to one of several places in a particular set of documents.
4.6.5. **OpenURL**

The OpenURL provides a mechanism for encoding a citation for an information resource, typically a bibliographic resource, as a URL. The citation is provided by either using a global identifier for the resource, for example a Digital Object Identifier (DOI), or by encoding metadata about the resource, for example title, author, journal title, etc., or by some combination of both approaches. It is also possible to encode a local identifier for the resource within the OpenURL. In combination with information about where the OpenURL was created, this allows software that receives the OpenURL to request further metadata about the information resource. By clicking an OpenURL for a work, the user requests that the service component deliver extended services for that work. The service component takes the OpenURL as input and collects metadata and identifiers for the work. It can do this by directly parsing such information from the OpenURL and/or by fetching it using the metadata pointer that was provided in the OpenURL. This pointer can lead into the original resource or into another one. Once identifiers and metadata are collected, the service component will evaluate them and provide extended service links to the user. When the service component is appropriately tailored, these links will be sensitive to the context of the user.

4.6.6. **SFX**

SFX is a context-sensitive link server from Ex Libris\(^1\) that allows context-sensitive linking between Web resources in the scholarly information environment. SFX is OpenURL-compliant, in that it accepts an OpenURL as input from an Information Resource known as an SFX source (http://www.sfxit.com/).

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\(^1\) The Ex Libris group is a worldwide supplier of software solutions and related services for libraries and information centers. The Company’s flagship product, ALEPH 500 (Automated Library Expandable Program) is a market leader in the field of library automation for higher education as well as for public, national, and research libraries, consortia and national networks, and large corporations. Ex Libris has recently announced two new products: MetaLib, a front-end portal to scholarly resources, and SFX, a reference linking system supporting hybrid library environment.
An SFX source is a Web-based resource in which the user searches, and from which a user may link out to additional resources and services by clicking on an SFX button. The SFX button activates an OpenURL that sends metadata to the SFX server. A resource can only be an SFX Source if it provides an OpenURL.

There is relationship between SFX, CrossRef and DOI. As it mentioned before, CrossRef is a consortium of primary publishers. CrossRef members use the Digital Object identifier to link between their resources e.g. from the reference in an article from one CrossRef member to the full text of the article itself from another CrossRef member. The DOI, whilst offering a namespace-based linking solution, does not take into account the user's affiliation and therefore does not provide for context-sensitive linking services. However, when used within the SFX framework it can deliver such context-sensitive linking services. OpenURL/SFX and CrossRef/DOI are compatible and complementary.

The SFX solution offers libraries flexibility and choice. Reference librarians can choose appropriate content from a range of information vendors and interconnect this content as desired. They can then provide links to services that they feel are appropriate for their end users. Reference librarians need not depend solely on the linking services defined by the information providers, on a specific set of identifiers (such as ISSN, SICI, or DOI), or on particular communication protocols (such as Z39.50 or http).

4.6.7. MetaLib

MetaLib is a standardized user interface and portal for users of today's and tomorrow's hybrid information systems. MetaLib is powered by two new Ex Libris technologies—the Universal Gateway and SFX. The Universal Gateway ensures accurate and target-sensitive searching and employs an intelligent analyzer to convert user requests into target specifications, and target data into user formats. SFX provides a host of contextual links to related information after performing an intensive, automated analysis of a document, including both the institutional and user environments. MetaLib serves as a gateway to local and remote databases. It enables an institution to provide its patrons with a unified interface to the diverse resources that it offers.
MetaLib provides a hook that makes use of the institution's authentication mechanism. Once a user is authenticated and identified as belonging to a certain group of users, MetaLib's authorization mechanism, as defined by the institution, controls both the resources and the functions available to that user. MetaLib also provides for guest users, who may be members of the institution or may not be affiliated with it at all.

4.7. Summary

One of the important issues in electronic journal publishing is format of publishing. Throughout the 20th century, librarians have faced and surmounted the challenges posed by new formats of materials. While the traditional format of paper journals is relatively limited, in electronic environment there are many more possibilities. The most important digital formats are: ASCII text, PostScript, PDF, HTML, SGML, XML, RTF, Excel, MS Word, WordPerfect, TeX, LaTeX, Realpage, and etc. But the most commonly used formats are PDF, HTML and XML. A study was carried out on preferred formats by the top five commercial and the top five society publishers. The information regarding preferred formats by these publishers is summarized in Table 4.1.

As it is seen from Table 4.1, two most preferred formats among all the top five commercial and the top five society publishers in the present study are PDF and HTML formats and all publishers offer PDF format.

In this chapter, the definition of electronic journals, speed of publication, format of electronic journals, preferred formats by publishers and some technical issues are discussed. In the next chapter, pricing and publishing models of electronic journals are studied.
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Table 4.1: Preferred Formats of Publishers