CHAPTER: THREE

EMERGANCE OF ELECTRONIC PUBLICATION: ISSUES AND TRENDS
INTRODUCTION

The world is passing through a resolution in Information technology which has far reaching impacts. This is the age of 'Publication Explosion'. Every day billions and billions of publications are coming out containing in calculable information resulting in 'Information Explosion'. Publications of the network society are appearing with mixed digital media and increasingly in a completely electronic format. The Internet has existed for years and has been utilized by the research community for a variety of purposes with little dramatic publishing could potentially and drastically alter the dynamic among authors, publishers and consumers of scholarly works. Electronic publishing may offer the various 'stakeholders' contractual alternatives that could satisfy their respective needs with fewer problems than the dynamic under copy right law.

It is the invention of printing with movable metal type faces in the 15th century that led to the emergence of publishing as an independent and sustainable economic activity, with Industrial Revolution, paper becomes the medium of literary works, but still it was as manuscripts they remained. Gutenberg's invention of printing press in 1455 led to the emergence of the printing and publishing industry. Once the plate is ready one can make any number of copies meant reduced cost of production because of economy of scale.

This new formed convenience as a result of the technological innovation made enterprising people to bring out copies of popular works already published by author. This caused a major economic challenges to the original publisher who invested his money and effort in bringing out the first edition in untested waters. In order to the safe ground the interest of the those who has invested their time and money in printing an edition of a book, the earliest copyright laws were enacted. This technological challenges lead to the legal response of the government in the form of copyright law.
Over the year's copyright law under went a number of changes, not a small number of which were responses to technological advancements. The changes were made to adopt it to face the challenges posed by photography, sound recording and cinematographic technologies in the early part of last century and to technologies that facilitated name copying of sound and radio records in the latter half of that century, in response to social and economic development, the period of copyright protection also steadily got extended from original seven years in the earliest copyright laws in England to the present life term plus seventy years in U.K. and life plus sixty years in India.

The technological development that has caused the greatest challenge to publishing industry is the emergence of the digital technologies in the nineties. Apart from the possibilities that this new technology has opened up for individuals in copying and manipulation of works, it has spawned a new kind of publishing, that is, e-publishing and a new kind of work, that is, multi media work, both of these have raised a multitude of challenges to the copyright regimes in India and in other countries.

1). Historical Background:

The history of e-journals began with the full text databases offered by traditional on line vendors like dialog during late 80's. This full text was a misnomer and was really not complete text. What they offered was bane ASCII files of the journals and magazines which stripped off the diagrams, photographs, graphs and other images objects of the article. The technology of the day then made it difficult to offer the complete text as the storage costs were still expensive the bond-width then at 2.4 kbps to 4.8 kbps was simply in adequate and the access interface was non-graphical. However, the full text was presented as a searchable text. CD-ROM's and the development in compression technology made it possible to record and deliver complete text of the journal as image file. They were the image replicas of the printed pages. But the text was not searchable. A searchable bibliographic database of the
table of contents provide the link of the corresponding image files of the articles on the CD-ROM's. These images, in spite of enormous compression, occupied a large volume of space. Although, a CD-ROM could store 200,000 plus pages of ASCII text, it could store not more than 10,000 pages of a scanned image, scanned as resolution of 150 dps. Being an image file, it was searchable. This was the pre GUI and pre windows day.

During the early 1990's, on line vendors used the CD-ROM' technology and the FAX technology to deliver almost instantly the complete text, through a technological integration of online bibliographic databases with a CD-ROM collection of image files residing in a network of jukeboxes. It was like online ordering for articles found during a bibliographic search, to be delivered by fax with in a span of 15 – 30 minutes. In this process, for the first time the bibliographic database, document collection in electric format and the document delivery activity were integrated through different pieces of technology. The application of this technological integration found its way primarily for delivering patent delivery. Curiously, this application did not found its document delivery for journals, probably due to copyright issues which publisher would always like to jealously guard. UMI now called Beu & Howel. Information and learning (BHEL) successfully promoted this technology model for journal and offered a LAN based solution with its image files of full text CD-ROM databases for journals in the area of management, medical and social sciences. similar LAN based models were supported by other aggregators of electronic journals on CD-ROM like ADONIS and IEEE.

With the emergence of Internet and the web during mid 90's, the full text database started including image object like photographs and charts as link object, which could be zoomed, or, an icon with act as a link. The text was searchable

The e-journal we see today is a transformation of this Internet version, which is generally a PPF image and an exact look a like of the print with the text as a searchable file. While PPF is the preferred format for e-journals by a number of
leading publishers and the libraries, a large number of publishers and third party aggregators, offer e-journals in a variety of other formats, like HTML, SGML, etc. E-journal in the latter formats is not exact look alike of the mats although they offer complete text of the journal with graphic objects in the articles as embedded images.

Bibliographic databases, journals and document delivery are the three information resources. Components of information access and delivery mechanisms. With the emergence of e-journals, these three components are likely to submerge, integrating all the three components through a common interface technology.

The bibliographic databases and document delivery in future is likely to become byproducts of the evolving e-journal system. As a major benefit of the e-journal revolution the table of contents and abstracts for most of the scholarly and scientific journals are accessible today, free. This development can fill the databases access gaps for Indian Libraries to some extent.

2). Copy right issues in Electronic publishing :

Essentially, “e-publishing” is when you have your book online to be downloaded onto a user’s computer. These books are stored online and the reader’s download the book or article to read in leisure. An “e-book” on the other hand, is an electronic book that can be read with a computer.

The first issue is whether electronic publishing qualities as publishing, as per the copyright act 1957 (India) publication means making a work available to the public by issue of copies or by communicating the work to the public”. There are two ways of publishing as per this definition the first one is that of issuing copies and the second one that of communication to the public other than by issuing copies.

What is e-publishing? It is making available to the public “copies of work” through a network of computers or Internet. Here, the time-honoured concept of
'copy of a work' comes under challenge. When we talk of a copy, in the case of a literary work usually a paper copy, which is bound. When we say a publisher has published 1000 copies of a book, we mean he has brought out 1000 material copies that we can touch, count, stack, destroy.

In the case of e-publishing we do not see the 1000 copies stocked in one place. We can not touch or count them. Even their dispatch is quite different from the usual distribution through transportation. Here, through signals of binary digits zero and one, we distributed to any number of computers simultaneously and instantly.

2.1 Copy:

What is a copy? The Act does not define 'copy'. But we know that copy of a book is a identical reproduction of an original. In fact the etymological meaning of 'copia', the Latin root word, is transcribed. Section 14 (a) says that reproduction includes "storing" of a work in any medium by electronic means. Since e-publishing is issuing of copy of a work using of electronic means and it involves storing of the work in a digital format, it is covered by the definition of 'publishing' in section 3 of the copyright Act. Therefore, e-publishing protected under copyright Act.

Section 3 of the copyright Act further provides that communicating a work to the public is also 'publishing'.

Communication to the public means making any work available for being seen or heard or otherwise enjoyed by the public directly or by any means of display diffusion other than by issuing copies of such work regardless of whether any member of public actually sees, heard or otherwise enjoys the work so made available.

The language of this definition is such that keeping any work in a digital format in a computer that is a part of a network becomes 'publication'. Thus
storing works in such web sites as ‘publication’ as per the copyright Act and, therefore, e-publishing comes under the purview of the Act.

Internationally the major issue that e-publishers were facing was that of coverage of e-publication by the definitions of rights of reproduction and distribution strange as it may see, in India, the copyright Act covers e-publication.

2.2 Right of distribution:

With regard to the right of distribution there is, however, the issue of ‘first sail exhaustion’ section 14 (9) (ii) of the act while reversing with the copyright owner, the right to issue copies of the work to the public, excludes ‘copies already in circulation’ from the purview of that right. So far as physical copies of a work this does not cause a problem and is a perfectly understandable exception.

However, in the case of a digital copy how this exception clause works is a root point. If a person having purchased a work in digital format makes another copy for personal use and then sells the copy to another, will he not be infringing on the right of the owner? More importantly, how does a publisher or copyright owner monitor movement of a second hand copy in the e-world?

2.3 Digitization of non copyrighted matter:

The criterion of ‘originality’ the basic concept of copyright raises certain questions in e-publishing. This has many connotations. For example, if a publisher converts a work in the public domain to a digital format from the print format, how his investment and effort are protected? Since the work is a non-copyright one, any person can freely reproduce or distribute that work. Therefore, if a person gets access to the digital version and makes a number of copies of the same then he will not be infringing any right. At the same time, the investment of the publisher goes down the drain. How to protect his initiative and investment is a point to be probed.
2.4 Multi-Media Products:

A major issue in e-publishing is that of ‘multi-media’ products. Because of its versatility, e-publication does not limit itself to more reproduction in digital format of a literacy work. They tend to become multi-media works. This poses some difficult questions for publishers especially;

I. What is the ‘work’ to be protected?

II. Who is the author of such a ‘work’ and the owner of the rights?

Is the multimedia product a literacy work or a cinematographic work or a sound recording? Under which class would it go if it were a some of many components, which form separate classes of work? This poses further problems. Protection of a multimedia product a highly complex issue because of variegated nature of rights in different works. The application and enforcement procedures of rights such as communication to the public and rental rights differ from one class of work to another therefore; there may be a need to introduce a separate class of copyright works as multimedia works whose rights may differ from those of other classes.

2.5 Across Countries and Continents:

E-publishing by its very nature spans across countries and continents. This raises a number of questions with regard to the laws applicable and territorial licences. If a book written by an Indian author, published by a British firm, issued through a website located in Hong Kong and made available on the internet to a person in the U.S.A., the law of which country would be applicable? Can owners issue territorial licences in such publications? If so, how those territorial licences can be respected and enforced. There are issues, which do not elicit ready answers.

Presently, it is not possible to insure whether the presented information is legitimate or not. By making adequate provisions in the copyright law, the integrity of publishers and authors works will be protected allowing for one to
know the authenticity of a work. Some assurance must be therefore the publisher that they are the ones making the profit on a work. Publishers will need to determine a way in which they can cover costs and still work within the constraints of the electronic format—because of the uncertainty of electronic rights, publishers and authors are attempting to solve the issue on their own because the legal field has not resolved copyright issues.

Electronic publishing products may include text, graphics, audio, video, numeric and textual databases references sources such as dictionaries and atlas and computer programs.

3). Need and importance of Electronic Publishing:

The need to control and provide easy access to ever increasing volume of information, the explosive growth of the lost raw materials used in publishing, the need to reduce the time required in conventional publishing and the realization for the potential and unique feature of Electronic media are some of the reasons which have resulted in the shift of emphasis from conventional publishing to electronic publishing.

The varied tastes of the user communities along with their steady claim, pinpointed and Instant Information obligated the libraries and Information scientists to transform the dimension of dissemination of information from customary to electronic form so as to persuade the need of the users at any point of time, for which electronic publishing became a positive modus operandi to unravel the problems of the users. In electronic era electronic publishing is a decisive constituent to prove the validity and the validity of technological efficacy of Information sources in the most appropriate and effectual manner.

Electronic publishing allows faster dissemination of Information than print technology because the step of printing on paper is eliminated altogether Information
may be made accessible on electronic networks weeks or months before it can appear in print forms.

Reduction in the numbers of costly subscription to periodicals and journals. Reduction in the space required to store paper based Information. Access update Information a user can perform a fast in minutes that world takes hour to perform a manually. Information is updated regularly wherever library references material can be out dated. The time consuming job of searching manual systems, which often very on the depth of knowledge of an individual is removed. It eliminates the time spent in clipping and filing articles which may be of interest.

Publishers embraced electronic publishing technology recent years because it speeds up the publishing process, makes editorial changes easier to accomplish, and enables the relatively small publisher to effectively participate in publishing authorities. Electronic publishing has opened up new markets such as publication of encyclopedias in CD-ROM format, creation and distribution of electronic databases of indexing and abstracting services, and electronic journals. In fact, since most of the publishers are now requiring their authors to send in their manuscript in electronic format, it is relatively simple to load them on computers and make them available to readers and libraries.

Electronic publishing resources improved library services to their customers and made this internal operation more efficient. For instance users can now search vast databases, print results of their searches, download papers and information of interest, and further incorporate this electronic Information into their regular day to day work.

Electronic publishing gives greater freedom to researchers to disseminate their research results without having to go through the cumbersome route of finding a publisher who is willing to publishes their results. In this context, publishers and scholars are working with different objectives – publishers need to make a profit while
scholars to bypass the publishers and disseminate their scholarship directly to others and interested by persons. Some reasons of E-publishing which can be categories as :-

1) Need to support paper and Electronic methods of knowledge dissemination parallely.

2) Information needed by faculty and students is increasingly exponentially in the science.

3) Inter-disiplinary research / new fields of research have increased the scientists need for new Information.

4) Rising cost of journal publications coupled with the explosive growth in research and the concomitant explosion of paper journal in various disciplines have made it impossible for most libraries to maintain a comprehensive selection of literature.

4. Existing Publication Routes:

Let us explore this idea of extending human knowledge further by considering the publication routes currently available to us. Journals exist principally to disseminate research Methodology and results to other workers active in the research area. Books typically provide overviews of the research field in a more tutorial fashion than do papers their coverage is normally wider but less detailed. Conversely conferences are generally used for exploring ideas and presently preliminary results. Their proceedings being principally are cord of people's opinions before the event. They are usually regarded as being more ephemeral than journal or book publications, through the increasing tendency to publish conference proceedings in book form intimates against this Indecol. There are many very widely referenced conference publications and equally many rarely referenced journals ones.

The crucial factor of these publications routes, development over the years, is that of peer view; an author must be able to convince other efforts in the research area that his or her work is worthy of publication. The standard of referencing for journal
publications is typically quite rigorous. This is the above mentioned principle of extending human knowledge other types of paper are also of value of course: review of particle techniques or applications, tutorials and so on.

For books, peer reviews is also an intrinsic part of the writing process, through the over-siding factors here at least from an author's point of view – is the quality of explanations (publisher are quite rightly, concerned that the book should have a market) originality is less important is book publication since the intended audience is usually non-expert.

Conference publications are also subject to peer review but this is typically less rigorous than for other types of publication. This is partly because conferences are intended to be a place where one may discuss ideas and results with other researches. There are other reasons too the review panel for a conference is typically of limited size and the deadlines required to ensure rapid decisions are such that errors may be overlooked. The more cynical among us might even remark that conferences exist principally to make money and consequently even poor submissions may be accepted by some conference organizers to increase the number of delegates.

There is another type of publication that must enter our consideration and that is the technical report. These are quite rightly, regarded with some caution as they have not been subject to the peer review process, hence, their accuracy and correctness are always suspect. Nevertheless, there are many excellent research report is actually the better work of reference because there is more details of the methodology and results.

The number of research reports made available is rapidly increasing. Although this is generally a convenient state of affairs, since reports are available quickly after a piece of work has been completed, there are also dangers, the lack of peer review and the possibilities for bias are obvious. More worrying in the danger term however is the
potential for the loss of knowledge: technical reports can and often do disappear as quickly as they appear and when that happens there are rapidly forgotten.

4.1 Drawbacks of Existing Publication Routes:

Having considered these routes for dissemination and their success, let us turn our attention to the problem associated with them.

From the above discussion, it might appear that the journal publication routes would be difficult to improve upon. This may be true in principle, but the practice is somewhat different. Firstly, the number of journals has increased dramatically in recent years, due to a number of factors:

- The advent of computer typesetting has simplified and streamlined the production process, reducing the overheads involved in journal publishing and hence facilitating journals with smaller readerships;
- With the pressure to publish upon researchers, and with the long established journals being unwilling or unable to greatly increased the number of papers published, there is a market for other journals;
- The increasing specialization of every research discipline means that there are more niche journals (usually termed specialist publications).

These developments, each of which seems beneficial individually, have some unfortunate consequences when considered in toto: although journals publication has become easier and arguably cheaper, the cost of institutional libraries has certainly not decreased; and, since the number of journals required to maintain a good coverage of a research area has typically increased, many libraries are now in the position where they are having to terminate their subscriptions to journals. This does not benefit the researcher, who must either take out personal subscriptions (not feasible if he or she is alone or as part of small group) or find some other means of monitoring published papers. perhaps
by traveling to a neighboring institution or by making use of abstracting services (which also cost the institution money, of course). It is easy to say that many of the 'upstart' journals are of indifferent quality, but this does not imply that all papers published in them should be disregarded.

A related issue, also consequent on the increasing specialization of researchers, is the duplication of work that is well-established in other fields. For example, few vision researchers read the computer graphics literature or vice versa even though the geometrical basis for the two is identical; people working in remote sensing and medical image processing who need to align images are not familiar with techniques developed in electron microscopy; and so on. There are probably two reasons for this: the relevant journals may not be available to researchers, and they may not have time to study them in any detail. It might be argued that this is a direct consequence of there being too many journals; however, the authors would argue that, with effective abstracting services, it should be easy to locate relevant papers.

The second major problem with journal publication is that their latency — the delay between submission and publication — is too long, up to two or three years for the more prestigious journals. Although accepting that rigorous peer review takes time, it is difficult to argue that this is efficient professional communication. Since may research group work on closely related problems at the same time, this lag in making new ideas and results known does us a disservice. Indeed, the increasing tendency to make available internal research reports is partially in response to this phenomenon.

The final point to make about journal publications has already been touched upon above: constrains are invariably placed upon authors regarding the lengths of papers. In order to be able to discuss methodology and present experimental data, this results in papers that are often difficult to read and understand. These same constrains means that there is rarely space for authors to
describe why they have taken the approach being described and so on. (Indeed, one of the authors has been asked, on more than one occasion, to remove such material from papers because it is not relevant). However, this type of discussion offers inside to the reader. There is a well-published case in which researchers involved in the early development of atomic energy are being interviewed by the current generation of researchers in order to capture just this type of information while it is possible: they found that reading research papers and reports is simply not enough.

The space constrains mentioned for journal publications normally apply with a vengeance to conference proceedings: three or four quarto-sized pages not a uncommon limits. This is enough space to present a technique in a compact form, along with one or two (hopefully representative) results, but nothing more.

We have to ask ourselves these types of publications are serving us well. To give a topical example, one of the main problems facing vision at the moment is producing techniques that are robust. Do publications that show only one or two carefully selected examples really further the discipline? The authors would argue that they do not. Of much more value are reports of work that present a technique, test it on a significant corpus of data, and characterize the other published techniques. It is not necessary that a new technique perform better than a well-established one, merely that it shows promise.

4.2 Online Publication:

Having expounded the basis for making others aware of research and identified the major drawbacks of existing publication routes, let us turn our attention to the dissemination of information over computer networks. Just as with conventional journals, there are several classes of online communication, which we shall consider in the following paragraphs.
The first class, familiar to almost every researcher, comprise direct electronic mail (email) and email lists. There are several emails lists in the vision area (indeed, one of the authors moderates one). A culture has grown whereby these lists are used principally distributing conferences calls, there is almost no technical discussion in them – which is something of a surprise, since that is precisely what most of them were set up for.

Closely related to email lists are newsgroups. Although there are many newsgroups that carry relevant and useful information, there is only one dedicated to vision – and that simply mirrors a mailing list! In fact, with the opening up of internet, the signal-to-noise ratio of most newsgroup is rapidly approaching zero, and the politeness and respect for other people's opinions has already vanished. None of the information dissemination routes in this email and newsgroup class provide for the more formal types of communication that are the subject of this essay.

The second class of communication route, more relevant to our discussion, comprise two separate phenomena:

- Pre-print and technical report servers: There are several disciplines where rapid dissemination of research work has been achieved by instigating servers for pre-prints (i.e., papers also being submitted for conventional publication) and technical reports. These typically operate by distributing abstract by email from a central server; interested readers then acquire the complete paper by anonymous FTP. The best-known examples of this currently lie in the particle physics field, where papers are typically written with TeX or LaTeX mark up, figures being in POSTSCRIPT.

- The first generation of "electronic journals". There are over 800 such journals, covering all the natural and social science and the humanities. (Indeed, some of those in the humanities have been the most successful). Some are, to be candid, little more than mailing lists, while other do
involve peer review of varying degree of rigour. They are typically text only, unable to provide quality output, and have no real support for mathematics or graphical output. Many of them are distributed only by email, or are retrievable from only one server, so there are potentially access problems.

The third class and the current state of the art consists of journals on the world Wide Web (WWW) which offer quality output via POSTSCRIPT and are able to accommodate mathematics, tabular and graphical material. They offer some advantages over printed journals too: they are searchable and are able to offer hypertext links within papers and to cited works. Many of these journals are organized analogously to conventional publications, having rigorous peer review, editorial boards, and so on. It is worth noting that several well established conventional journals and professional societies are slowly moving towards online publication.

This latter category is almost enough to meet the needs of the vision, pattern recognition, and related communities but not quite the additional technology required, however, does exist, albeit in a rather experiment form in some cases.

Images, the staple diet of vision research, are supported by all the popular WWW browsers, both on workstations and on PC-class machines. Both uncompressed (PBMPPLUS) and compressed (lossy via JPEG or lossless via GIF) formats are supported. Online viewing of imagery has four major advantages over printed imagery

4.3 Advantages:

1 Colour images are significantly more expensive to print than monochrome ones and so colour images are at a premium in most
journals. This constraint does not, of course, apply to online viewing: the additional bandwidth required to carry colour is not great and all serious researchers have access to colour displays.

2. The printing process invariably degrades the appearances of images and can introduce visual artifacts. The situation is even worse for colour images since the colour gamut available via printing ink differs significantly from monitor gamuts.

3. Images with poor visual details may be enhanced interactively by the online reader, perhaps yielding further insight into the operation of an algorithm.

4. Imagery available online may be used by other researchers. This is a particularly significant point, one that we shall consider further below.

A topic that is important in many areas is motion and this is something that no printed journal can accommodate. (Actually, there are image coding journals that have tried distributing videos with issues, but this is problematic libraries are not well equipped for storing or viewing them, and the degradations introduced by bulk copying onto even U-matic videos can mask fine detail). In the online case, of course, replaying motion sequences comes down to having an appropriate "helper application" for a WWW browser. The current norm is to use MPEG-1 decoders; while this is not necessarily appropriate for all applications due to the nature of the compression, it is certainly acceptable for viewing. Indeed, with a careful choice of viewer, one may reply sequences in slow motion or frame by frame.

Although vision per se is concerned principally with imagery and information derived from them, the closely related discipline of pattern recognition need not. Research in areas such as speech recognition which has made important contributions to image analysis would also benefit from the ability to play audio data. As with motion sequences, most of the popular WWW browsers support audio. It must be admitted that there are a number of formats for
storing audio data, but it is easy acquire software (e.g. sox) that performs formats inter conversion.

There are other developments in terms of presenting data on the WWW that will be beneficial the most significant of these is likely to be the Virtual Reality Modelling Language (VRML), a “language” for specifying 3D environments. Since one of the most important topics in vision is the retrieval of 3D structure (from stereo motion shading etc) a facility whereby an author may show his or her results by means of a 3D model, one that the reader may rotate using a VRML browser, would be invaluable. The current generation of VRML browser display static scenes; however, adding “behaviors” to VRML is under active discussion, so it will soon be possible to produce animated 3D displays, with obvious applications in displaying results.

The features just mentioned can be supported by an online publication much more easily than by a conventional publication and without the degradations caused by using paper as an intermediate medium. Moreover, this can be extended even further if the final destination of the research is considered to be not just the human reader but also his or her computer. This raises the possibility of exchangeable datasets. Although databases of images exist, it is not clear how widely they are used and they seem to be somewhat decoupled from the application aspect of research. By making an explicit link between the publication and the image data within it, the reuse of this data is encouraged, facilitating comparative evaluation of algorithms.

What applies to data applies equally to code. Authors are discouraged from presenting code in their papers even though this is often an easy way of explaining the operation of an algorithm. If source code were available within a publication, it would encourage readers to try out their own experiments and build upon the work presented. Not all authors would wish to do this of course, but at present the path is not open those who do.
4.4 Possibilities for Online Publication:

The obvious medium for disseminating online publications is via the WWW, as WWW browsers such as Netscape and Mosaic already support images, audio, and video on both PC class machines and workstations. Since there are no 'page' constraints on WWW documents, authors are free to write arbitrarily long papers if their work justifies it. (of course, extraneous and over long text will have to be shortened, but this is a common outcome of reviewing). Moreover, many of the shortcomings of HTML, the mark-up scheme for WWW documents are being eradicated. HTML 3 will be SGML compliant, support the concept of style sheets, and incorporate facilities for mathematics and tabular material.

A further advantage of the WWW for 'publication' is that utilities exist to convert from the major text preparation tools used in science and engineering (e.g. LATEX, MS Word, Word Perfect, Frame Maker) to HTML. This allows authors to prepare their submissions in an environment that is familiar, if they so wish, leaving the conversion to HTML until the point of submission. (Or perhaps even later: it might be easier for the editors to perform the conversion, as they may wish to use customized converters that impose the journals style). The viability of this process is illustrated by this document, which was written using LATEX mark up and converted to HTML via LATEX.

To be successful, an online journal should not be tied to a particular server: there should be servers in different geographical region that mirror each other's papers and WWW pages. (There is, of course, software that can carry this out automatically). As well as providing fault tolerance, so that if one server were down, a reader need only point his or her WWW browser to another, this scheme would ensure researchers obtain the best response for reading or submitting papers.
Having produced papers on the WWW, it is but a small step to contemplate recording them on CD-ROM. This might, for example, be an appropriate way to solve the problem of distributing online journals to libraries. (It is unlikely that this could be arranged free of charge, and so this has potential as a source of revenue for individual journals). Paper copies are still required in order for the journal to be assigned an ISSN; but the number of copies that must be lodged is small and they are easily generated from the online version.

Let us consider how an online might appear, for both a reader and an author. The scenario described below is just one possibility; one that the authors consider is most likely to be successful.

For a reader.

Imagine, for the sake of argument, a researcher who is not working in the vision field but who wishes to make use of vision or pattern recognition techniques in his or her work. This person learns of the online journal and wishes to use it to learn about potentially relevant work. The first step is to connect to the main WWW page for the journal. That page offers the reader links to further information, including:

- The journal’s “mission statement”
- Information on how to read papers online and how to print version of papers
- A list of the keywords used to classify papers
- Searching for a paper by keyword, by author or by institution
- Free text search through papers
- A complete list of published papers
- A list of abstracts of paper under review
- News and conference announcements
- How to “subscribe” to the journal
- How to submit a paper
The person could learn about relevant papers by identifying appropriate keywords from the list, then searching for papers that supply that keyword. If that is not successful, the person could perform a free text search through papers using, for example, WAIS. Any papers found by the searching process will be presented to the reader as a WWW page of titles, authors, and abstracts, with links to their actual texts. This is essentially how WWW search engines, such as the popular Yahoo one, work. An implication of this is that will be beneficial for a journal to have a wide remit, as it will still pick up papers that might be peripheral to most people’s interests but highly relevant to a few readers. Alternatively, related online journals might share publications databases.

There is one item in the list that may appear strange for an online journal:

- How to “subscribe” to the journal

The authors envisage that individuals would subscribe by filling in a WWW form that defines a “profile” of interests (probably using the same set of keywords). Then, when a paper is published, subscribers with profiles that match the keywords in the paper are automatically notified by email of its title and abstract. The message also containing the URL of its text. In an altruistic world, this type of subscription would be free; but individual journals might in principle charge for it, as a way of recouping the cost of the system that hosts the journal on the network.

For an author.
The “home page” by which readers access the online journal can also point potential authors to submission instructions. It is envisaged that the submission process will run as follows:

1. The author completes a WWW fill-in form detailing the paper’s title etc and emails it to a submission address at the journal. The paper is assigned a unique identifier (probably containing the year and the site to
which the paper has been submitted) which the author uses in all further communication.

2. The author uploads his or her paper (perhaps in LaTeX format) by anonymous FTP to the journal’s server compressed tar or zip file which also includes images and figures.

3. The editor extracts the paper from the uploaded version, saves it in an appropriate directory, and makes it available from the WWW server with password protection, perhaps as POSTSCRIPT. The paper may be anonymized if double-blind refereeing is employed.

4. The editor selects reviewers and notifies them of the paper’s URL and the associated password, without which the paper cannot be viewed.

5. The reviewers return to the editor their comments via email.

6. The editor forwards the reviewer’s comments (suitably anonymized) to the paper’s authors by email.

7. Assuming the paper was accepted, the author uploads the revised version by anonymous FTP.

8. The editor’s ‘publishes’ the paper by allowing public access to the directory, linking the paper in the journal’s WWW pages, and emailing the paper’s details to subscribers as appropriate.

It is worth noting that many of the individual steps in this sequence may be partially automated by means of appropriate software. Indeed, there are programs (e.g. edas) already in existence that perform several of the tasks. If confidentially is regarded as problematic --- since email is clear text, anyone can in principle read it --- then public-key encryption packages such as pgp may be employed for most of the communication steps outlined above. Finally, authors are often concerned that they have little visibility of the status of their papers. With the scheme outlined above, all transactions for each paper being recorded, it is easy for a WWW CGI script to inform a requestor that, say, one review has been received but that two others are outstanding.
The great advantages of this 'publication' route are that the only delays built into the system are those involved in the peer review process. It is also entirely possible that editors may link together papers. This might, for example, be used to trace the development of a technique through a number of references; or it might be used to link to further papers that agree or disagree with an author's findings.

4.5 Outstanding Issues:

The key to a high quality professional journal is the peer review system. The present system works to an extent, but poorly selected, inexperienced and/or overworked referees mean that the process is often less than perfect. There are many other ways of applying peer review to maintain high quality which an online journal would facilitate. One option is that of "open peer commentary" plasticized in Brain and Behavioral Sciences. In this journal, papers are accompanied by as many as twenty or thirty 1000-word invited commentaries from experts, together with a response from the authors of the initial papers. This allows the papers to be placed in context and encourages fruitful discussion of issues raised. A hyperlinked online journal without page limits would allow such a scheme to be applied. Another possibility is to include, within the online journal, a list of links to unreferred papers or technical reports, to encourage readers to keep up to date with the latest work and to communicate with their authors.

Apart from the question of peer review, the major concern expressed by potential authors when the idea of online publishing is suggested.
5. **Difference between Printed Document and Electronic Document.**

<table>
<thead>
<tr>
<th>PRINTED DOCUMENT</th>
<th>ELECTRONIC DOCUMENT</th>
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<tbody>
<tr>
<td><strong>1. Physically Presence</strong>: Books and other printed texts have direct physical presence. You can hold them in your hands carry them around stick a finger between the pages and have a book mark in them.</td>
<td><strong>1.</strong> Electronic texts appear on displays, gleaming at us from behind glass or plastic cover, with no tangible properties of there own you can touch the device that shows you an electronic book and if the device is portable, but you can not touch the book itself.</td>
</tr>
<tr>
<td><strong>2. Format</strong>: The format of the printed document is basically paper.</td>
<td><strong>2.</strong> Electronic books are available in electronic format like floppies, CD-ROM’s, text file databases, HTML format etc.</td>
</tr>
<tr>
<td><strong>3. Expensiveness</strong>: Printed documents are expensive.</td>
<td><strong>3.</strong> Electronic document are expensive the first times, updates are normal.</td>
</tr>
<tr>
<td><strong>4. Restriction</strong>: The research of the printed documents are not restricted.</td>
<td><strong>4.</strong> The research of the electronic books are restricted to those who have or can have access to computers and networks.</td>
</tr>
<tr>
<td><strong>5. Mode of Delivery</strong>: The mode of delivery may vary and the time taken for delivery is slow and limited.</td>
<td><strong>5.</strong> The delivery mode is fast ranging from seconds to minutes through networks.</td>
</tr>
<tr>
<td><strong>6. Cost</strong>: Cost of archival is relatively less</td>
<td><strong>6.</strong> The delivery mode is fast ranging from seconds to minutes through networks</td>
</tr>
<tr>
<td><strong>7. Technical Knowledge</strong>: No need of technical knowledge.</td>
<td><strong>7.</strong> Cost of archival is relatively expensive at the moment.</td>
</tr>
<tr>
<td><strong>8. Organized</strong>: Physical stage can be organized.</td>
<td><strong>8.</strong> As of now e-books are unorganized at present.</td>
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6. Characteristics of Electronic Publishing:

Electronic Publishing has specific characteristics that distinguish it from print publication.

i. Electronic publication can be produced and disseminated very rapidly.

ii. An electronic text can be updated or corrected with the same immediacy, if correction is necessary.

iii. Electronic publication can be made collaborative and interactive, involving either several ‘authors’ or authors and readers.

iv. Electronic publication can be disseminated world-wide without the need for separate rights/negotiating for different countries and without the costs of distribution and reprinting.

v. Where an electronic publication is charged for, the producer does not incur the costs associated with traditional book selling.

vi. Electronic documents are not localized in other words; with the help of late communication they can be used from anywhere with the user even not knowing where it is stored geographically.

vii. Several people can use online electronic media at the same time.

viii. It is easier to copy them or download them in user files.

ix. They are less bulky than the paper documents.

x. They are very flexible, as it becomes easier to revise, rearrange, reformat and combine them with other documents.

7. Issues and Concerns of Electronic Publishing:

The problems and concerns of publishers, library and information centres as well as subscribers include issue of single article versus full issues of electronic journal, copyright, users friendliness, pricing, Intellectual property rights, professional.
role, networks, incompatible hardware and software, formatting graphics, scholarly recognition and obsolescence some of the problems in electronic publishing are:

i. High initial cost  
ii. Incompatible hardware and software.  
iii. Weak infrastructure of computer and communication network.  
iv. Delay in release.  
v. User training.  
vi. Incredibility.  
vii. Inconvenient to use.

8. Advantages of Electronic Publishing:

Electronic Publishing would have several advantages:

8.1 Accessibility:

It will take only minutes or even seconds rather than hours or days (provided the equipment is available) more efficient dissemination of information is possible through the matching of articles newly accepted into databases with the interest profiles of potential users.

8.2 Speed of production and distribution:

The printing and mangling processes are eliminated while authoring and publishing systems can be integrated easily. Electronic transmission, especially in the review process, saves valuable time. This production mode also establishes network communication among authors, editors and referees.

8.3 Subscription cost:

The subscription price for print journals is increasing rapidly in contrast to the decreasing budget of libraries. Compared to this subscription cost of e-journals is less. The producer does not incur the costs associated with retail bookselling i.e. there are no 'middleman’ costs.
8.4 Hyperlinks:
Link available both with in the article and to other articles are very helpful for the users. Even publishers and authors can be contacted via e-mail links.

8.5 Multimedia capabilities:
Besides the traditional plan text, data and information can be presented using other features like three-dimensional models, motion video and sound.

9. Disadvantages of Electronic Publishing:
There are some disadvantages of electronic publishing such as:

9.1 Technological Barriers:
The technology is still, to a significant degree, user friendly to many people. All the academic community may not have access to needed equipment and network. They are still reaches only a minority of potential users or customers.

a) An electronic version not only requires computer hardware, but also software, and this software will have to know the format of the journal to display it.

b) On-line journals are less permanent (the response "this URL doesn't exist" is quite often).

c) Some time the network connection can be slow and the screen quality of graphic and photos will not be that good.

d) The technology consumes a greater amount of energy in its use than the book.
9.2 Economic Barriers:

a) The equipment required for accessing e-journal is expensive, frequently needs replacing as technology progresses and incurs heavy maintenance costs.

c) Even to read the abstract one may have to pay too much students and researchers who are the main users in academic libraries may find it difficult.

d) The pricing schemes of some suppliers of e-journals are very complicated and limiting and this might hinder libraries from utilizing e-journals. Sometimes full-text e-journals cover only a small percentage of what is available in paper.

10. Access Models for Electronic Publishing:

Internet by its very nature of technology and utility is a remote access model. Seamless access is a possibility through liking information resources like databases and e-journals distributed at several sites. Internet and its secured cousin Internet have however, through up different access models that fit into the convenience of libraries. The access models for Electronic publishing have emerged such as –

i) Electronic Book:

Publishing a book electronically is to achieve quick dissemination of Information. A book may not have contemporary value that a journal has but it certainly has an archival and reference value. A number of Encyclopedia do come out on CD-ROM. It is felt that the Internet is not a satisfactory platform for publishing full text of documents but CD-ROM is an appropriate medium for publishing books. Books length e-text are also available on Floppy disk. Most e-texts published on CD-ROM are public domain works including encyclopedias.
ii). Electronic Periodicals:

This new medium is vehicle of scientific research. This category includes electronic journals, newsletters, magazines and discussion lists. Perhaps no other area in electronic publishing has received more study than the area of electronic journals, particularly as they apply to scholarly research.

Franks (1993) authorized a more recent article that provided analysis of current forms of electronic journal publication, explored some alternative possibilities for an electronic research journal and commented on the strength and weaknesses of those alternatives.

iii). Electronic databases:

With the emergence of computers and communications technologies, the strength of Information system in the development of modern database has taken new shape. The Information originating from a database has become a large segment of electronic publishing that provides a base or foundation for procedures, such as returning information, drawing conclusions and making decisions.

The holdings of the library database consisting of books, periodicals, reports and these can be converted into electronic form that allows access for public use through digital networks. The online electronic library card catalogue (OPAC) shows how information could be published and that enables users to search the document with various access points like author, title and subjects.

Various electronic database publishers today account for publishing information both bibliographic and full text on CD-ROM as well as making them available for on line retrieval. The prominent on-line publishers include DIALOG, BRS, EBSCO host etc.
An excellent example of an electronically published database, the ERIC (Educational Resources Information Centre) database is the largest educational database in the world that contains more than 800,000 records with the addition of 30,000 new records per year. ERIC available in CD-ROM format as well as on the free of charge (URL: http://www.accesseric.org:81).

iv) **Text processors:**

A number of easy to use text processing programs have been available for years. Simple text processors such as notepad for windows, simple text for the Macintosh and edit for DOS allows users to easy open and save text files.

v) **HTML (Hyper Text Markup Language):**

HTML is a simple language used to create web documents. It is these HTML language “tags” that designate heading, list, body, text, images, hypertext links etc. it is based on SGML a formatting language developed by the International Standard Organization (ISO) for higher level document annotation. Hypertext link and cross platform capability are some of the advantages of HTML.

vi) **SGML (Structural Generalization Markup Language):**

SGML is a set of rules for describing the structure and managing the content of any digital document. It can create complex documents that can be shared across a corporation or industry that can remain linked to source Information for instantaneous updates.

vii) **PDF (Portable Document Format):**

It is an electronic document system that allows for the creation of formatted documents that includes text, graphics and page layout elements along with Hypertext links to other locations within the document or to other
11. **Role of Librarian in Electronic Information Environment:**

Electronic publishing may be considered as preparation, storage and dissemination of Information primarily textual and graphic, using computer and telecommunication. Electronic publishing has started playing a powerful role in Library function. The types of materials being published electronically or optically are:

I. Indexing/abstracting journals.
II. News paper/News magazines.
III. Primary journals.
IV. Reference books.
V. Directories.
VI. Library catalogues, indexes.
VII. Consumer applications.

Electronic publishing may be magnetic type/disc, CD-ROM, Audio-video cassettes, etc. electronic can be in the form of a database that can be searched offline and online. Publication in electronic media will entail quicker and better literature search and retrieval service including SDI to users. Online ordering of documents and dispenses with paper work for carrying out the transactions. If a library has equipment like graphic terminals, facsimile machine and digitizes with Satellite earth station, very fast document delivery service could be offered. Developments along these directions are already taking place in western industrialized countries.
11.1 Issues before Librarians:

Librarians have been dealing with different formats of reading materials over the years. Some of the issues that are often mentioned with respect to electronic journals are briefly described below:

I. Access v/s ownership:

Subscription policy for e-journals are for normally for one year. Afterwards it has to be renewed. Several issues related to this aspect is not yet clear.

II. Collection Development:

Identification, selection, processing, organizing and evaluation are some of the issues that needs to be addressed. Further, whether to continue the print version or subscription to both print and electronic or electronic only or no subscription at all, but pay-per access. Whether to have single access budget etc, are some of the issues that will have to be faced.

III. Processing:

Classification and catalogue will drastically change. Will the catalogue entries provides a link to publisher’s site or what are the other details the entries have OCLC and other agencies have started working on these issues, but it will certainly change the whole process of processing e-journals.

IV. Hardware and software connection:

Not all libraries can afford a to have full connection to the internet and have all the facilities to access, download and preserve the e-journals. Cost involved in creating the entries infrastructure, network connection and printing may be deterrent in using e-journals.
V. Network Traffic:

Current trend indicates that everyone is in a hurry to place their interest, this is going to slow down the data transfer rate, particularly when one wants to access the journal with images, graphs, charts, etc.

VI. Economic factors:

We fact that e-journals will cost less, but one can find from pricing policy of some of the publishers that, these journals are not going to make any substantial saving for librarians. Whatever little saving can be done from annual subscription will go as overhead cost.

VII. Storage and Archiving:

Most of the e-journals are available with images hence require large disk space to store and archive. Though the cost of hard disc has gone down, but looking into the requirement for archiving the back issues will be difficult to cope with. Also, whether the new software can handle for retrieval for stored data.

VIII. Standardization:

It is not very clear, what is the acceptable standard format, that all e-journals will follow. There are several formats viz. PDF, postscript, SGML, HTML, TX, DVI and ASCII etc. that are being used. In some cases, it is a combination of more than one. Some publications have their proprietary software to handle e-journals. The libraries will need to have all these software to access, retrieve view, download and print the articles.

IX. Training and Education:

Not all librarians and users will have familiarity in using the technology associated with e-journals. Training the staff and every user will be another task for the librarian which takes considerable time.
X. Copyright issue: Controlling the misuse or use without paying for e-journals will be a major problem for both publishers and libraries. It is very difficult to make users to adhere to copyright law.

XI. Acceptance:

Acceptance of e-journals by the authors, librarians and end users is another question. Not all the authors would like to publish their articles in electronic versions. Librarians are also yet to accept the e-journals as an alternative to print version librarians are also yet to accept the e-journals as an alternative to print versions. Having used print versions for so many years, users will take some time to feel comfortable with e-journals.

Other issues to be considered are evaluation of e-journals, retrieval and browsing individual’s subscription and bibliographic control of e-journals. These will give new dimension to the librarianship and provide new opportunities for the professionals to work and enhance their skill to keep up with the trends.

12. Role of Publishers in Electronic Information Environment:

The publishing industry is based on the integrity of any work created or published and the willingness of the public to pay for such works. The publisher plays an integrated role in the creation of the work though editing quality control and assurance, design, production distribution, marketing and promotion. Electronic publishing does not necessarily deprive the publisher of the opportunity to create a visual identity in the mind of the reader. But to avoid being a faceless address on the Internet, the publisher will have to resort to new strategies for helping to create or preserve their identity.
In a electronic world, role of publishers will be greater in the electronic publishing of works. As time goes by what the publishers do will become increasingly important as there role in managing the peer-review process and collecting papers into reasonably coherent and stable journals has been of great benefit in paper publishing. Hence it seems likely that it will be important in electronic publishing. By electronic publishing the publishers can create a much more individualized product for their customers as there are more opportunities for learning about one’s customer base, for getting feed back from readers, and for improving one’s product without having to wait years for one’s inventory of the first printing to be sold out.

In the digital age, when text and even images can be manipulated and altered seamlessly, and without a trace, authenticity becomes a paramount consideration for which the publishers can try to offer reliable source for the real thing with the new digital technologies the opportunities for theft are so much greater that in fact the market for legitimate sales will shrink as the market of readers and users increases.

Publishers justify the assignment of copyright to them by the values that they add to publications and the services they offer. It is sometimes difficult to understand how their role would be compromised if they were just licensed to publish in specific ways. If real, the values they add should ensure their prosperity. More and more innovative ways of producing, collecting and disseminating information are being invented in the digital world. Publisher’s scientists and brains will have to move with times and adopt themselves according to the need of the situation. The roles of the publisher in the digital age will certainly include many of these aspects with some changes and additions that will evolve.

13. Copyright for Electronic Information:

The legal issues of electronic Information include copyright, ownership, pricing and rules and regulations governing multiple usage. The problems and concerns of publishers, libraries as well as users of electronic information like
readability, accessibility and acceptability by the users, readability, accountability of back issues and volumes, authenticity of the electronic information preservations and archival maintenance are to be thought of.

Electronic information is not permanent. It is easily amendable to revise, modify, re-rewrite, re-modify without leaving any resemblance to the original. Its ownership is non-ascertainable and at times can be questionable.

13. Future Trend in E-publishing:

New technologies create new consciousness. The printed book was revolutionary in its time, resulting in new ways of interacting socially, economically and politically. The printed book charged the way people perceive and interact with the world. Today’s computers and telecommunications technologies are creating changes that are equally profound again changing the way people perceive and interact with world.

The existing news is that the industry is groping towards this still uncertain, intriguing future. Infact e-book regarding and sales are stronger than ever. In the past year, 1,600 titles were download more than 3.1 million times at the e-text library at the university of Virginia. That’s 8715 free e-books per day. Mean while, independent publishers and retainers such as Fiction wise and Book locker.com, Hard shell word factory and palm Digital Corp to name a few have reported sales increases to 2001 from between 100 and 400 percent over 2000. OCLC, which provides computer, based cataloguing, reference, resource charging and presentation services to 40,000 libraries in 81 countries and territories are continuing their effort to romp in more authors, libraries, publishers to provide access to users a on a wide variety of subjects and topics.

Courses curriculum are being developed to teach students about the creation and use of PCs, e-books, e-book readers, using the e-library system, how to get e-
books on the Internet and even how to create their e-books. Finally according to Jay Jordan, President of OCLC, "Electronic books and other forms of electronic content are quickly becoming strategic drivers in the sharing and advancement of knowledge in the digital age."

In time it might be easy to store every thing from the Internet, Yet if what we leave in the future is a collection of Listserv archives and if we will have not served the future well. However, we might have created a new discipline known as Information anthropology.

Thus as we approach changing the system, we should do so cautiously and thoughtfully. E-publishing must be concerned with the issue of quality as the technologies promise to open a flood gate of quality. For all of its infinite possibilities, e-publishing must deal with these venerable problems.

Emergence of e-publication has brought forward some of the challenges to the profession. These challenges should be taken a opportunities and despite several problems, e-journals are here to stay and professionals should be prepared to handle them. It is the need of the hour that the profession should rise to the occasion by acquiring the latest skills and techniques of emerging information technology.

Librarians have to give importance to the process of electronic publishing and the application of Information technology in it. Thus, the impact of Information technology has affected the Information professionals. It is high time now to seriously start using Internet as a tool for electronic publishing.