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Directorate General XIII - E/4**

Electronic publishing and Libraries



Telematics for Libraries

**A STUDY OF ISSUES FACED BY NATIONAL LIBRARIES
IN THE FIELD OF DEPOSIT COLLECTIONS
OF ELECTRONIC PUBLICATIONS**

REPORT OF THE WORKSHOP

HELD IN

LUXEMBOURG, DECEMBER 18, 1995



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PREFACE

Since the Commission first started its work with libraries in Europe, prompted by the Resolution of the Council of Ministers in 1985, the move towards the information society has gathered pace and political profile. Libraries, as guardians of and gatekeepers to knowledge and information, have a key role to play in the increasingly complex electronic information environment.

The perspective of libraries, and particularly of national, deposit libraries, is a long-term one. They collect and provide access to a history of acquired knowledge, and preserve that access for the future. In a world of increasingly rapid technical change where more knowledge and information is produced in electronic form, the challenge facing national libraries is how to maintain this long-term view and fulfil their function of providing continuity of access to this knowledge.

The establishment of deposit collections of electronic publications is a keystone in the strategy of long-term availability. Deposit may be a result of legislation or of voluntary agreements: whatever the framework within which it operates, it poses significant problems of an organisational, economic and technical nature.

These problems were high on the agenda of CoBRA, a concerted action involving national libraries in Europe and steered by a forum of eight national librarians. At CoBRA's instigation the Commission has funded a study into the issues facing national libraries in the field of deposit collections of electronic publications. The study has been undertaken within the Libraries programme, which itself is part of the *Telematics systems in areas of common interest* programme under the Third Framework Programme for RTD.

The study has been carried out by NBBI: it forms the basis of the background paper for this Workshop. The full study report will be published by the Commission in late Spring 1996.

Of course, deposit affects not only libraries but also publishers who themselves are facing challenges which are no less acute, with major impacts on the economics and on the models of distribution and use of publications. In the new environment of the information society, actions cannot be taken in isolation and new alliances are called for between libraries and publishers.

This Workshop provides a rare opportunity to bring together key players from the national libraries and publishers in Europe in order to discuss those issues which are critical for deposit collections of electronic publications and to set an agenda for the future collaboration which will be essential if the information produced today is to be accessible tomorrow.

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**REPORT OF THE WORKSHOP ON ISSUES IN THE FIELD OF NATIONAL DEPOSIT
COLLECTIONS OF ELECTRONIC PUBLICATIONS, LUXEMBOURG, DECEMBER 18, 1995**

1. Background and objectives of the Workshop

The Workshop, hosted by the European Commission's DGXIII/E, brought together European national libraries, publishers and experts to discuss deposit collections of electronic publications.

The starting point was the background document for the Workshop (see Appendix 1), based on the findings of a nine-month study into 'Issues faced by national libraries in the field of deposit collections of electronic publications', conducted by NBBi of the Netherlands for the Commission. This study has been carried out at the suggestion of CoBRA (Computerised Bibliographic Records Action) a group, established under the aegis of the Conference of European National Librarians and supported by the CEC, which integrates actions in the area of national bibliographic resource provision and national libraries. It comprises 8 national libraries in the EU, EEA and EFTA countries. The study was monitored by a Steering Committee consisting of Dr. Brian Lang of the British Library, dr. Wim van Drimmelen of the Koninklijke Bibliotheek in the Netherlands and Professor K.D. Lehmann of Die Deutsche Bibliothek.

Most countries in Europe maintain a deposit collection of publications. These collections are usually based on legal conditions which require publishers to deposit their publications with a designated deposit library - usually the national library. In a number of countries there are no legal deposit regulations, but voluntary regulations have been agreed on by publishers and the national deposit library.

The existing methods of legal or voluntary deposit which have been applied to publications on paper do not yet have their parallel in the electronic world. This world is subject to rapid organisational, economic and technological changes. At the same time, there is an ever-increasing number of publications available (only) in electronic form.

Storage and preservation of electronic publications by deposit libraries is necessary to preserve the intellectual record of the information society for future generations. The need for long term preservation of electronic publications is recognised world-wide. In addition, analysis of existing deposit legislation leads to the conclusion that there is no reason for a legal distinction between electronic and non-electronic publications. Urgent efforts are therefore now needed from national

libraries and publishers to collect electronic publications and to store them so that they are accessible in the future. New strategies are needed for:

- the selection of electronic publications by deposit libraries;
- the acquisition of electronic publications;
- creating and maintaining the technical environment needed to store and access these materials in the short and long term;
- providing bibliographic descriptions for these materials, including information on where and how to access them;
- arriving at the level of co-operation between deposit libraries and publishers to ensure best practice in this area.

The overall objective of the Workshop was to establish consensus on what are the critical and priority issues and to discuss what might be done to address them in a timely manner. The specific objectives were:

- to discuss the findings of the study and to validate them;
- to prioritise key issues;
- to identify responsibilities, channels and structures for further actions, in the short and medium term;
- to bring together the different interests in the deposit process.

The study by NBBI did not set out to resolve problems but rather to identify them and bring them to the notice of relevant organisations who could initiate the actions needed to address the problems.

2. Participation

The participants comprised: directors of the national libraries in the EU, EEA and EFTA countries, or their nominated representatives; publishers of electronic materials as well as representatives of publishers' interest groups; and technical experts with experience of the issues. Representatives also attended from the Commission of Preservation and Access in the USA and from its European counterpart (European Commission on Preservation and Access). A full list of those participating is given in Appendix 3.

This meeting provided a rare and valuable opportunity for these groups to meet and discuss issues of common concern.

3. Discussion of issues

The main debate was structured in two sessions: the first focused on issues which affected primarily libraries or which lay principally (though not exclusively) within their responsibilities and remit to address; and the second tackled issues from the publishers' perspective, with the aim of establishing bases for future collaborative actions. The programme for the workshop is given in Appendix 2.

The discussions centred round the following key issues:

- General aspects of legal deposit of electronic publications
- Selection of publications for deposit
- Storage and maintenance of electronic deposit collections
- Bibliographic control of electronic publications
- Providing access to deposited publications

3.1 General aspects of legal deposit of electronic publications

The need for deposit. The need for deposit of electronic publications was confirmed by both libraries and publishers at the Workshop. The use in online publishing of generally accepted standards does provide some guarantee of access in the short-term. However, there was consensus amongst libraries and publishers that without deposit many materials would risk becoming unavailable to future users. Leaving the responsibility for archiving and preservation with the originator of the publication does not offer adequate guarantee of future availability and continuation of access.

Deposit libraries and their role. It is clear that technology and change is having an immediate and wide-ranging impact on the electronic publishing environment and on libraries. However, the historical function and responsibility of national libraries - to store the collective memory of the nation - remains unaltered. Technology, rather, makes it possible for this responsibility to be met and fulfilled in new ways.

Co-operation between national libraries and publishers. Two fundamental principles were recognised here. First, on the side of the libraries, there was clear recognition of the legitimacy of publishers' demands for a fair return. From the publishers' side came the consensus that the national library, insofar as its role of maintaining a national deposit collection is concerned, was not in competition with publishers. The role of the deposit, national library is different from that of other libraries and is hospitable to mutually beneficial alliances with publishers. This

recognition of common interests presented a sound basis for developing cooperation in this area.

Co-operation between Europe and the United States. It is important to take note of activities in the area of electronic deposit outside Europe, notably in the United States. There, the Task Force on Digital Archives, set up by the Commission on Preservation and Access (CPA, a private non-profit organisation) has recently studied the issue of long term preservation of electronic materials. The Task Force produced an interim report in August 1995 with the final report due in early 1996.

Mrs. Marcum of the CPA described its activities in this field at the Workshop. The Task Force sees the primary responsibility for the archiving of electronic documents as lying with the owner of the document. Nevertheless, fail-safe mechanisms have to be built in to guarantee long-term preservation. The Task Force has argued in favour of a decentralised solution in which a number of certified archives are foreseen. The European approach, involving deposit libraries in the various countries, can be regarded as a special case of such a decentralised solution.

There are areas of common ground which call for co-operation between partners in the United States and Europe. Two of the recommendations of the Task Group were particularly hospitable to cooperation at this level, namely:

- experiments and the development of demonstrators, especially in the area of authentication and handling IPR;
- a joint engagement in policy development for the networked information infrastructure to ensure the longevity of archived materials.

3.2 Selection of publications for deposit

It was agreed that at a legislative level all electronic publications should be considered as candidates for deposit in order to maintain a suitably flexible framework in a context of rapid change. However, it was also accepted that practical solutions had to be based on the application of selection policies. Such practices are not, in any case, novel: selection is already applied in many cases to the intake of printed materials for deposit. For electronic publications, selection should be pragmatic, taking as a starting point materials which were stable and which could be handled by deposit libraries without excessive additional effort, expenditure and risk. An incremental process of regulation and best practice should evolve in due course.

There was considerable discussion on categories of material and on whether distinctions could or should be made between online and offline, static and dynamic etc. It was generally agreed such distinctions were artificial and of diminishing relevance in the long term. Selection criteria for materials to be included in deposit

collections should be driven by the content of the publication and not the medium of publication, subject in practice to the pragmatic considerations outlined above.

3.3 Storage and maintenance of electronic deposit collections

Storage issues are partly dependent on the outcomes of the selection debate. If the pragmatic solutions practised by libraries imply a high level of selectivity, such as accepting only a restricted range of media and formats, the confrontation of some of the more complex archival and preservation issues may be postponed for the short term. However, - and this is echoed by the CPA findings - there is to date very limited experience of handling electronic document collections and stores of the volume and scale of those that will be accumulated by national collections. There is a need for experimental projects to identify the software and hardware environments that are likely to be required for very large scale digital collections. This was a problem also confronting publishers and was a fruitful area for collaborative actions.

On the part of the national libraries, there is also a need to establish on a European level the basic conditions and requirements needed to fulfil the functions of providing a national deposit collection of electronic publications. There are likely to be considerable disparities between Member States which would need to be overcome if a satisfactory pan-European approach were to be implemented. In both the United States and in Europe, efforts are needed at national policy level to develop suitable organisational and technical infrastructures for ensuring the longevity of information.

3.4 Bibliographic control of electronic publications

In the area of electronic publications, bibliographic control is likely to become increasingly important as an aid to:

- authentication of publications
- safeguarding intellectual property rights through clear attribution of authorship, linked to the deposit process;
- development of recognised access points and navigation routes from a single source, providing high-quality, accurate and independent descriptions, to distributed publications. As such the bibliographic record becomes an integral part of a value-added 'promotional' service delivered by libraries to publishers, through providing active links from the bibliographic record to the publishers' own resources.

Implicit in such developments is the requirement to develop appropriate metadata formats and resources. Bibliographic formats must become more flexible if they are to cope with the evolving requirements of electronic publications. National libraries should look to ongoing initiatives in this area, both inside and outside the library/bibliographic world, but are well-placed to develop services of this kind.

3.5 Providing access to deposited publications

A substantial part of the Workshop discussions was devoted to the issue of access to deposited publications. This was, unsurprisingly, the area of key concern to publishers. For libraries, it is a basic principle of legal deposit to ensure that there exists at least one place in every country where publications are stored and held available. This principle of last resort is as valid for on-line electronic publications as it is for printed and off-line publications.

The study by NBBI also indicated the need for deposit libraries to provide access to electronic collections and pointed out three basic strategies for achieving this in a way which protects the interests of the publishers:

- On-site consultation in a controlled access area within the library; this is the approach taken by the Library of Congress in the United States, and also considered by a number of national libraries in Europe.
- Restricted, controlled remote access over the external network, based on license agreements between library and publishers; this model is now being tested in the Netherlands.
- Time-windowing, i.e. initial restricted access followed by more liberal access after a certain period of time.

In discussion, the publishers present also added a number of suggestions to the range of possible solutions, including:

- Restriction on the number of accesses to deposited materials within a given time-frame;
- Setting differential levels of access according to the information level concerned (bibliographic data, tables of content, abstracts and full contents of publications)
- Re-routing access from the deposit library to the publisher's repository for as long as the requested publications is held there.
- The adoption of national licensing schemes for access to publisher's repositories.
- Having the national library act as distributing agent for the publications, on behalf of the publisher

The national libraries tended to the view that limiting the use of deposited electronic publications to on-site access was unacceptable in an information society based on new service opportunities offered by the rapidly emerging network infrastructure. Experience in this field shows that provision for remote access can be mutually agreed by publisher and library if, for example, the national library allows publishers to audit and monitor remote access systems. In general, access should be based not on an extension of lending rights, but on specific access agreements between libraries

and publishers. Campus licences could be used as an appropriate model for this kind of agreement.

The solutions proposed imply changes in the economic models for publication and distribution which require investigation and testing collaboratively by national libraries and publishers. In the right conditions, access to deposit collections could act as a stimulus to the market for electronic publications, rather than posing a competitive threat. Testing is also needed in the application of security mechanisms, access controls and transaction and rights monitoring systems.

Overall, it was agreed that new alliances between libraries and publishers have to be created in order to reach more innovative and creative solutions. The mutual interests of libraries and publishers were recognised. If the right solutions are found, libraries could enhance the use of electronic publications in a way which leads to an increased volume of trade for publishers.

4. Conclusions and results of the Workshop

It was recognised that many questions remain to be resolved in all areas of electronic deposit. There is a need for pilot projects to develop practical solutions. The recommendations by NBBI in the Workshop's Background Document can be considered as a research agenda.

The main conclusions of the Workshop can be summarised as follows:

- The Workshop validated the findings and recommendations of the study by NBBI, as summarised in the Background Document.
- The need for deposit of electronic publications is recognised by libraries and publishers. There is consensus amongst both groups that many materials otherwise risk becoming unavailable to future users, and that the deposit library has a responsibility towards users without alternative means of access.
 - *There is a need for new solutions which support national libraries in their role of collecting the national memory or intellectual record. Further studies and pilots are required following the specific recommendations in the NBBI study and including the ideas for demonstrators put forward in the Workshop.*
- Solutions adopted by national libraries in the area of deposit should recognise the rights of publishers and the legitimacy of their demands for fair return and protection against unfair use.

- *More work needs to be done to arrive at solutions for access to deposit materials which satisfy the interests of both libraries and publishers.*

As a result:

- Publishers and national libraries at the workshop agreed to work together to develop both collaborative agreements and practical test-beds. Much of this work will be carried out in co-operation with CoBRA+¹, which has on its agenda the long-term availability of electronic publications and metadata issues.
- National libraries and publishers will form a small Task Group to consider further actions, which should be convened as soon as possible either under the aegis of CoBRA+ or independently.
- In view of the importance of deposit in the world of electronic information, national libraries and publishers are urged to bring that issue into the political arena of their countries to arrive at further legislation and adequate funding.

¹ CoBRA+ is a concerted action under Telematics for libraries involving the national libraries in Europe. It is steered by a Forum of 8 national libraries and works through Task Groups. It continues the work of CoBRA (Computerised Bibliographic Records Action) into the areas of electronic publications and associated bibliographic and metadata issues.

ELDEP Project

**A study of issues faced by national libraries in the field of deposit collections of
electronic publications**

**Background Document for the ELDEP Workshop
Luxembourg, December 18, 1995**

Version 2.0

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1. Introduction

The ELDEP study has been commissioned by the European Commission with the following objectives:

- to identify classes of materials of electronic publications with the appropriate selection criteria and sampling methods to be applied;
- to assess the technical options for storage and access, taking into consideration the conditions of use that are likely to be imposed by publishers and suppliers; attention will also be paid to issues of preservation of electronic documents and of continuity of access;
- to assess approaches to bibliographic control, including related quality issues.

The study is structured in five phases:

Phase 1: Desk research and interviews to establish the baseline for the analyses in the subsequent phases. The outcome of this phase is summarised in section 2 of this background document.

Phase 2: Development of a typology of electronic publications and preparation of guidelines for selection and acquisition for deposit collections of electronic publications. Selection issues are discussed in section 3.

Phase 3: Analysis of technical and operational/usage issues surrounding the storage and access of electronic publications and preparation of guidelines and recommendations. Preservation issues are discussed in section 4, access in section 5.

Phase 4: Analysis and development of guidelines for the bibliographic control of electronic publications through legal deposit. Bibliographic issues are discussed in section 6.

Phase 5: A Workshop, leading to a workshop report and the Final Report of the study.

A number of aspects which relate specifically to publishers are discussed in section 7 of this document. It should be noted, however, that many issues discussed in other sections are also relevant for cooperation between libraries and publishers in the area of electronic deposit.

This document provides background material for the ELDEP Workshop to be held in Luxembourg on December 18, 1995. It is based on the reports produced for the first four phases of the ELDEP study, and extracts basic issues and conclusions from these documents. A more detailed presentation of the findings of the ELDEP study will be published by the Commission in 1996.

Specific recommendations are given in bold typeface.

2. Electronic publications and the deposit library

2.1 Legal deposit in the electronic era

Most countries in Europe maintain a deposit collection of publications. These collections are usually based on legal conditions which require publishers to deposit their publications with a designated deposit library - usually the national library. In a number of countries there are no legal deposit regulations, but voluntary regulations between publishers and the national deposit library.

Why is deposit so important that it has obtained legal status or otherwise operates on a voluntary basis? There are a number of specific reasons for this:

- Publications are regarded as an expression of national culture and as the intellectual record of a nation's economic, social, scientific and educational activities and achievements which should be kept available for future generations. Deposit is regarded as the only way to guarantee that this will be the case.
- National libraries have the major task of compiling a national bibliography describing the entire national output of publications. This can only be accomplished if the national library is sure to obtain all publications required to be included in the national bibliography.
- Deposit collections act as a standard which can be used to judge the authenticity of publications, i.e. to certify that a certain document is indeed the publication it is said or believed to be.

The long term function of the deposit library is therefore to preserve publications for future generations. Books and journals deteriorate through use, they get lost or are thrown away. The deposit library is the "last resort" for publications which otherwise in many cases would disappear. It is also the single place where the entire publication output of a nation is kept together as a single cultural entity.

It would be a mistake to believe that the preservation of publications is no longer necessary in the electronic era. Electronic information as such is not subject to physical deterioration through use. But there are many reasons to believe that the longevity of electronic information is significantly shorter than that of printed documents:

- The longevity of storage media for electronic information is extremely likely to be shorter than that of paper; for many storage media currently being used, it is estimated at a maximum of ten years.
- Information technology is developing rapidly; which means that the hardware, software and data formats currently used for electronic publications will eventually become obsolete, probably within 10-25 years. Neither publishers nor the majority of libraries will be in a position to convert electronic publications to new formats and/or to migrate them to new operating environments.
- In modern society time scales are shortening; information is perceived to lose its value after a short period of time; publications become outdated in 1-2 years in many areas; this results in an attitude towards information as a disposable product to be thrown away after use.
- Increasing networking of information leads to a reduction in the geographic distribution of storage. Whereas a printed book may be stored in a large number of libraries all over the world, its electronic counterpart may be stored only at a single location on the global network;

if it is removed from that location, it is also removed from global storage and literally disappears from the world.

- In the library world there is a tendency to move from collections ('just in case' model) to access ('just in time' model), especially for electronic materials. This further reduces the geographic distribution and the chances for preservation.

It is clear that storage and preservation of electronic publications by deposit libraries is necessary to preserve the intellectual record of the information society for future generations¹. The need for long term preservation of electronic publications is recognised world-wide. In addition, analysis of existing deposit legislation leads to the conclusion that there is no reason for a legal distinction between electronic and non-electronic publications.

However, it is also clear that many aspects of electronic deposit (e.g. selection, storage and preservation, bibliographic control, and access and service) are problematic for a number of reasons:

- Archiving electronic publications on a large and systematic scale is a new area where a body of knowledge and experience remains to be built up. Many solutions will have to be developed and tested in practice.
- Since the whole area of electronic publications is evolving rapidly, there is little stability with regard to standards in areas such as media, formats, metadata, embedded software, network protocols etc. Today's solutions will not suit tomorrow's situation, and a high level of flexibility is therefore required.
- Archiving electronic publications requires significant investments in information technology resources and personnel. There is a tension between the high cost of IT resources and their possibly short technical life cycle. This calls for careful decision-making in an area where many parameters are difficult to assess.

The conclusion to be drawn is that deposit of electronic publications should be based on the following guidelines:

- **As a matter of principle, all electronic publications should be considered for acquisition and preservation in the deposit collection. This principle should be reflected in the national deposit legislation or voluntary deposit agreements.**
- **In practice, deposit libraries should proceed carefully, developing the electronic collection along evolutionary lines:**
 - **Focus on materials which are relatively easy to handle, such as standard media types (CD-ROM, CD-I) and formats (ASCII, Postscript) or which can easily be converted to these standards; gradually expand to other forms as experience is built up and when technical resources are available.**
 - **Focus on materials from 'official' publishers with which the deposit library already**

¹ In the United States the CPA/RLG Task Force on Archiving Digital Information has expressed the opinion that the responsibility for archiving rests fundamentally with the creator or owner of the information. This is of course especially true for materials that are covered by archival legislation, but not necessarily for other materials. It is our opinion that archiving by the creator or copyright holder of publications is a different issue from deposit. Deposit is concerned with long-term preservation well after copyrights expire and/or legal archiving responsibilities have ceased. The need for deposit is therefore independent of archiving by other stakeholders, and has to be regarded as such in order to secure preservation at the earliest possible moment, i.e. on publication.

has a relationship; gradually develop relationships with other types of publishers.

- Adopt a conservative attitude towards the technical resources required for electronic publications. When electronic publications are introduced which use new types of media, formats etc. requiring changes to the technical resources, the deposit library should wait until it is clear that the innovation is successful, and until prices have reached reasonable levels.

2.2 Current practice

In the ELDEP project a number of country studies have been made to clarify current practice in the area of electronic deposit. The following examples from France, Germany, the Netherlands and Norway illustrate the general situation in Europe.

In *France*, deposit law includes off-line publications as from the end of 1993, but not on-line information. The law specifies the various information carriers which are required to be deposited. Categories of electronic publications include software, databases and expert systems. Electronic multimedia publications are treated equally to 'analogue' multimedia publications such as books with videotapes, audio-cassettes etc.

Almost any type of publication (except blank forms) is required to be deposited, including official publications and internal documents such as annual reports if they are intended to be publicly available outside the organisation. This applies to both printed and electronic publications. The deposit law applies to any publication from a publisher with an address in France, including translations into the French language. Foreign publications of which more than 100 copies are imported also have to be deposited. The legal deposit library (the Bibliothèque Nationale de France) provides no financial compensation for depositing publications, except to cover the cost of postage.

In principle, the Bibliothèque Nationale de France keeps all deposited items without further selection. The BNF has specific tasks in the areas of bibliographic control, conservation and in ensuring accessibility of the deposit publications. Publications are included in the ILL union catalogue (in order to make known their availability for consultation), but are not given to users on loan. Photocopies can be provided, but only after permission has been obtained from the publisher. Permission is also required for digitising publications.

For practical reasons, a number of selection guidelines are used for collecting electronic publications. A committee is working on selection criteria for electronic documents, but has not yet finalised its work. The BNF hopes these guidelines will allow it to develop representative collections of electronic publications in specific areas such as computer games and children's books.

In *Germany* deposit law requires deposit of off-line publications but not of on-line publications. All German publications on a number of specified carriers have to be deposited, including text, images and sound. The only exceptions are broadcasts, films and videos, and 'economic' publications such as advertising materials, product catalogues, transport schedules, forms etc. The single criteria for deciding what is a 'German' publication is the publisher's address.

A new deposit law is expected to come into force within three years. This law will also include regulations for video and on-line publications (including at least specific types of networked information resources). The regulations will be based on an analysis of all available electronic publications.

The cost of deposited publications is carried by the publishers, except for expensive publications (above 150 DM) with a limited edition (less than 500 copies), for which a maximum of 50% of the retail price can be reimbursed. This arrangement is expected to be continued in the new law.

Deposited electronic publications will become accessible to the public on completion in 1997 of a

special reading room in the new building of the Deutsche Bibliothek. Discussions with regard to use of electronic publications (e.g. screen copies, network access) will be held in the near future. The current practice with regard to printed publications consists of on-site consultation and provision of photocopies. Copyright dues (0.10 DM p/p) are paid to the copyright clearance organisations for some 3.5 million pages per annum. The Deutsche Bibliothek would in principle like to offer similar services for electronic publications.

In *the Netherlands* there is no deposit law and the current practice is based on voluntary agreements between the Koninklijke Bibliotheek and publishers. This gives the Koninklijke Bibliotheek a considerable amount of freedom in establishing a deposit policy and adapting to changing circumstances. The current agreements are primarily for printed publications. Discussions are now being held with publishers in order to cover electronic publications as well. Discussions are also being held with non-official publishers of electronic information.

The emphasis in collecting electronic publications is on off-line publications such as CD-ROM, CD-I and educational software on diskette (currently some 7.000 items). Computer games are also collected, 'empty' software is not. Networked information resources are another, expanding area. There is little experience with on-line databases.

A technical assessment of electronic publications is carried out on receipt, and an installation report is written. The Koninklijke Bibliotheek favours platform-independent storage of and access to electronic documents. The current choice is CD-ROM for off-line documents and the library's own document server for networked information resources.

Bibliographic descriptions of electronic publications are included in the national cataloguing database (GGC), but not in the national ILL-catalogue (NCC) since the materials are not available for lending. Cataloguing rules for electronic publications have now been established and are now publicly available in the GEDOC-archive of the Koninklijke Bibliotheek's Internet Server. These rules are based on the national cataloguing rules based on ISBN, and are very comprehensive.

In *Norway* the deposit law of 1990 includes regulations for various categories of electronic documents. Agreements are now being made with publishers in order to establish a deposit practice for these publications. This process is complicated by the fact that many of these publishers, especially in the field of software, are new to the publishing business and are not familiar with the concept of deposit and its advantages.

Acquisition for the deposit collection is not restricted to publications of Norwegian origin. It also includes publications which are regarded as relevant to the Norwegian cultural heritage. However, only works in the Norwegian language are deposited. Works which have been translated into the Norwegian language (e.g. the Norwegian version of Microsoft Windows) are deposited by the distributor in Norway.

Up to now, a small number of CD-ROM's have been deposited, but no CD-I's. Computer games are only acquired as examples. On-line databases have not been acquired up to now in view of the volume of data. The collection also holds some 300 diskettes, mainly published as accompanying material together with printed works. Important information resources are downloaded from the Internet, as are some 70 Norwegian newsgroups. These are downloaded automatically at night and archived on CD-ROM. Networked electronic journals are also acquired though (free) subscriptions. In the case of parallel publications, both versions are archived.

Publishers are requested to provide deposit publications in a standard format suitable for the Microsoft Windows environment. It is however not clear yet what the best publication format will turn out to be. For text-based publications, SGML appears to be a favourite. Portable document formats, notably Acrobat PDF, are now gaining in importance.

The conservation of electronic publications is regarded as an important issue, although little

experience has been acquired in this area up to now. The most sensible approach is to convert documents to various formats in order to find out which of these has best withstood the test of time. If feasible, publications are converted to plain ASCII text, as this is the most universally usable format. This is, of course, not possible with multimedia and hypertext publications.

All electronic publications which are deposited at the National Library are included in the national bibliography. Cataloguing is based primarily on AACR2 and data is recorded using NORMARC, a variant of the MARC format, with a number of adaptations for this type of publication.

Service to users of the deposit collection is an issue of discussion between the Library and publishers. Special precautions have been taken for electronic publications. A special room has been created where restrictions apply to access of the materials. A window time of three years is in force, during which period materials cannot be borrowed by users. Negotiations are being held with publishers in order to reach agreement on copyright and the conditions imposed on the deposit library for using deposited copyright materials. A major obstacle is the definition of various types of electronic documents.

2.3 Conclusions and recommendations

From the desk research phase of the ELDEP project, a number of conclusions can be drawn:

- **Deposit collections serve an important role in preserving a nation's cultural heritage and the accumulated knowledge and intellectual record of its economic, social, scientific and educational activities and achievements, as reflected in publications. Since electronic publications are becoming an increasingly important subset of the total publication output, the role of deposit can only be maintained if current deposit regulations covering printed publications are expanded to include electronic publications as well.**
- **Preserving the intellectual record through deposit procedures requires a joint effort of all parties involved in its creation, distribution and preservation, including authors, publishers and deposit libraries. Authors and publishers can benefit from deposit, which guarantees continuity of access (as an archive of last resort) and bibliographic control (as a means for identification and authentication of publications). In this way, deposit libraries can assist copyright holders in the difficult task of maintaining control over electronic publications.**
- **The area of electronic publishing is in a continuous state of innovation. Deposit regulations in this area should therefore be comprehensive, based on broad definitions which are sufficiently flexible to include all existing and future types of electronic materials. Practical issues concerning incremental implementation of these regulations should be resolved in cooperation between publishers and deposit libraries, on the basis of such comprehensive regulations.**
- **There is a close relationship between deposit regulations and copyright law, especially in the area of user access and services, but in some cases also with regard to preservation. Copyright law tends to restrict what can be done with deposited publications above bibliographic control and storage. Care should therefore be taken that copyright legislation does not prevent the preservation of the cultural heritage and intellectual record.**
- **Selection policies, in as far as they exist, are varied and not well-developed. There is a lack of basic theory on which to base selection criteria. Selection is done in a pragmatic way, based on the available skills and resources.**
- **The management of off-line electronic documents in deposit libraries, including**

bibliographic control, can be done along the same lines as printed publications. Existing cataloguing rules are generally used with some expansions. The relative ease with which existing practices have been adapted for electronic publications is, however, a result of a pragmatic and selective approach: deposit libraries tend to focus on those publication types that are relatively easy to handle.

- In developing a practice for storing and preserving electronic publications for future use, a choice has to be made between preservation of the artefact (i.e. the publication in its original form and operating environment), and preservation of the information content (possibly with a different 'look and feel'). In the long run, preservation of the artefact can lead to technical obsolescence. It is therefore recommended that preservation of content be regarded as the objective of deposit regulations in cases where preservation of the artefact is not feasible for technical or financial reasons.
- In view of the large variety of electronic publications and the increasing range of organisations and individuals acting as publishers in a functional sense, deposit libraries should develop a more pro-active approach to collecting deposit materials. They should target specific groups of publishers and assist them in complying with deposit regulations.
- Access to deposited electronic publications and the development of user-oriented services based on them is considered to be problematic and remains an issue for discussion with publishers. Deposit regulations should allow only restricted access to copyrighted deposit materials, and technical and organisational measures should be taken to exclude unfair use. Any other services based on deposit collections of electronic publications should be developed in close consultation with publishers in a way which guarantees fair use and payment of copyright fees.
- Practice guidelines for selection, storage and access of deposit materials should be based on legal or voluntary deposit regulations, and on practical experience with handling these materials. In the area of electronic publications, fully developed regulations do not yet exist, and practical experience is rather limited and restricted to only certain types of electronic publications. It is recommended not only to make a further effort to stimulate the expansion of deposit regulations to include all relevant types of electronic publications, but also to set up pilot projects to experiment with different ways of handling the many problems involved with selection, storage and access of these materials.

3. Selection of electronic publications

3.1 Introduction

In countries where there is a legal basis for deposit, the law prescribes the various categories of publications which are to be deposited and which are exempt from deposit. Exempted categories can include fliers, forms, transport schedules etc. Even in countries with a legal deposit, voluntary agreements exist for special categories for which the law prescribes no deposit obligation (e.g. for audio publications in the UK). The largest variety of publication categories seems to be covered by the Norwegian deposit law of 1990, which includes several types of electronic documents.

The differences in deposit practice between countries in Europe are partly due to the various publication categories specified by national deposit law. But there are other causes as well. For instance, there is little agreement on what should be considered as a 'national' publication. In Germany, a strict definition is used: deposit is limited to publishers registered in Germany. In France, foreign books of which more than 100 copies are imported have to be deposited. In Norway deposit covers foreign publications which have been adapted for the Norwegian public (e.g. foreign films which have been dubbed in the Norwegian language).

To a certain extent, therefore, the selection of materials by the deposit library is governed by deposit laws. The legal selection criteria are mostly based on publication type and 'nationality'. In view of the current innovative state of electronic publishing, it is recommended to create deposit legislation which incorporates a wide range of electronic materials with as few restrictions as possible. In other words: deposit libraries should have a right to acquire all electronic publications for deposit reasons.

However, in order to achieve practical solutions for the deposit process, libraries initially will only acquire certain types of electronic publications. Even when electronic deposit has been fully developed, acquisition and preservation of all electronic publications will prove to be impossible. There is therefore a need for selection guidelines based on well-defined criteria.

3.2 Selection guidelines

General guidelines for the selection of electronic publications for legal deposit should be based on the following criteria:

- For selecting electronic publications on the basis of nationality or national interest the same guidelines should be followed as for other deposit items.
- The nationality of an electronic publication should be established using the following criteria (in order of significance): geographic location given in the publication or its accompanying metadata, the location of the publishing organisation if it can be established, the domicile of the first author, the author's nationality, or the primary location of the publication on the network.
- Selection should be limited to those electronic publications which can be acquired and stored under control of the deposit library. Merely providing access to publications that reside elsewhere (e.g. highly distributed documents on the global network infrastructure) is not a deposit function.
- Dynamic documents (i.e. documents which are frequently updated, such as on-line databases) should in principle be deposited frequently enough to preserve all information contained in the publication during its lifetime. However, when the cost of this is considered to be prohibitive, the deposit library should aim to preserve representative samples which should

include at least the first and last version published.

- Priority should be given to publications by 'official' publishers and other organisations of which the primary business activity is the creation for public distribution or access of information products. This should include both copyright and licensed materials. When sufficient coverage of these publishers has been achieved, the deposit library should develop procedures for acquiring public domain and grey literature. Documents distributed by private individuals should only be included on a voluntary basis, or excluded.
- The data format used for the publication should not be regarded as a selection criterion. If necessary, the publication should be converted to a format the library can handle.
- Acquisition for deposit should include electronic monographs and journals, off-line databases, (on-line databases on a snapshot basis), and closed networked documents (i.e. networked documents which form independent, self-contained entities). Highly distributed, open networked publications should be excluded. Software should only be acquired if it contains an informational content. Computer games should only be acquired if other games are also collected. Public communications sent over networks (e.g. e-mail, NetNews, listservs) should be excluded.
- The medium used for the publication should not be regarded as a selection criterion. If necessary, the publication should be transferred to a medium the library can handle. Items from on-line media should only be acquired if they are independent, self-contained entities, and they should be transferred to local storage media.
- Informal communications and pre-prints are to be excluded.
- All editions of a publication which are officially recognised and certified by the publisher are to be acquired. For on-line publications the primary on-line or network source should be used if the publication is not obtained directly from the publisher. Non-authenticated versions or variant editions should be excluded.
- In the case of parallel print and electronic versions of a publication, both versions should be acquired. In the case of parallel electronic versions, a single version (in a format and medium preferred by the deposit library) should be acquired.
- Publications which cannot be handled and preserved within the technical environment of the library should not be acquired.

These criteria can be summarised as follows:

- **All (editions of) electronic publications (including electronic parallel versions of printed publications) which belong to the national heritage are to be acquired by the deposit library, with the following exceptions:**
 - **items which cannot physically be acquired and stored under full control of the deposit library;**
 - **very frequent updates, in which case snapshots should be taken;**
 - **items distributed by private individuals;**
 - **items distributed by non-publisher organisations (e.g. grey literature) if insufficient experience (with electronic publications) and/or resources are available;**
 - **highly distributed, open networked publications;**
 - **public communications (e.g. e-mail, NetNews, listservs);**
 - **informal publications and pre-prints;**
 - **non-official variant versions or editions;**

- **parallel electronic versions (only one version, in a format and medium preferred by the deposit library, is deposited);**
- **publications which cannot be handled and preserved within the technical environment of the library.**

The function of the deposit library should therefore be limited to those electronic publications that can be acquired and stored locally under control of the deposit library. Only in that way the deposit library can guarantee long-term availability of the publication and quality of the bibliographic record. It has to be accepted that an increasing number of electronic publications of a dynamic and distributed nature cannot be deposited in this sense. i.e. cannot be acquired and stored by a library.

Providing access to such documents is a useful function. National libraries can describe and provide links to non-depositable items in order to enhance access to them for as long as they exist on the networks. But this does not guarantee long-term availability nor correctness of the bibliographic record, and it is therefore outside the domain of the deposit function. In other words: deposit should be limited to the acquisition, storage, preservation and use of documents possessed by and under the control of the deposit library.

Although the deposit library can exploit its experience by performing archival functions for third parties, such as the cataloguing and preservation of archival collections, this should not be regarded as a substitute for the deposit collection even if such archival collections are stored within the deposit library.

4. Preservation: maintaining accessibility of electronic publications

4.1 Introduction

Most printed documents can be preserved indefinitely in their original form if storage conditions are adequate and the materials used (e.g. paper and ink) are of sufficient quality. This is not the case with electronic documents, and preservation therefore has to be managed carefully.

In view of the cost and specialised nature of preservation of electronic publications, it is unlikely that other parties than the deposit library can guarantee long-term archiving and availability. Decentralised models in which the archiving of electronic publications is delegated to publishers or network resource providers are therefore not recommended. Preservation of electronic materials is best guaranteed by local storage under the control of the deposit library.

Deposit libraries should attempt to preserve as much of the deposited materials as possible. If selection becomes necessary, it should be done in a way which preserves a representative sample of the cultural record.

4.2 Long-term preservation of media

An important aspect of the preservation of electronic publication is that it inevitably involves, at least in the long run, some kind of conversion to another format and/or medium. There are a number of reasons for conversion:

- *Physical deterioration of the medium:* media used for distribution and storage of electronic publications do not remain error-free indefinitely.
- *Obsolescence of the technical environment:* hardware and software which is currently used for accessing electronic publications will not be supported indefinitely and will eventually be replaced by new technology..
- *Economic and management considerations.* For instance, cost considerations, available human skills or compatibility with other systems etc. can create a need to limit the variety of formats and media or to limit the required storage capacity by means of data compression.
- *Intrinsic reasons.* For instance, networked publications by definition cannot be acquired and stored on their original medium and have therefore to be converted to another medium.

There is general consensus that optical media (notably CD-WORM) are currently the preferred media for long-term archiving of electronic data. New higher-capacity media are already being developed. Re-writable disks are expected to be standard within a number of years. Although the equipment needed for reading these new media will be able to read current CD-ROMs as well, it is unlikely that "backward compatibility" will be maintained for longer than 10-20 years. It is therefore likely that technical obsolescence will be a more important factor than media deterioration.

Conversion from electronic media to paper or microfilm is sometimes proposed as a preservation strategy which could avoid the problems of media deterioration and technical obsolescence. However, this strategy is only valid for publications which are not true electronic documents, but just non-interactive, static documents distributed on an electronic medium. Conversion to non-electronic media as a preservation strategy will become increasingly irrelevant due to the increasing importance of dynamic, interactive multimedia, and is therefore not recommended.

4.3 Migration strategies

It is clear that careful storage of electronic publications in their *original* format, media etc. is insufficient to preserve them for future access. It is therefore necessary to develop strategies for migrating electronic publications to stable and supported media, formats and environments which do guarantee their preservation.

The following migration strategies can be followed for preserving electronic publications in the deposit collection.

- *Medium refreshing* involves copying the data from a physical carrier (e.g. a diskette) to another physical carrier of the same type (e.g. a new diskette). For media with a life expectancy of more than 20-25 years, refreshing will probably not be necessary since technical obsolescence will require a more drastic approach such as migration of the technical environment.
- *Medium conversion* involves transferring electronic publications from one (usually less stable or less standard) medium to another (more stable or standard) medium. For deposit purposes, medium conversion should preserve the integrity and functionality of the publication. Medium conversion is also necessary when the media used by the deposit library become obsolete and are no longer supported by hardware suppliers.
- *Format conversion* involves converting the data format of a publication to another. Format conversion is normally applied to reduce the number of different formats the library is required to handle, and/or to convert a publication in a format that the library would otherwise have to reject.
- *Migration of technical environment* is a more far-reaching approach to conservation. It involves converting the publication to operate in a different technical environment (in terms of hardware and software) than originally intended. It is too early to assess the difficulties and possibilities of technical migration for large volumes of highly diverse electronic publications. However, one can expect this type of migration to be extremely expensive, and in many cases difficult or impossible without a significant loss of the original functionality.
- *Emulation of technical environment.* An alternative solution may be the use of 'emulators', i.e. systems which run in a new operating environment, but emulate (simulate) a previous, now obsolete environment. Deposit libraries should stimulate the development of emulators as a cost-effective alternative to technical migration.

4.4 Planning of migration

An factor is the likelihood that the technical environment within the deposit library will change significantly every five to ten years. This happens when the deposit library (or rather the parent organisation, e.g. the national library) moves to a new computer system, operating system, database management system etc. If the currently used storage and access systems are not compatible with the new environment, a major migration effort may be required.²

If the change to a new technical environment requires a major migration effort for a significant proportion of the deposit collection, the costs will of course be significant. In such cases the cost of migration should be included as a factor in the decision making with regard to a new technical environment.

² It should be noted that this is similar but not identical to migration of the technical environment due to technical obsolescence. In the case of technical obsolescence there is no other alternative than to migrate, since the current technology is no longer supported. The migration describe here is a consequence of policy decisions by the (deposit or national) library, and could possibly occur more frequently than technical obsolescence.

Deposit libraries should carefully monitor technical developments in relation to the state of their deposit collections and expected migration requirements. In doing so, they should not only look to long-term developments, but also identify possible 'killer technologies' which may lead to radical changes in a very short period of time.

Finally, it should be noted that migration will usually have implications for the bibliographic sub-system which describes electronic publications in the deposit collection. This has to be included in the planning and budgeting for migration. It is likely that some forms of migration will require technical changes to the bibliographic system. An example is the software used to access and view publications on electronic storage media, which may have to be changed if the deposit library moves to new storage media.

4.5 Selection criteria for conservation

As a general principle all deposited materials should be preserved. In practice however, cost considerations may force the deposit library to adopt a more selective preservation policy. This policy should be based on the principle of representativeness, i.e. representative samples of all the various types of electronic documents held in the deposit collection should be preserved. This relates both to the various types of electronic publications and to content, source and context. In other words: the sample should fairly represent the various subjects and issues, authors, publishers, target audiences etc. found in the collection.

In selecting materials for preservation, care should be taken not to select items on their individual preservation cost, recorded or expected use etc., since these criteria could easily introduce unnecessary bias into the composition of the deposit collection.

An inevitable, and therefore acceptable criterion is the degree in which various aspects of a publication such as content, presentation, interactivity etc. can in fact be preserved in a new technical environment. Especially if the content value is severely reduced, other items should be given higher priority.

4.6 Artefact versus content

In electronic publications the information content is embedded in the electronic medium, the software necessary for accessing and presenting the information, the required hardware, etc. There is a general understanding that media will deteriorate, and that new hardware will evolve which cannot read our current media or run the software we use today. This leads to a dilemma for the deposit process. If we preserve electronic publications as 'artefacts', i.e. if we keep them exactly as received from the publisher, they will eventually become inaccessible and their content will be lost. On the other hand, if we attempt to preserve content, many aspects of the visual presentation and perhaps even of the 'functionality' of electronic documents will be lost.

In view of the fact the basic function of deposit is to preserve the nation's intellectual and cultural heritage, deposit libraries and deposit legislation should concentrate on preservation of the intellectual content and accept that certain interactive, dynamic and presentational aspects of the original cannot be retained.

However, there is another aspect to the concept of an artefact. An off-line publication, as a physical object, is an expression of our culture in its own right. It may contain artwork, accompanying text etc. (both on the medium and on the packaging) which are worth preserving, even if after a certain period it is impossible to use the object for accessing its informational content. In addition, some accompanying materials (e.g. manuals) may contain essential background information for accessing and using the informational content of the publication.

It is therefore recommended that when the contents of an off-line electronic publication are transferred to another medium (e.g. from diskette to mass storage or from current CD-ROMs to a future new optical medium), the deposit library should preserve as 'artefacts' at least a representative sample of these publications in their original form as received, inclusive of all accompanying materials such as packaging, manuals, software etc.

In addition, deposit libraries should preserve all accompanying materials of off-line publications which are essential for accessing and using the information content stored on archival media. The possibilities for digitising such materials should be investigated.

5. Providing access to deposited electronic publications

5.1 Basic access

It is the function of the deposit library to preserve a nation's intellectual and cultural record (as represented in publications) for future generations and for situations where the record is not readily available elsewhere. It is therefore clear that the deposit library will have to provide its users with access to deposited documents.

Deposit libraries accept that unrestricted access to deposited publications cannot be allowed, and that the legitimate interests of publishers require that access is limited and controlled. Within such limits, however, there is a special reason why user access should be *encouraged*. Especially with electronic publications, a high level of access helps to enhance the preservation function. Electronic items do not deteriorate through use. But if they are not used for a long period, they may prove not to 'work' anymore for a variety of reasons (media deterioration, technical obsolescence). A high level of access helps to check the operability of electronic publications and to identify and remedy any access problems which may occur. In other words: frequent use is the best way to keep the deposit collection in good shape.

The general principles for providing users access to deposit materials are as follows:

- If the publication is protected under intellectual property legislation, access is only allowed without explicit consent from the publisher if it is restricted and controlled. The right of restricted, controlled access also applies to materials included in the publication for which other parties hold property rights (e.g. images, sound clippings etc.).
- If the publication is protected under intellectual property legislation, any other use or dissemination has to be explicitly authorised by the rights holder.
- If the publication is not protected by intellectual property legislation (e.g. it is public domain or the copyright period has expired), the deposit library is free to provide any level of access, use and dissemination to its users.

A number of approaches are currently being used or suggested to provide restricted, controlled access to deposit materials. These include the following:

- *On-site consultation.* Providing on-site consultation, i.e. in a controlled environment within the deposit library, is currently the most common approach. Although it provides the best safeguard against unfair use, it also defies the essence of the modern electronic library since it does not allow for on-line distance access. Other solutions will be inevitable to meet evolving user requirements for distance access.
- *Controlled remote access.* A more modern approach is to base access to electronic deposit publications on the same principles as developed for campus licences. This allows for on-line remote access for all users, provided they are registered and that use is monitored. This approach depends on the use of secure methods for registration, authorisation and monitoring.
- *Time-windowing.* This is an intermediate approach which involves limited (e.g. on-site) access during a certain period of time, and less restricted access afterwards.

Other solutions are of course possible and should be based on agreement between the deposit library and the publishers.

5.2 Additional services

Deposit libraries can provide additional services based on deposited copyright items, provided permission is obtained from the depositor. Such additional services could include providing access for other reasons than private study and research, and/or offering facilities for printing, copying, downloading and distance access. These services could be allowed by the depositor free of cost and other conditions. Normally, however the user will be required to identify himself to the deposit library and pay a fee for the additional service. In general this will mean that the deposit library acts as a distributor on behalf of the publisher, and will collect fees and/or user/usage data for the publisher.

In most cases such additional services can be regarded as a service performed both in the interest of the user and of the publisher. The library may or may not demand a commission from the user and/or the publisher for performing this type of service.

The national library can benefit from legal deposit of electronic publications to develop a number of other services beyond user access. Options include:

- developing an archiving function on behalf of publishers;
- document delivery to other libraries (on the basis of license agreements with publishers for copyright materials);
- setting up a national repository for non-copyright materials (including both depositable and non-depositable items);
- consultancy and servicing based on experience with conversion, migration and preservation of electronic documents.

6. Bibliographic control in the context of electronic publications

6.1 Functions of bibliographic control

The objective of bibliographic control in the context of legal deposit is to provide a unique identification of each publication to which deposit regulations apply. To achieve this a bibliographic description of each deposited item is created. These bibliographic descriptions are published in the national bibliography as an official bibliographic record of the country's publishing output. National bibliographies are used for a variety of functions including for identification, selection and acquisition of publications, as the basis for creating or checking bibliographic entries in catalogues, bibliographies, reference lists, etc., and provision of evidence of intellectual property rights.

In the context of legal deposit of electronic publications the bibliographic record serves two additional functions. The first is to describe access data for publications which cannot be obtained as physical objects from the publisher but which have to be accessed on-line.

The second additional function is to refer the user of the bibliographic record to the publication as stored in the deposit library. This can be a simple reference to the fact that the publication has been acquired by the deposit library and is available there for on-site consultation in the case of copyright materials for which access restrictions apply. In other cases such as public domain materials, however, there is no objection to including full access data (e.g. a URL referring to the deposit library) and allowing direct public access to deposited materials.

6.2 Coverage of bibliographic control of electronic publications

As a general principle, it is recommended to include all deposited electronic publications in the national bibliography, irrespective of format and media.

However, the deposit collection is not a sufficient basis for bibliographic control. Deposit of electronic publications is a new area which remains to be developed gradually in most countries. This means that it may take considerable time before the entire electronic publishing output is deposited. However, bibliographic control of electronic publications, and especially of networked resources, is generally recognised as a problem that has not yet been solved in a satisfactory way. The national library should lead the way in this area by covering the largest possible proportion of electronic publications.

It is recommended that national libraries attempt to include a significant proportion - if not the entire output - of national electronic publications in their national bibliography as soon as possible. In order to achieve this, the inclusion of electronic publications should not depend on their availability in the deposit collection. In other words, the deposit collection cannot be regarded as the (single) basis for the national bibliography. The national bibliography will have to look for additional sources, in addition to the deposit collection, of electronic publications.

6.3 The distinction between deposit and bibliographic control

The considerations discussed above lead to the conclusion that one has to make a distinction between the deposit function (preserving the national output) and bibliographic control (describing the national output). Although this distinction has always existed to a certain extent, the new emerging electronic publications make it more explicit.

The distinction can be summarised as follows:

- The deposit collection preserves only those documents which are meaningful, self-contained entities and which can be acquired as discrete items.
- The deposit collection contains various issues, editions or instances of serial or dynamic publications which are described as a single bibliographic entity in the national bibliography.
- The national bibliography describes:
 - publications in the deposit collection (including their network location if appropriate)
 - publications not (yet) included in the deposit collection for practical reasons
 - publications which are not depositable but which are accessible over the network

6.4 Bibliographic control of dynamic publications

Normally the deposit library will periodically acquire 'snapshots' of the state of dynamic publications such as on-line databases. The question arises whether individual instances of dynamic publications should be described in the national bibliography.

The current practice, to be recommended, is to treat dynamic publications in a way similar to serial publications such as journals or loose-leaf publications. This means that an 'open' entry is created for the publication when it is initially published. When the publication is discontinued, an amended bibliographic record is published.

If the national library's policy is directed towards providing access data for on-line resources in the national bibliography, it should issue an amended bibliographic record if the access data for an item are changed.

6.5 Bibliographic control of networked resources

There is some discussion about the need for bibliographic control of networked resources by libraries. The arguments often put forward are mainly that the available human resources are insufficient to catalogue the vast amount of networked information, let alone at the speed expected in a networked environment, and that the Internet is becoming 'auto-indexing', i.e. the network contains resources which themselves are indexes or 'catalogues' of the network itself.

These arguments neglect the added value library cataloguing can offer in the networked environment, and they certainly do not apply to deposit libraries where comprehensive preservation rather than speed of access is the main issue.

Bibliographic control of networked publications remains necessary also for a number of specific reasons:

- **The existing network indexes are inadequate; they contain insufficient descriptive data and show a lack of standardisation of data elements and presentation; they are often of little value to users; it is also not at all clear that they will be sustained over a longer period of time.**
- **The dynamic nature of network indexing mechanisms means that no record is kept of resources which are removed from the network.**
- **Frequent changes of documents and locations lead to questions related to authenticity which can only be solved through formal bibliographic control.**

- Bibliographic control can help to protect authors against piracy in an environment where information can easily be copied and manipulated.
- Deposit and bibliographic control can help to enhance the status of electronic publications as a scholarly publication medium.
- The deposit collection has to be catalogued in any case, in order to make sure that publications can be located by future generations

6.6 Cataloguing issues

Cataloguing electronic publications is not the exclusive domain of national deposit libraries. Many other libraries also collect and catalogue electronic materials. There is therefore no need for special standards or bibliographic systems for deposit libraries. However, a few additional remarks can be made.

It is reasonable to expect that at least in the short run handling electronic materials will be more important to the deposit library than to many other libraries, and that it will be done at the highest professional level. The library world could therefore benefit from sharing the experience of deposit libraries, and will probably look to the national deposit library for guidance in this field.

It is recommended that, as deposit libraries gain experience in cataloguing electronic publications, they provide input to the further development of bibliographic standards to accommodate electronic publications.

There is a growing need for descriptive metadata to be included in or provided as a header with electronic publications. It is recommended that deposit libraries work together with the various groups of electronic publishers to develop 'cataloguing in publishing' standards and procedures for electronic materials.

In the following three sub-sections a number of the issues which especially pertain to cataloguing electronic publications are discussed.

6.6.1 *Current practice*

The overall trend in cataloguing electronic publications is to treat them as far as possible in the same way as more traditional, printed publications. The specific problems of new media and publication types are handled in extensions to existing cataloguing rules. The most difficult area, and the one where most activity is taking place, is that of on-line networked resources.

The current practice can be summarised as follows:

- Cataloguing rules for software and data on diskettes are already available.³ These rules provide guidelines which can be applied to other types of off-line media as well.
- Existing cataloguing rules and bibliographic formats have been adapted and extended to accommodate electronic and networked materials. Examples are various extensions to the USMarc format (e.g. field 856 for access data) and changes to the PICA format as a result of the DocServer Project.

³ CF AACR (2nd ed., 1988 revision - chapter 9: computer files) and ISBD(CF). ISBD(CF) is currently in the process of revision.

- Work has also been done on bibliographic control of interactive multimedia which can be regarded as a specific type of electronic publication. This work has resulted, *inter alia*, in The Guidelines for Bibliographic Description of Interactive Multimedia by the ALA in 1994.
- New methods are being developed for specific areas and/or to assist information providers in creating descriptive metadata. Examples include: The TEI header for the digital encoding of texts in the humanities; the IETF Working group on Document Identifiers which is developing a standard for Uniform Resource Characteristics (URCs) to represent metadata; the so-called 'Dublin Core Metadata Set' proposed at the OCLC/NCSA Metadata Workshop in March 1995, offering a basic but extensible set of descriptive elements for networked resources.
- In addition to these various 'formal' attempts to develop standards and guidelines for metadata and cataloguing, many hands-on activities are being carried out which add to a body of common practice in this area. One can distinguish three types of activities:
 - Large scale projects and pilots aimed at developing catalogues of electronic resources; examples include the British Catriona project and OCLC's 'Catalog of Internet Resources' project in the US.
 - Index services which are more or less 'built into' the Internet, such as Alex, Lycos, WebCrawler and Yahoo. These effectively function as 'catalogues' or 'databases' of networked resources offering increasingly sophisticated retrieval functions.
 - Domain-oriented lists, gopher structures and WWW-pages which provide descriptions of important resources in a certain subject field, geographic area, profession etc.; these lists are usually created by individuals, libraries and professional institutions.
- An increasing number of guidelines for citing electronic publications in reference lists and bibliographies is being published.

In view of the current practice, the following recommendations can be made:

- **Cataloguing of electronic publications, including networked resources, should be based on the rules provided by AACR2.**
- **Practical guidelines for networked resources should be based on existing experience, e.g. as documented by the OCLC project 'Building a Catalog of Internet Resources'.**
- **It is recommended that European national libraries develop a similar but expanded set of 'Guidelines for cataloguing electronic documents' adapted to European practice.**

6.6.2 *Descriptive data*

For electronic publications the following sources of descriptive information can be used:

- the initial screen ('title screen') shown when the publication is accessed, or any other part of the publication proper;
- embedded metadata included with the publication;
- descriptive information on the previous access node;
- accompanying materials in electronic form (e.g. 'read-me' files);
- other accompanying materials (e.g. packaging, manuals).

In addition to standard bibliographic data elements, additional data elements are needed for describing deposited electronic publications. These include:

- *Access data* which inform the user about the location on the network where a publication can be obtained, the 'method' to be used (such as FTP, Gopher, WWW), and various other aspects such as format, availability, etc. Access data is functionally similar to the call number in a library catalogue entry. The difference is that access data is a much more intrinsic characteristic of the publication itself, rather similar to an imprint statement. Access data therefore should be included in the bibliographic description of the publication and should not be regarded as local data referring to a particular copy.
- *Snapshot data*: when snapshot copies of dynamic publications are maintained, data on these copies should be included in the bibliographic system. Relevant data elements include frequency, type, date and time stamp, and date of next snapshot. In most implementations, snapshot data will either be included in the bibliographic record through a separate and repeatable field, or by means of linked subrecords.
- *Embedded metadata*: an important future characteristic of electronic publications will be that they will include metadata (structured descriptive information) in electronic form as an integrated component. It is clear that there is no accepted standard for such embedded metadata at the present moment, and that it will take at least a number of years before such a standard exists and is generally accepted and used. Amongst the issues to be decided are:
 - definition of elements (e.g. author, title, etc.)
 - definition of schemes (formal designators for data elements)
 - syntax/format (the formal representation and structure of metadata)
 - relationship with document (e.g. do embedded metadata take the form of a document header, title page or other)
- *Preservation data*: it is important to realise that items preserved in the deposit collection will differ from the original publication described in the national bibliography after they have been migrated to different formats, media or operating environments. It is necessary to record these differences and to maintain a history or 'audit trail' of the successive migrations and their consequences, in order to make clear to the user what the differences are between the item preserved in the deposit collection and the item as originally published. These data can also be used by the deposit library for preservation management purposes. In most implementations, preservation data will either be included in the bibliographic record through a separate and repeatable field, or by means of linked subrecords.
- *Data related to the operating environment*: in view of the preservation function of the digital library, the bibliographic record should contain specific data that will allow the user of the item described in the bibliographic record to recreate the operating environment necessary for accessing that item. There is as yet no standard for this type of data, and the issue will have to be investigated further. It is likely that at least sub-elements related to hardware and software requirements and system parameters should be included

6.7 Authentication of electronic publications

One of the important functions of the deposit library is to provide the basis for authentication, i.e. checking whether a copy of a publication is an authentic copy, identical to the original publication.

In order to provide the means for authentication of electronic publications the deposit library has to ensure that the version retained by the deposit library is and remains authentic, and to provide a mechanisms for (semi-)automatic authenticity checking for electronic documents.

The acquisition procedure for deposited items should include a thorough check to ensure that the item received is indeed an authentic version as intended by the publisher. It is however a different problem to maintain authenticity over the long term, when items are migrated for preservation reasons.

A number of techniques exist to preserve and check the authenticity of electronic documents, such as encryption, digital signatures and digital time-stamping. These techniques are still under development and are not yet sufficiently standardised to be used in practice. A number of technical issues also remain to be resolved, and deposit libraries should develop testbeds for studying the applicability of the various techniques.

Deposit libraries can potentially offer a number of services in the area of authentication:

- making certified copies of publications available for authentication purposes;
- providing signature and certification services;
- acting as a public repository for signatures and certification data;
- promoting the use of standard authentication algorithms.

6.8 Cataloguing in Publication (CIP) for electronic publications

A service which in many countries is well established in the area of printed publications is 'cataloguing in publication', where the national library or bibliographic agency creates a preliminary bibliographic record which is included in the publication. There is a growing need for descriptive metadata to be included in or provided as a header with electronic publications, i.e. for an electronic version of cataloguing in publication.

In view of the many difficulties involved in describing, identifying and authenticating electronic publications, it is recommended to expand cataloguing in publication to electronic publishing as a valuable contribution by the national library to solving these problems. In this way the experience acquired by the national library in cataloguing large volumes of electronic materials can be made available to other parties. It is recommended that deposit libraries work together with the various groups of electronic publishers to develop 'cataloguing in publishing' standards and procedures for electronic materials.

The service provided by the national library in the area of cataloguing in publication could well be expanded to include advice on other descriptive and presentational matters, such as versioning, electronic title pages, authentication procedures such as digital time stamping and electronic signatures, embedded metadata, or ways to identify the various components of a distributed publication as a single entity.

Cataloguing in publication for electronic materials will therefore:

- enhance standardisation of embedded metadata distributed with electronic publications;
- enhance the quality of resource description on networks by providing examples of good practice;
- alert both the deposit library and other libraries to the publication of electronic materials in an advanced stage;
- improve the identification and authentication of electronic publications.

7. Publishers and electronic deposit

7.1 Electronic publishing and legal deposit

Legal or voluntary deposit of electronic publications is only feasible if it is firmly based on close cooperation between publishers and the deposit library. This applies both to the joint development of deposit procedures, and to the practical application of these procedures.

Our interviews with publishers organisations have clarified a number of issues related to publishers' views on electronic publishing and their attitudes towards legal deposit.

For most publishers, electronic publishing is still a relatively marginal area. The main area for electronic publishing at the present moment is to be found in off-line products. The number of mixed publications (paper + CD-ROM or diskette) is growing relatively fast. Networks are seen by some publishers as an efficient means for distributing existing products electronically, e.g. to libraries. Use of such electronic versions is expected to be governed by site licensing.

Networked publications proper, i.e. publications which are designed to be made publicly available to end-users through networks, have drawn little interest from the main official publishers. In general, they do not regard the Internet as a publishing channel, but rather as a communications channel between authors (e.g. exchange of pre-prints) or between authors and publishers. At the most, they consider the Internet as an alternative distribution channel leading to an additional type of parallel publication.

However, non-official publishers (e.g. learned societies and universities, government organisations, financial institutions etc.) and many individuals are becoming increasingly interested in developing networked publishing, possibly as an alternative to traditional publishing channels. Most publishers do not believe that this will develop into a serious threat to their activities within the next decade. Neither do they think that the concept of an 'article databases', from which end-users can construct their own selection of articles, is a viable *alternative* to the traditional journal. One of the reasons for this is their belief that authors prefer to publish in a well-known 'named title'. Recent developments do, however, show an increasing interest in electronic *distribution* of existing journal titles, as an alternative for print distribution. This means that an increasing number of publications (notably scientific journals) are becoming available in an electronic form suitable for electronic deposit.

Publishers are somewhat reluctant to acknowledge the benefits of deposit; they tend to view it as an obligation which costs money with little return. In addition, they envisage problems with electronic publishing which also pertain to electronic deposit. Two major issues are maintaining integrity of electronic documents, and preventing unfair use and reproduction.

Publishers therefore demand that deposit regulations for electronic publications contain sufficient guarantees that these problems can be solved in a satisfactory way. There will have to be limitations on the use of deposit items, and arrangements for fair compensation of exploitation. Some form of licensing and technical solutions for compensation will have to be found.

There appears to be a difference in perspective on preservation between libraries and publishers. While libraries tend to focus on preservation of content, publishers expect deposited items to be preserved in their original form. Lay-out and typography are considered to be essential characteristics of the product, not only for printed publications but for electronic publications as well. In the United Kingdom, the concept of 'publishers' rights' on the typographical arrangement (in addition to the intellectual copyright on content) is being discussed. However, publishers do recognise that some kind of conversion in order to preserve future access will become inevitable. Publishers are not prepared to provide deposit items in a standardised format.

Our interviews indicate that publishers might be interested in the concept of deposit libraries as a last resort, i.e. as a kind of centralised archive for future use, which would relieve publishers of the task of setting up their own electronic archives. This could be regarded as a specific type of service offered by deposit libraries to publishers. Other benefits to be obtained by publishers through the deposit system include authentication and bibliographic control.

7.2 Deposit guidelines for publishers

The efficiency of the deposit function as performed by the deposit library depends to a large extent on cooperation from publishers in the way they deposit their materials. The following guidelines are recommended as a means to ensure that the deposit library can duly perform its various functions such as preservation, service provision and bibliographic controls. These guidelines can either be included in legal deposit regulations, or be included in bilateral agreements between the deposit library and publishers.

- **Electronic publications should be deposited irrespective of whether they are distributed for sale, as part of a subscription, by licensing or free of cost.**
- **Electronic publications should be deposited together with all accompanying materials (packaging, documentation, manuals, etc.) with which the product is normally sold and/or which are necessary for using the product.**
- **If a publication can only be accessed by using proprietary software and/or hardware which is normally sold together with the publication, such software and/or hardware is to be deposited with the publication.**
- **In view of the expected need for conversion to other media, electronic publications should be deposited without any form of copy protection.**
- **The deposit library's right to copy the publication for conservation purposes, and the right to provide access to the publication for on-site consultation should be confirmed in writing on deposit by the publisher unless this right is already included in the national deposit legislation.**
- **Rights obtained by the publisher from third parties to include materials in the publication (so-called neighbouring rights) should not prevent the deposit library from exercising its rights under deposit regulations (e.g. archival copying and on-site consultation).**
- **If a publication is published in both printed and electronic form, both forms should be deposited.**
- **If a publication is published in identical electronic versions on different media (e.g. diskette and CD-ROM), the deposit library should be allowed to choose the medium on which the publication is deposited.**
- **If on receipt or at a later stage the publication proves to be incomplete or inoperable, the deposit library is entitled to obtain a new copy free of cost.**

8. Recommendations for future activities

As an outcome of the ELDEP study a number of areas have been identified which call for action or require additional clarification and/or need to be monitored in view of ongoing developments. We recommend deposit libraries, publishers and the European Commission to consider carrying out further activities in the following areas:

European Commission

- The ELDEP study is to be regarded as a first step in identifying and solving the many problems involved in legal deposit of electronic publications. The European Commission can stimulate further developments by supporting subsequent actions in this area, notably as outlined in these recommendations.
- The European Commission should identify and coordinate activities carried out in projects under the Telematics for Libraries programme that have implications for legal deposit in order to enhance the benefits of these projects for deposit libraries and publishers of electronic materials.
- A periodic review of electronic publishing is required to identify new publication types, media and formats, as well as other developments in off-line and networked publishing which could have implications for deposit libraries.
- The coordinated effort of European deposit libraries should in the long run lead to the establishment of a networked European deposit library. It is recommended that the European Commission coordinate and stimulate this development. As a first step, an Action Plan for the European Deposit Library should be developed.

Collaborative effort of European deposit libraries

- Deposit of electronic publications is a new area for which many problems remain to be solved. It is important that the European deposit libraries share their knowledge and experience in this field. This can be supported by a number of mechanisms, including conferences and communication over the Internet (e.g. using the listserv mechanism). It is also recommended that the deposit libraries carry out a long-term case analysis study to monitor the way specific aspects of electronic deposit are handled in practice.
- Yearly figures on the number of electronic publications and their storage volume need to be gathered for all European countries in order to monitor and predict storage requirements.
- There is a need for European national libraries to develop a set of "Guidelines for cataloguing electronic documents" based on OCLC's guidelines for cataloguing Internet resources, but expanded to all types of electronic publications and adapted to European practice.
- National libraries in Europe should undertake an effort - in cooperation with other bodies - to develop standard designator schemes for data elements related to storage and preservation of electronic publications.
- A separate study is recommended for the issue of *versions* of electronic publications. This study should develop definitions and a vocabulary, and study versions patterns and characteristics of various types of electronic publications. It should lead to 'best practice' recommendations and guidelines for handling versions in the deposit collection.

- **A *pilot study* is recommended to investigate the feasibility of archiving large databases on a periodic 'snapshot' basis. To arrive at optimal solutions, more data is needed on the cost to publishers and to the deposit library, the technical requirements (e.g. large database management systems), and other parameters which may affect the deposit of these items. This study could be implemented as a testbed at one of the deposit libraries.**
- **A *pilot study* is recommended for investigating the problems of accompanying materials (packaging, manuals etc.) for off-line publications, the storage and preservation implications and the possibilities for digitising such materials.**
- **Deposit libraries should stimulate the development of emulators as a cost-effective alternative to technical migration. A long-term technical and organisation study in this area is recommended. It is also recommended that one or more libraries set up a *pilot study* in the form of a testbed for emulators as they become available.**

Cooperation between deposit libraries and publishers

- **The area of electronic publishing is in a continuous state of innovation. Deposit regulations in this area should therefore be comprehensive, based on broad definitions which are sufficiently flexible to include all existing and future types of electronic materials. Practical issues concerning incremental implementation of these regulations should be resolved in cooperation between publishers and deposit libraries, on the basis of such comprehensive regulations.**
- **In order to ensure that the deposit library can duly perform its various functions such as preservation, service provision and bibliographic control, specific deposit guidelines should be developed for publishers. These can either be included in legal deposit regulations, or be included in further agreements between the deposit libraries and publishers.**
- **It is recommended that deposit libraries work together with the various groups of electronic publishers to develop 'cataloguing in publishing' standards and procedures for electronic materials.**
- **In view of the shared responsibility of publishers and deposit libraries for preserving the national intellectual and cultural heritage, it is recommended that publishers and deposit libraries set up a joint working group to study the issues involved and to develop recommendations for further cooperation.**

**WORKSHOP ON ISSUES IN THE FIELD OF NATIONAL DEPOSIT COLLECTIONS OF
ELECTRONIC PUBLICATIONS**

GLESNER ROOM, BATIMENT WAGNER 18 DECEMBER, 1995

PROGRAMME

- 09.30- 10.15** **Welcome and objectives of the Workshop (Commission)**
- Context of the libraries programme - overview of relevant actions
- 10.15-11.10** **Presentation of the study and its overall findings (NBBI)**
- 11.10 - 11.30** **Coffee**
- 11.30 - 13.00** **Issues facing national libraries**
- Introduction: Dr Brian Lang, The British Library (Discussion chair)**
- Discussion of issues and recommendations for actions**
- Selection issues and policies
 - Technical strategies
 - Bibliographic control
 - Cost and resourcing implications
- Summary of conclusions**
- 13.00 - 14.15** **Lunch**
- 14.15 - 15.15** **Issues facing publishers**
- Introduction: Dr von Lucius, Fischer Verlag (Discussion chair)**
- long term archival issues
 - access v. deposit strategies
 - value-added support services provided by libraries
 - mechanisms for deposit
- Discussion of main issues and recommendations for actions**
- 15.15 -15.30** **Coffee**
- 15.30 - 16.00** **Summary of discussions and of conclusions (NBBI)**

ELDEP WORKSHOP

LUXEMBOURG 18TH DECEMBER 1995

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