

# The future role of libraries in the information age

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## The traditional function of libraries in the information chain

Within the information chain, libraries perform an *intermediary* function between publishers (and other information producers) and end-users. This function is performed in two distinct ways:

- For information producers, the library acts as a *clearinghouse*. This means that producers do not need to offer their products to individual users, with all the administrative problems and costs involved. This is especially important in the area of journals, where the library takes out a relatively expensive institutional subscription from which materials are further distributed to end users. In many cases (especially in the area of commercial publishing) administrative intermediaries such as booksellers and subscription agents handle the distribution of publications. Through this system the publisher only has to deal with a limited number of purchasers, whereas libraries can handle their acquisitions through a limited number of suppliers.
- For the end user, the library is an efficient instrument to make available a limited set of relevant publications out of the entire volume of publications available in the market place. The library acts as a selective filter and quality instrument, making available to the user only those publications which are relevant and of sufficient quality. There is no need for individual users to keep themselves informed about the information market and to acquire materials individually from publishers and other producers. Also, since publications are acquired through library funds, information usually is made available to end users free of cost.

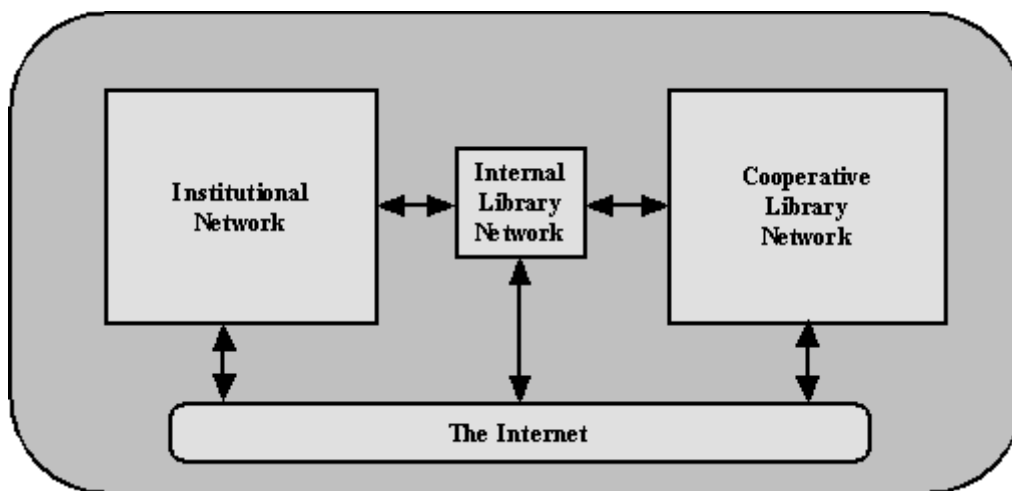
Basically, the services of a library are carried out through the so-called 4S-scheme:

- *Selection*: selecting and acquiring available information in the marketplace, based on user needs and quality standards, within the available budget.
- *Storage*: maintaining the availability of publications through long-term storage and preservation.
- *Service*: making the information resources available through facilities and procedures for on-site consultation, lending and document delivery.
- *Support*: giving the user guidance and assistance, including the development and maintenance of support systems such as catalogues, on-line help systems etc.

## The changing role of libraries

The dominant factor in the development of libraries is the ongoing move towards digital distribution of information through the global network infrastructure. This implies a shift from the traditional role of the library as a 'clearing house' and service centre for printed publications, towards a role as a supplier of networked services for digital information resources.

In this context, it is important to realise that most libraries are already embedded in a variety of network infrastructures at different levels (internal, institutional, within the library world and at the global level), as illustrated in figure 1:



**Figure 1: the networked library**

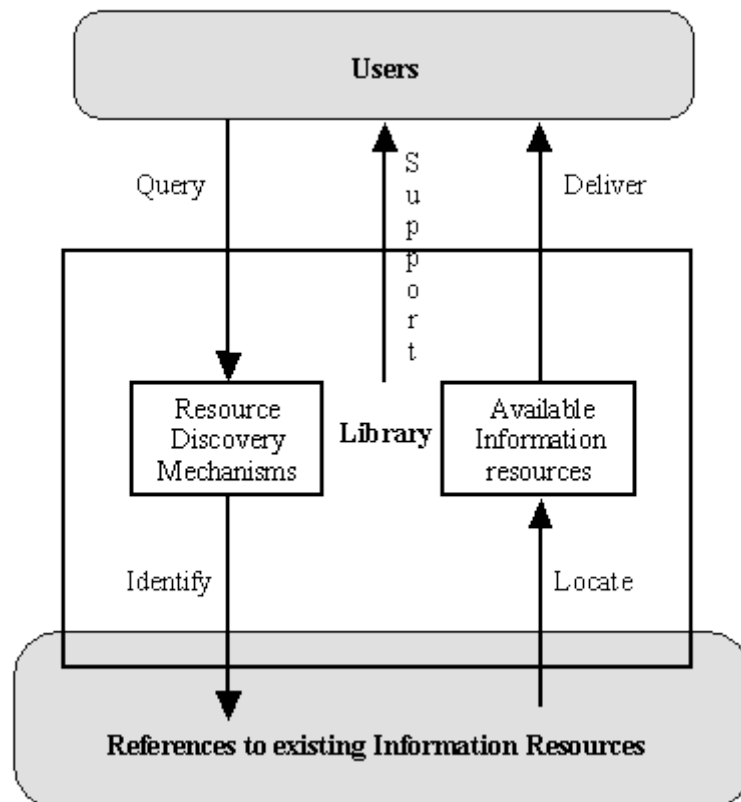
In view of the development towards digital, networked information resources, the characteristics of the future library can be summarised as follows:

- Since in the long term almost all information will be published and distributed in digital form, the services of the library will be based mainly on digital, networked information rather than on printed information or off-line digital products (e.g. CD-ROMs).
- Users will access the library through the network; distance access will become more important than on-site access. This has major implications for user services and support.
- Since most information will be stored on the network, and many search, access and delivery systems will also be embedded in the network, the library can no longer depend on its internal resources such as a (printed or digital) collection and the internal bibliographic catalogue. Emphasis will be on access rather than on the collection. This implies that the status of a library will depend on the quality of its services and support rather than on the volume and quality of its physical collection.
- The traditional on-line catalogue will develop into a networked 'resource discovery mechanism' which acts as a preselective reference mechanism to a wide variety of knowledge resources, including individual networked information

resources (e.g. digital publications), networked services (e.g. search engines, WWW-sites, FTP-sites, delivery services, other libraries, institutions, and individuals acting as knowledge resources). This has major implications for the concepts of bibliographic data and bibliographic control.

- The current organisation of libraries is predominantly based on a spatial institutional model: each institution or geographically distinct set of users is served by its own local library. In the networked world, this model may no longer be valid. It is therefore not unlikely that we shall see the emergence of large domain-based libraries, serving all users within an entire nation (or even at a supra-national level) within a specific discipline or subject domain (e.g. engineering, medicine, the social sciences or the arts). Examples of domain-based library services area already becoming apparent, e.g. in the United States and the United Kingdom.

One way to approach this development is to re-define the role of the library in terms of *knowledge mediation* (figure 2). The concept of knowledge mediation implies an intermediary role of libraries in matching user needs to available knowledge contained in information resources, irrespective of where and in what form these resources are available.



**Figure 2: Knowledge mediation**

One of the key components of the knowledge mediation function is the (set of) resource discovery mechanisms(s), i.e. mechanisms that allow the user to identify existing information resources based on an expression of their information needs (query). A

further component is a mechanism to locate the source of information resources and to deliver them to the end user. User support is also required in order to allow the user to make the best use of the knowledge mediation services offered by the library. Under this model, there is theoretically no need for the library to store information resources. The library could be entirely 'virtual', mediating between the knowledge requirements of (internal or external) users and information resources available in the outside world, e.g. on the global networks. However, as we shall see later on, there will remain a need for some libraries to maintain collections of digital materials, i.e. to continue performing a storage function.

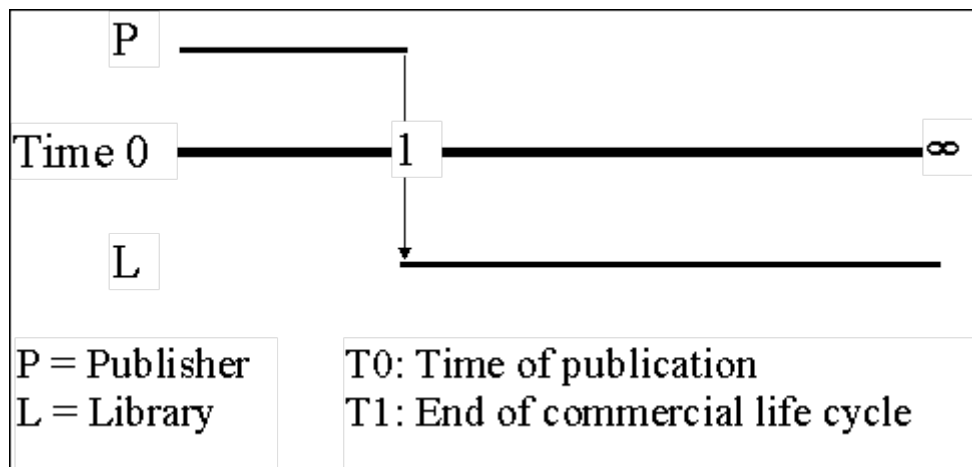
### **The relationship between libraries and publishers**

Since libraries depend to a large extent on information resources from publishers, the division of roles between these two parties in the information chain is of crucial importance. One of the problems in assessing the future of libraries is that we do not know the future strategy of publishers with respect to digital distribution and the use of networks. Indeed, publishers themselves are anything but certain as to what their future strategy should be.

At the present moment, a 'strategic alliance' seems to be developing between publishers and libraries. Under this alliance, publishers offer their products (notably journals) to libraries in digital form, allowing them to distribute information in digital form to end-users over the network. This service is governed by license agreements that specify the conditions under which the library may offer this type of service. Basically, this amounts to a digital version of the traditional mode of distribution. Libraries maintain their subscriptions to journals, now in digital form. They also continue to store published materials, i.e. to maintain (digital) collections. The advantage to publishers is the efficiency of the administrative process (libraries continue to act as clearinghouses), and the availability of detailed information (which license agreements require the library to collect and supply to the publisher) on the use of publications. The advantage to users is the availability of materials in digital form on the desktop.

It can be argued that this strategic alliance is only temporary, a kind of large-scale experiment to gain experience with the many technical, legal, financial and organisational issues involved with digital publishing and distribution. In the networked world, there is no need for resources to be stored in a large number of locations (e.g. libraries). A single source is, in theory sufficient and cost-effective. It is therefore not unlikely that in future publishers will not continue to distribute journals through the library, but will make them available through their one network servers or 'digital repositories'. The library will continue to provide users access to these materials based on license agreements, but will no longer be allowed to store the materials in the library. This will, of course, have many implications for the type of services offered by the library, payment schemes (e.g. based on 'pay-per-use' rather than on a subscription basis), and long-term availability.

What we could see in future, then, is a situation where publishers (and other information producers) retain information resources within their own networked archive for a certain period of time. For commercial publishers this would be the 'economic life time' of the publication. The question then arises what will happen when the originator no longer holds resources. They will disappear, unless somebody else takes on the responsibility for long-term archiving. This is precisely the traditional role of the library (figure 3). Long-term storage of resources will therefore remain a role of the library world, as it always has been with printed documents.



**Figure 3: Archiving of digital publications**

However, there are important differences. If libraries take on a responsibility for long-term storage and preservation of digital materials in order to maintain continuity of access beyond the immediate interests of the originator, they will only do so after a certain period of time rather than from the moment of publication. Also, there is no need for a large number of libraries to archive the same materials. In fact, the projected cost of long-term preservation would prohibit that. What we shall see, therefore, is that long-term archiving becomes the task of a limited number of large libraries specifically appointed for this task. This is mainly a role for national libraries that have been appointed the legal deposit task for digital publications. The implication is that for other libraries, storage of digital resources will be limited to local resources and perhaps also short-term storage of some non-commercial resources. These libraries will be mainly access-based; they will no longer maintain significant collections (apart from the existing print collections) and focus on providing access services to publisher's repositories and deposit collections.

### **Serving the user**

We may now define the functions of the library in the future, networked context. Surprisingly, these functions are identical to those of the traditional library. It is through these four functions that the library will continue to serve its users in the networked information age as a knowledge mediator:

- *Selection.* Selecting relevant information of sufficient quality will remain an important function for the library. However, selection will no longer function as the basis for acquisition of resources by the library. Rather, selection refers to the well-structured 'window' on available information resources on the network. Out of all available knowledge resources, the library will select those documents, services, sites, organisations etc. which meet the knowledge needs of its users, and provide links to them through its resource discovery mechanisms.
- *Storage.* The library world will continue to be responsible for the long-term archiving and preservation of information resources. In fact, this role will become even more important in view of the ephemeral character of digital information. However, as indicated above, this role will be performed only by a limited number of large deposit libraries which have the significant resources required to take on this challenging role. For other libraries, the storage function will be extremely limited.
- *Service.* Library service functions will be based on two mechanisms: the resource discovery system as a means for identifying and locating information resources, and the delivery system for making resources available on the user's desktop. These two mechanisms will form the basic technical infrastructure of the library.
- *Support.* In addition to pre-selection based on relevance and quality, and technical systems for resource discovery and document delivery, the main added value of libraries as a network service will be offered by the level of user support presented by the library. Individual libraries will develop a mix of support functions tailored to their users' needs, including personal assistance, distance support by telephone or e-mail, resource guides, signposting (both physically in the library and graphically in the virtual library interface), on-screen instruction and help files, user instruction and computerised training aids, and enhanced resource descriptions.

### **The added value of libraries**

The networked information infrastructure is a vast collection of available knowledge resources to which any user can have immediate and complete access. What users actually need, however, is a mechanism which can relate their specific knowledge needs to distinct resources. This is precisely the area where the added value of libraries for the user can be found. The four S-functions of the library will help to make the global network infrastructure an efficient and manageable knowledge environment. Knowledge mediation in this respect can be related directly to quality enhancement of the network. Libraries re-create the network into an effective source of knowledge tailored to the specific needs of users.

The other added value of the library in the information age is provided through its role as a component in the information chain, notably as a link between publishers and end-users. This is mainly achieved through the role of libraries in providing users access to publishers' resources based on license agreements. This has benefits both to publishers (who do not need to maintain administrative relationships with individual end users), and

to end users (who do not have to have accounts, passwords etc. for each individual information supplier).

### **A publishing role for libraries**

The importance of library-publisher relationships should be viewed in the perspective of another development. Many people regard the network as a publishing medium *per se*, making it possible to publish without publishers. Already many important information resources are available on the Internet that are not produced by official, commercial publishers. Even academics now tend to distribute information directly over the network, before or even instead of disseminating their works through official publishing channels. Work is being done on networked quality control and peer review, which is often described as the true *raison d'être* of scientific publishers. Whatever happens, libraries and their users will become relatively less dependent on official publishers for satisfying their information needs than traditionally has been the case.

A major issue is whether institutions, both corporate and academic, could publish their own materials over the network instead of employing official publishers. The legal and financial implications of this development are complex, and it still is unclear whether the significant role of publishers (notably in the STM-domain) will become less important. However, if institutional publishing does increase, there is a clear new role for libraries.

There are already many examples (e.g. in the Netherlands) where libraries collect internal materials produced by their institution, and make them available through their own document servers and WWW-sites. Effectively, they act as institutional digital publishers by doing so. Libraries are well-placed to perform this function, since they are beginning to develop in-depth knowledge of the many technical and organisational issues involved in networking, and have experience in making library resources (e.g. catalogues) available over the network.

There is therefore a clear case for libraries to add to the 4 S's (selection, storage, service and support) the P of publishing.

### **Reference**

The literature on the future role of libraries is vast. Rather than provide a necessarily limited overview here, we refer to a recent study carried out by NBBI for the European Commission, on which this paper is partly based. The report contains an extensive bibliography, both to printed resources and to resources available on the Internet.

Mackenzie Owen, J.S.; Wiercx, A. - Knowledge models for networked library services. - Luxembourg, European Commission DGXIII, 1996.