The role and responsibility of the university library in publishing in a university.

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Abstract

As a consequence of developments in information technology, the traditional information chain is subject to change: the separate functions in this chain become more and more integrated and the roles played by the traditional parties are most uncertain. Several new models in scholarly publishing and communication are emerging, in which the scientific community and the scientists themselves play a central role. It is more than natural for universities to support these developments in order to realise new models of scientific communication that are more in tune with the needs of the academic community than the traditional model, which has led to a serious serials crisis.

An important step in this direction is that each university encourages scientists to make more use of ICT in their research publications. However, it is also necessary to give serious attention to organisational matters: in this respect every university should take responsibility for collecting, archiving and disclosing the scientific output of its own scientists. The provision of scientific information is the traditional core business of university libraries and it is a natural extension of this role for university libraries to support this development and to organise the processes needed.

The paper describes the role that universities and their libraries have to play. It also gives some examples of library initiatives in this field, including an evaluation of their impact on the innovation of scientific communication.

1. Introduction

Developments in information technology have consequences for the processes of scientific publishing and scientific communication. It is to be expected that these processes will change drastically. This paper analyses these changes and addresses the question whether a university library might have a future role in electronic publishing.
The structure of the paper is as follows:
Section 2 describes a number of important trends relevant to the future of scholarly publishing and the role of a university library. Section 3 draws some conclusions, particularly concerning the position of the library. Sections 4 and 5 describe two

projects at Utrecht University Library, which are examples of the university library's new role. Lastly, section 6 comprises concluding remarks.

2. Important trends

A number of trends resulting from technological developments can be observed that are relevant for the role of a library in relation to publishing.

The information chain
The first trend is related to the so-called information chain. The role of the library and as well as that of the publisher are often described as links in this chain. There are currently various problems connected to the information chain. The chain stretches from information production to consumption. Traditionally, the various stages have been strictly distinguished in terms of the chain's main functions, i.e. information production, distribution, acquisition and consumption. Clearly identified parties, such as the publisher, the subscription agent and the library, carried out these activities.

This chain is usually represented schematically. The traditional representation was fairly simple. Lately, however, it seems to have become more complex due to the pressure of an ever-expanding information stream and as a result of various technological developments. It has even been suggested that the chain is about to explode. However, this metaphor of an exploding chain or cycle is not accurate. The chain is not about to burst at all. In fact, it is the amount of information that is growing explosively, and this is due to the way the information is being transferred. Yet, all the functions in the traditional information chain, i.e. production, distribution, acquisition and knowledge consumption, can be carried out at a so-called integrated work site. Within this context, the image of an imploding chain would be more appropriate, since the system is starting to shrink due to the pressure exerted by the environment.

The configuration of functions within the information chain has been subjected to change, whilst within this changing constellation, all the parties involved are struggling to determine their positions. For instance, all kinds of arrangements have been made between universities and publishers to facilitate the harmonious exploration of their new roles. However, there is a considerable danger that they will remain fixed in the traditional chain.

This danger becomes all the more evident as soon as an attempt is made to describe the development of the information chain in terms of the so-called synergy model. This model, which we have borrowed from chemical theories on dissipative structures, is often applied to organisations and systems (Zuyderhoudt, 1985). According to the model, the control of processes within an organisation remains stable until a notable interior or exterior factor alien to the accepted pattern agitates the configuration. An unstable situation can arise if these disturbances increase in number or extent. In this situation, all sorts of events may occur which are not compatible with the existing order. This state is usually referred to as chaos. Sooner or later a new order will emerge out of the chaos, a constellation that is able to warrant renewed stability under altered circumstances. If, however, a new order fails to arise, the result will be regression: stagnating development and a more or less random disintegration of structure.

In view of the developments taking place in the field of information provision, it is clearly necessary to experiment creatively and innovatively with new roles instead of adhering to traditional patterns. All forceful attempts to preserve the old structure will not only impede development as such, but will also expose the structure to the increasing danger of arbitrary disintegration.

The serials crisis

The philosophy behind the familiar adage 'publish or perish' has resulted in a noticeable growth in the number of scientific papers. As a consequence of this growth, considerable problems and bottlenecks are impeding the existing system (see also Savenije, 1997).

1. The system is sluggish: it takes at least six months, sometimes up to a year and a half, for a submitted paper to actually be published.
2. There is increasing doubt as to the system's reliability, particularly since reviewers could use their prior knowledge to take advantage.
3. The system is becoming unaffordable due to considerable price increases that sometimes exceed the general price index. These price rises lead to subscriptions cancellations which in turn stimulate new increases, eventually evolving into almost monopoly-like situations.
   Furthermore, we must be aware of the fact that, in addition to these price increases, universities have to pay for these publications more than once, because they also fund:
   • the salaries of university staff members who write the articles and papers;
   • the salary of the reviewer who, at the request of the publisher, judges whether the articles are suitable for publication;
   • the publication's purchase price;
   • the archiving of the publications.

A number of problems could be solved with the help of information technology. However, this calls for an innovative attitude towards publishing. Presently, it can be observed that traditional commercial publishers are reluctant to experiment with innovation.

The feasibility of new publishing models

The need for communication among scholars has always been the very raison d'être of the scientific journal. A board of editors was introduced to judge the quality of the contributions and the results they reveal. A hierarchy gradually emerged owing to differences in evaluations: some boards introduced stricter selection criteria than others. As a result, some journals acquired a more solid reputation than others. Consequently, scientists started deriving their stature from the reputation of the journal to which they contributed and readers were aware of the difference in quality. The distinction in quality even led to the rise of a ranking system. Gradually the ranking system began to play a significant role in the evaluation of scientific results, a role that is now firmly established.

The so-called indexes are important tools in the evaluation of articles. These indexes are based on the quotation frequency of articles and on the reputation of the journals in which they are cited. Bibliometry, of which these indexes are a basic element, has even evolved into a separate discipline. As a result, scientific journals tend to become a separate factor in the evaluation of academic research programmes. On the other hand, however, paper journals are currently not playing a significant role in communication amongst scholars. This role has been assumed by the Internet.

Consequently, it is becoming more and more clear that other models of publishing that also facilitate communication are likely to arise.

What trends can be observed presently for academic publishing and, in particular, for scientific periodicals?

Firstly, many journals are available in an electronic as well as a paper version. In a period of transition this may be useful because it allows publishers and researchers to acquire a certain degree of experience. In the long run, however, this will lead to a superfluous duplication of efforts.Secondly, exclusively electronic journals are emerging. The publication procedures are similar to those of paper journals, but the production time is shorter.

The next step has already been taken by many institutes. Universities and 'learned societies' are installing document servers to make publications available globally. Having started as pre-print distribution facilities, some of these initiatives are evolving into electronic archives of an entire scientific discipline. (see http://www.openarchives.org/). Eventually they could develop into the effective and efficient system described by Leo Waaijers (Waaijers, 1996). As soon as an article is completed it is made available on a server, where it is stored carrying its publication date and other identification data as a feature. It is accessible to everybody. Anyone can print it, refer to it or quote from it, while the author retains copyright.

The publications can be evaluated and commented upon, and revised versions can be issued. Publishers can select any article they wish and publish it in an electronic or paper journal. For readers who prefer a qualification, this selection would be the equivalent of a certificate. The most significant difference with the present situation is that this method offers swifter communication and a quality selection afterwards.

In the present situation an author who wants his article published, is confronted with a dilemma. If he seeks speedy publication, he has little choice but to have his work published in the so-called grey literature. If, on the other hand, quality is more important, he will need to approach a traditional publisher and accept the slow publication process.

This dilemma could be solved by the model described above. However, it appears that many academics are conservative when it comes to publishing their results. This is understandable in view of the role traditional journals play in quality assessment procedures. Nevertheless this does not fully explain their attitude. Many are also reluctant to take part in innovative experiments that they regard as risky. They are more willing to participate in projects that more closely related to the traditional publishing process, such as the development of an electronic version of a traditional journal.

3. The role of the university library

From the trends described above we can conclude that the academic community should endeavour to keep the processes of scholarly publishing in its own hands. Furthermore, universities should use the possibilities offered by information and communication technology to experiment with new publishing models in order to incorporate and emphasise the essential aspect of communication in scholarly publishing.

Traditionally, the university library is responsible for selecting, collecting, preserving and providing access to information. The publisher's distinctive tasks in the information chain are distribution and quality certification. The distribution of electronic documents is a process that shares many similarities with the library's function of providing access to information, particularly when this task is combined with storing and preserving.

Regarding quality certification, the peer review is carried out by academics and organised by publishers. There are two obvious organisational alternatives to this:

- the process is organised by publishers, who act not as owners of the information but as service providers hired by the university;
- the process is organised by libraries. One of the advantages of this alternative is the possibility of direct contacts between the library and the scholars and their personal networks.

When the publishing processes and the publishing output are electronic, the support processes that enable scholars to publish their results share many similarities with the digital library tasks. If the academic community wishes to take control of scholarly publishing, an organisation within the university will have to organise the support processes and the back office functions that facilitate scientific publication. The university library is the natural candidate, provided that the it is able to make the transition from a traditional to an electronic library.

Two aspects of electronic publishing support can be distinguished.

The first is involves tasks carried out for the benefit of the 'mother institution' of the library, the university in which the library is embedded. The priorities are to store, preserve and providing access to the university's scientific output (e.g. its own publications). These tasks are very close to traditional library activities. The essential objective of these tasks is to create a digital archive of the scientific output of the university, to preserve this information and make it accessible to the academic community, within as well as outside the university.

The second aspect is more discipline-oriented and takes into account that scientific publishing and communication are not limited to one institution. This is the role that emphasises the necessity of new publishing models that enhance scientific communication, accelerate the exchange of research results and organise open discussions in knowledge domains. The facilitating role of the library in this context is mainly performed by organising the processes needed for electronic publishing. Researchers can put their papers on the website of their institute or initiate electronic journals, as well as experiment with publication servers and new peer review models. The initiative for these activities will come from researchers within faculties, from research institutes and learned societies, but they will be able to make use of the back office support provided by the library, including the organisational and technological capacities.

The following sections describe two projects within Utrecht University, both managed by the University Library. These are:

- the *Dispute* project, aimed towards creating a digital archive of the university's scientific output;
- the *Roquade* project, aimed towards creating an infrastructure to stimulate electronic publishing.

4. Dispute

The general idea behind the DISPUTE (Digital Scientific Publications Utrecht) project is that if every academic institution was to organise the scientific information it produces, this would results in a worldwide network of servers that make full text scientific information accessible online to everyone. The next step would be to order the information by subject within knowledge domains. It is quite natural to regard the preservation and disclosure of an institute's scientific output as that institution's own responsibility. As stated above, a university library can play a key role in this.

Obtaining the publications from the scientists and scholars is not a matter of course. The first condition is that it must not demand much effort, if any, to supply the publications. This means that:

♦ practically every technical format must be accepted (various versions of Word, Word Perfect, Tex, Mac formats, etc.);

♦ the author can select from a number of options for submitting the work (e-mail, diskette by post, ftp, web form)

♦ the publications that are already available in electronic form (e.g. in the journals for which the university has a license) should be added to the collection by the library itself.

Furthermore, the benefit and importance of this undertaking should be made clear; not only the importance for the abstract academic community but also for the authors themselves. Two functions which are particularly useful from the authors' point of view are the following:

♦ Long-term preservation, including guarantees for permanent accessibility, readability, integrity and authenticity (with respect to the transition from one medium and/or format to another)

♦ Broadening of the readership by making the publications traceable via various Internet channels. Advanced methods of archiving and indexing play a crucial role here, as do the options for self-ordering and ordering in knowledge domains. The use of the publications is promoted further through the use of the usual library tools in modernised form, such as user-friendly and accurate search engines, alerting and filtering systems and well-organised presentation of the publications on the web.

With respect to older publications, which are not available in electronic form or of which the electronic version is no longer readable, a reasonable alternative is online publishing of their bibliographical data as derived from the university annual reports.

University administrators, too, recognise the importance of storing the university's output and making it widely accessible. Other aspects are also important to them, such as the integration of various university systems and making research information accessible so as to promote accountability. In order to satisfy the wishes of the administrators and, at the same time, generate greater accessibility and openness, it would be useful to establish a link with the research information system, which contains the meta data about the research. This system contains the names, addresses and other identification particulars pertaining to the researchers, names and descriptions of the research programmes they are involved in and the data on the resulting publications. Such links to these publications, availabe online in full text, would enhance the research information system.

The contact between the library and the academic staff is an important aspect of this project. Not only has contact between the parties intensified, the subject matter they

discuss has changed as well. As a result, communication between library and academic staff has improved and the library's position within the university has been strengthened.

Project approach

In the Dispute project, the following activities can be distinguished.

1. Feasibility study regarding the creation of a comprehensive collection of Utrecht University's scientific publications (May – August 2000)
   The study is examining the restrictions that arise as a result of copyright issues (for example, requirements concerning access and security, differences among publishers and disciplines and permission from the authors themselves). An inventory of 'authorised' publications is being compiled and issues regarding the other publications are being analysed. Individual contact between the project leader and a pilot group of researchers plays a crucial role in this phase.

2. Availability of full text publications via various channels (September 2000 – June 2001)
   The first order of business is to gather all the 'authorised' full text publications together. In this project the limit of technical feasibility has been set to include publications from 1997 onwards. Access to these publications via the research information system will be generated and tested. In addition the publications will be available on the web through:

   ♦ hierarchical web menus relating to sources of scientific information from the library and faculty pages.
   ♦ free searching with the aid of search engines, including the relationship with hierarchical menu structures.
   The design will be tested by end users.

3. Availability of bibliographical data about the publications (September 2000-June 2001)
   The data from the university annual reports from 1980-1996 will be scanned or converted and published on the web.

4. PR and information about the project results (May – July 2001)
   Publicity (faculty-level activities) will be organised both within and outside Utrecht University.

5. Submitting the project results to the standard library organisation (September - October 2001)
   This activity involves defining and implementing regular tasks pertaining to collecting digital Utrecht University publications and making them available. This includes the supportive facilities and tasks pertaining to electronic publishing, which comprise the result of the second *Roquade* project.

5. Roquade

Roquade is a joint project of Utrecht University Library, Delft University of Technology Library and the Netherlands Institute for Scientific Information Services of the Royal Netherlands Academy of Arts and Sciences. The objective of the project is to set up an infrastructure for electronic publishing. Its mission is to enhance scientific communication by offering scholars an wide variety of facilities and organisational structures, aimed at gradually changing the publishing habits of scientists. The raison d'être of this mission is the fact that a relatively large number of scientists still hesitate to use new publishing methods which would liberate them from the monopoly commercial publishers have with respect to the publication of new research results. *Roquade* presents the academic community with an infrastructure for electronic publishing, which facilitates a gradual revolution from traditional publishing to very innovative models. Close cooperation with similar organisations constitutes a crucial factor in *Roquade*'s mission.

The main point of departure is to safeguard the interests of the authors and the academic community. The project is directed towards all disciplines and concerns Dutch publications as well as international initiatives (Savenije & Grygierczyk, 1999).

<u>The main structure of the project</u>

To understand the main structure of the project it is necessary to know that *Roquade* comprises:
1. a number of subsidiary projects with a variety of possibilities:
    a. a moderated pre-print service for grey literature
    b. electronic substitution for traditional publishing
    c. a publication site with different peer review models
2. a subsidiary project aimed at a technical and organisational infrastructure which is common for all variants

The first variant consists of a moderated pre-print service for grey literature. In this subsidiary project, grey literature is defined as publications which are moderated but do not have a formal independent stamp of approval. In this case, dispatch prevails over time-consuming quality judgement.

The second variant can be described as electronic substitution for traditional publishing. Two categories of publications can be distinguished:
- dissertations and conference collections
- scientific journals

There are two subsidiary project types concerned with scientific journals:
- Publishing new and existing electronic journals: this involves providing support to editors who prefer the traditional form of electronic publishing, in which the electronic journal is an electronic 'copy' of the traditional paper journal.
- Co-publishing: setting up a series of digital publication services for publishers, for instance for electronic versions of existing paper journals.

It appears that most of the editors, who are interested in setting up an electronic journal want to begin in a more or less traditional way, which involves mainly text and pictures. The concept of volumes and issues, typical of the paper journal, is maintained in the starting phase and, as in the case of traditional paper journals, peer review takes place before publication.

Gradually, a whole spectrum of additions and alterations are possible:
- the concept of issues will become obsolete as work is presented as soon as it is ready for publication;

- research data can be added;
- communication and discussion facilities can be added;
- multimedia can be used to enrich the publication.

The third variant is a publication site with peer review. The main feature of this variant is the initiation of a series of pre and post-publication peer review processes, which makes as much use as possible of experience and knowledge gathered in traditional and digital academic publishing processes. Subsequently, the traditional process of peer reviewing is to be transformed into several new types, thereby preserving the traditional advantages as much as possible. Simultaneously, the benefits of the new medium and organisation should be exploited to the fullest extent. In this variant it is possible to achieve speed without omitting the time-consuming peer review process by delaying peer reviews until after publication. This variant also offers the possibility of experimenting with different forms of quality assessment.

These variants reveal the main objective of the *Roquade* project: a gradual transition from less innovative solutions (for instance a publication site for grey literature or a traditional electronic journal) to more innovative solutions (such as a publication site with post-publication peer review). Not is this objective feasible, in some cases, it is even natural.

The phases of the project

In the project the following phases can be distinguished.

1. The preparation phase (May – December 1999)
   This phase comprises analysis and a user survey, assignment of project activities and setting up collaborations with similar initiatives and organisations.

2. The start-up phase (February 2000 – March 2001)
   The main elements of the start-up phase are:
   a. Setting up the infrastructure:
- the organisation and the production process
- availability and presentation
- archiving and storage
- security and authorisation
   b. Pilots for each variant:
- moderated pre-print service for grey literature: facilitating the transition to variants with peer review
- launching new electronic journals (at least two)
- co-publishing initiatives (at least two)
- publication site with peer review for one or two selected disciplines
   c. Financing
   d. Evaluation

3. The development phase (April – July 2001)
   This objective of this phase is to adapt and further expand the organisation, on the basis of the experience acquired in the pilot projects. The result should be a viable organisation with a good reputation.

4. Expansion phase (July – December 2001)
    This objective of this phase is scale enlargement of:
-   available material. This involves initiatives for increasing the number of journals, articles and grey literature on offer, increasing the number of disciplines and setting up new initiatives for collaboration.
-   the audience, by means of focused PR activities.

6. Conclusion

The first sections of this paper comprise a more or less theoretical analysis of developments in the information chain and the present and possible future role of a university library within this chain. This was followed by a description of two projects at the Utrecht University Library. These projects show that there is a new and real challenge for university libraries, to be engaged in the support of electronic publishing. This challenge is real because the projects are not only initiated on the basis of a strategic analysis by the library management, but even more so because scientists within our university have come to the library asking for the support they need to make a successful transition to electronic publishing and new publishing models.
Of course, the university library, just as any other library, will be under threat as a consequence of technological development and shifting powers within the information industry. But the role of the university library within its own institution is closely connected with the added value a library can provide because of its direct links with its users and its close relation to the primary processes of the institution, teaching and research. As a consequence the development towards electronic publishing models controlled by the academic community itself provides a perfect opportunity for the library to strengthen its position within the university. The library's willingness and readiness to take part in this development may well be strategically essential to safeguard the library's future.

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