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UNIVERSITY LIBRARIES IN THE ARENA OF SCHOLARLY COMMUNICATION

I. Introduction

University libraries are important actors in the arena of scholarly communication. Their visible and well-known role has always been to provide access to scientific knowledge via the research publications in the library collections. Earlier research publications were available in the university libraries in printed form. Nowadays, it is typical for university libraries to offer access to a huge amount of electronic research publications via the networks. Further, the landscape of scholarly communication has changed because of the dual model of scientific publishing, where both traditional commercial publishing and open access play crucial roles. Therefore university libraries face various challenges in acting in the arena of scholarly communication.

However, university libraries do not only provide access to published research knowledge. They play a more active role in various knowledge processes inside the universities, aiming to support scholarly communication at various stages. Quite often university libraries act as publishers and/or participate in open access publishing, taking

care of the parallel publishing of the university. In some cases, the vision of the university library also encourages librarians to carry out research and embrace the research engagement as a core professional and institutional value (see e.g. Schrader & Shiri & Williamson 2012). Further, the university libraries have quite often been asked to produce bibliometric analyses, which not only visualize the diffusion of scientific knowledge but also offer the instruments for scientific evaluation. (See Figure 1.)

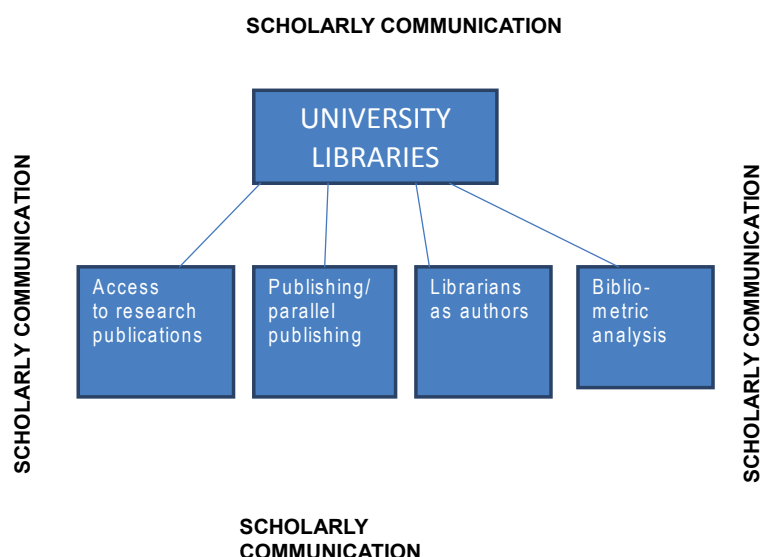


Figure 1. University libraries in the arena of scholarly communication

In this chapter we present scholarly communication as a social and cultural concept. In addition, we describe what role the university libraries play in various knowledge processes of the university. Further, we contemplate the role of the University of Namibia (UNAM) Library in the arena of scholarly communication. We do not consider in detail the role of university libraries as publishers or the university

librarians' own research activities, because these topics are covered by other chapters (Sisättö & Mäki & Heikkilä & Katjavivi 2012; Lehto & Matangira & Shatona & Kahengua 2012) in this book. Nor do we examine in detail bibliometric analysis as a relatively new role of the university libraries in the arena of scholarly communication, because that topic has been described with good examples in another chapter in this book (Forsman & Ndinoshiho & Poteri 2012). The university library has a multifaceted role in scholarly communication. We believe that it could be made even more visible. As Morrison (2009, 66) states, "library is a key support for scholarly communication".

2. Scientific communication

– scholarly communication – science communication

Scientific communication is the basis of science and the growth and diffusion of scientific knowledge. It is studied in different fields of science: the sociology of science, communications studies, information studies, science studies. Scientific communication has been studied from different viewpoints in different fields, such as knowledge production, action, language, adoption... In information studies, when we talk about communication, we also talk about concepts like data, information, knowledge, wisdom.

When we talk about scientific communication, we can see it as scholarly communication and science communication. Scholarly communication is an **umbrella term** used to describe the process of academics, scholars and researchers sharing and publishing their research findings so that they are available to the wider academic community and beyond. Meadows (1998) states that scholarly communication is targeted at 1) scholars of the same field; 2) scholars of other paradigms; 3) scholars of other fields: and 4) students (young scientists). All these groups could be called professionals in science.

Science communication means something like public media aiming to talk about science with non-scientists, e.g. “societal interaction”. The target groups may be 1) specialists in various fields with scientific education (medical doctors, high-level specialists like librarians, teachers, lawyers etc.) who may also have professional mobility between science and practical work. These groups could be called amateurs of science (Meadows 1998). 2) Specialists in various fields without scientific education (professional education) who may need scientific information in their work. 3) The wider public or “the man in the street”. Everyone can belong in this group, and the communication channels are newspapers, magazines, radio, TV, and the Internet.

Research as a communication process includes information seeking and reading, discussion in scientific communities, interpretation, analysis and ordering of information, production of new information and knowledge, publishing, and finally, evaluation of research. Scholarly communication has traditionally been divided into formal and informal communication. Formal communication includes books, journals, research reports and articles. Peer review gives a certain credibility on publications. When we talk about informal scholarly communication, we often mean “invisible colleges”, or networks of researchers, correspondence, conferences, unofficial discussions, email, discussion groups, scholarly blogs, social media, oral communication. In both types of communication there is a printed and digital environment. Nowadays, in the age of the Internet, it is often difficult to classify different types of publication.

3. Scientific publishing from the first scientific journals to e-journals

In 1665 the first scholarly journals in the world were published: on 5 January in France *Journal des Scavans* and two months later in

England *Philosophical Transactions of the Royal Society*. More journals followed soon after these two. The first scholarly journals were made possible by the invention of the printing press with the postal system for distribution. These factors shaped the development of the journal (Morrison 2009, 21–22).

Now in 2012 the number and form of scholarly journals have changed a lot. According to the global serials directory database Ulrichsweb there are 59,000 scientific journals in the world, about 15,000 available online, 3,600 only electronically, and about 42,500 (72%) in English. Of these about 28,000 are peer-reviewed journals, about 11,000 (39%) are available online, about 2,000 only electronically, and about 27,000 (96%) in English.

The extent of English scientific journals indicates that scholarly communication is now more global than ever. Many researchers aim to write to the researchers in other countries. Further, the scientific journals can aspire not only to an international audience, but also to international authorship. Kortelainen (1999) studied the diffusion of a Finnish scientific journal using bibliometric methods. Her results show that the character of a scientific journal can change from national to international, although the change may take time.

However, probably a more effective change in scientific publishing is related to the development of information technology. During last 10–15 years a really transformative change from printed to electronic (digital) publishing has occurred. This certainly has an influence on scholarly communication and, as Willinsky (2006) describes, presents new opportunities to the researchers of those countries that do not have a long tradition in publishing. Open access scholarly journals especially may have an enormous positive effect on research work in Namibia and other African countries.

Discussion about open access publishing and its different modes in scientific communication began internationally with the new millennium. In open access publishing two main directions can be discerned, green and golden. The green route means that the author can

self-archive at the time of submission of the publication whether the publication is grey literature (usually internal non-peer-reviewed), a peer-reviewed journal publication, a peer-reviewed conference proceedings paper or a monograph.

In the golden route the author or author institution can pay a fee to the publisher at the time of publication, the publisher thereafter making the material available free at the point of access. These two are not incompatible and can co-exist.

As Jeffery (2006) states, the green route makes publications available freely parallel to any publication system but is not, itself, publishing. The golden route is one example of electronic publishing.

One dimension to be distinguished is the timing and quality aspect: pre-prints are pre-peer-review articles, post-prints are post-peer-review and post-publication articles while e-prints can be either but in electronic form.

Another dimension in this is white/grey literature. White literature consists of peer-reviewed, published articles while grey consists of pre-prints or internal “know-how” material.

In any case, open access makes research work and its results more visible. Both the University of Helsinki and University of Tampere support open access to research publications. In Helsinki researchers have been required to self-archive copies of their research articles in the University open repository since 2010. In Tampere researchers have been requested to self-archive copies of their research articles in the open institutional repository of the University from January 1st 2011 onwards. The University of Namibia in 2006 established DSpace, which is an institutional repository where UNAM staff deposit their publications and grey literature to promote institutional research output.

4. Knowledge processes at the universities

Universities are knowledge-intensive organizations. Their core function is to create new knowledge which diffuses through scholarly communication and scientific publications. In the creation and dissemination of new knowledge, various processes can be recognized. The university libraries participate in these processes in numerous ways. (Huotari & Iivonen 2005.)

Knowledge processes can be divided into generative, productive and representative knowledge processes (Wikström & Normann & Anell & Ekvall & Forslin & Skärvad 1994; Huotari & Iivonen 2005). In *generative knowledge processes* new knowledge is created and innovations are produced. Research is a very typical generative knowledge process, where people's knowledge and understanding are combined with external information and knowledge. Scientific research is at the heart of scholarly communication because it is based on the findings of earlier studies and produces new knowledge and ideas to be discussed and utilized in forthcoming research.

University libraries enable access to research publications both in printed and electronic form, and advise on searching and selecting publications. As Forsman, Ndinoshiho and Poteri (2012) describe elsewhere in this book, university libraries utilize various methods of supporting research and the creation of new knowledge. University libraries also try to develop new methods and new approaches to work together with researchers, like knotworking. Thus they form an important link in the continuum of scholarly communication.

University librarians can themselves act as the producers of new knowledge and innovations. However, as Lehto, Matangira, Shatona and Kahengua (2012) point out in this book, there are still many obstacles and challenges when librarians consider publishing their research results.

In *productive knowledge processes*, the new knowledge is used for providing and maintaining a new product. In scholarly communica-

tion writing and finalizing publications are very typical productive processes. It is essential to get new knowledge and ideas into the form of research publication because this enables their diffusion. Nowadays the international diffusion of research findings has been emphasized by many research policymakers, including the Finnish Ministry of Education and Culture (Laadukas... 2011). Although international conferences offer a forum for the diffusion of new scientific knowledge, research publications still play a more crucial role in international scholarly communication.

Writing and finalizing publications are very time-consuming processes. Therefore in many universities there is a need and desire for the libraries to support more scientific writing processes. Many university libraries worldwide already offer online research management, writing and collaboration tools such as RefWorks and train researchers to use them. These tools are designed to help researchers to easily gather, manage, store and share all types of information, as well as to generate citations and bibliographies.

In *representative knowledge processes* new knowledge is manifested and transferred to the users. Publishing is a good example of representative knowledge processes in scholarly communication. When the researchers have created new knowledge and produced new publications (articles, monographs...), there is still a need to publish them and put them on the market. Usually researchers do not do this by themselves; other actors are needed.

As described elsewhere in this book (Sisättö et al. 2012), university libraries have for some time already been involved in the publishing processes in the universities. Open access publishing will create new challenges for the university libraries. Nowadays many university libraries take care of the parallel publishing and open institutional repositories of their own universities. Conventional publishing models are changing towards multiple models and in many universities the university presses and libraries have joined forces (Sisättö et al. 2012).

Bibliometric analysis is another good example of representative knowledge processes in scholarly communication. Other researchers are definitely the users of scientific publications but so also are those actors, for example, who make decisions on research funding. They may be university administration personnel or high-level decision-makers (Ministry of Education and Culture). Decision-makers usually do not want to read scientific text as such but need bibliometric data on scientific publications. Today it is increasingly common for university libraries also to be involved in bibliometric analyses.

Bibliometric analysis is a representative knowledge process, which makes scholarly communication visible in another form. Bibliometric analyses provide both quantitative and qualitative information about the final results of research work, e.g. publications. Bibliometric analyses are useful both to researchers and research groups for their self-evaluation. They are also valuable to research administration when planning research policy and making decisions about research financing. As Forsman, Ndinoshiho and Poteri (2012) demonstrate in another chapter in this book, librarians may have professional skills for bibliometric analyses and services, and so take a major role in producing bibliometric data for different purposes.

5. The University of Namibia Library in the arena of scholarly communication

As described earlier, in a developed country there is a long history of scientific publishing and printed scholarly communication. In developing countries like Namibia this history is shorter. This implies many challenges but also many opportunities. In developing countries university libraries can make the leap of a tiger in building their partnership with the academic community and promoting scholarly communication in many ways.

The UNAM Library is a relatively new university library, established in 1992. The University did not have a strong research orientation until recently, when postgraduate programmes were introduced with a marked emphasis on teaching, research and publishing. The role of the Library as a partner in scholarly communication has developed during the years and this has been acknowledged by the University.

One of the university libraries' main roles in scholarly communication is to offer access to the findings of earlier studies. It is only natural that the printed collections of the UNAM Library are not yet very extensive. However, we believe that electronic publishing, and especially the diffusion of open access publishing, will improve the library's ability to provide access to published scientific knowledge. The library has a critical task in teaching researchers, teachers and students to seek scientific information in an electronic environment.

The UNAM Library has already been involved in developing publishing processes at the University. It was active in initiating the re-establishment of the University of Namibia (UNAM) Press in 2009. Although the UNAM Press operates today as an independent unit at the University, it remains a brainchild of the Library, and this symbiotic relationship is acknowledged and respected. In addition, the UNAM Library has established a digital repository as an open access publishing option for its research output. This undertaking complements UNAM Press and broadens the scope of scholarly communication.

A significant proof of the esteem in which the UNAM Library's is held in scholarly communication throughout the structure of the University is that the Library is represented on the Research and Publications Committee, the Postgraduate Committee, the Research and Academic Forum and has six seats in the University Senate. Although the role of the Library is valued and appreciated in these various committees, it can play a much bigger role. It could do more by supporting the various stages of knowledge processes at the University than

it is currently doing. For example, it is not yet in a position to offer bibliometric analyses of UNAM's scholarly output.

Because university librarians usually have an academic education, they have the ability to read and write scientific texts. However, from experience we know that writing skills, for example, develop only by writing over time. Therefore it is important that the UNAM Library encourage its staff members to learn academic writing by doing it.

6. Discussion

University libraries have always had an important role in the chain of scholarly communication. By focusing on various types of knowledge processes we can even ensure that the university libraries' role in scholarly communication continues to grow and assumes new forms. However, we emphasize that libraries and librarians should make their role more visible. They should take an initiative and participate in the discussions in various arenas of scholarly communication and proudly show their own expertise. In most cases, university librarians have the academic education with the special field of know-how, which, combined with the knowledge of researchers, will benefit the whole academic community (Iivonen & Huotari 2007).

Likewise, the librarians should listen and learn from the researchers about their work. University libraries can support researchers in their scholarly communication better if the librarians understand well enough how researchers work, what their research culture is like, and how they seek and produce information. In addition, focusing on scholarly communication may also enhance the librarians' own self-confidence when they understand how important their own role is in the long chain of scholarly communication.

Scientific work itself is changing and acquiring new forms. It is more global and more collaborative. It also is carried out more in a

networked and digital environment. Researchers can work anywhere with their laptops or tablet computers. They are not confined to a certain space – like a library building – when making information searches, sending their texts to colleagues by e-mail or working on some common platform. E-research, e-science, e-social science and e-humanities, for example, are terms used in describing the changes of scientific work. Managing research data and outcomes (publications) is a real challenge in e-research. University libraries can take an active role in this process. This is a similar challenge for university libraries in developed and developing countries alike, both in Finland and Namibia.

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