

OPEN ACCESS MODELS AND STRATEGIES IN DISSEMINATING SCIENTIFIC INFORMATION

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Abstract: *Open Access movement has completely changed the publishing model in academic community. The golden way is publishing on Open Access Journals and green way is to archive scientific production in institutional repositories. Transilvania University built repository in 2009, first institutional repository from Romania.*

Key words: *Open access, publishing model, repositories, archiving.*

1. Introduction

Aiming to gain broad access to research output, alternative ways of publishing scientific literature are developed. As suggested by the supporters of open access, there are actually two ways of gaining a “genuine”, true open access: self-archiving, performed by authors (*Green Road Open Access*) and open access journals (*Golden Road Open Access*).

2. Strategies for Open Access

The first strategy, called the *Green Road*, is self-archiving. It implies depositing the electronic publications (both edited and non-publications) in the open electronic repositories, supported by the research, education and cultural institutes. These archives are called archives of electronic publications or institutional depositing (repositories) (Ţurcan, 2009).

The standards, focusing on facilitating the dissemination of information, are promoted and developed by the *Open Archives Initiative – OAI*. The *Green Road* is free of charge for both authors and users. In 2004, Electronic Publishing Innovation Centre made a distinction between archives and repositories, which states that an archive is a collection of papers published in journals, and a repository is a collection of papers including both published and non-published papers. However, this distinction is not seldom used and both terms are used as synonyms.

The *Study on the economic and technical evolution of the scientific publications market in Europe* (available at: http://europa.eu.int/comm/research/science-society/pdf/scientific-publication-study_en.pdf) specifies two types of archives or repositories: thematic and institutional (Table 1).

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Open access archiving models: The Green Road

Table 1

Archive/ repository models	Description	Examples
Thematic archive (subject-based)	Collects and offers access to articles and documents on specific fields, disciplines. They emerged in fields with a long tradition and for the exchange of preprints when quick publishing was imperative.	The thematic archive in library and information science of CILEA Interuniversity Consortium (http://eprints.rclis.org/perl/oai2)
Institutional repository	Preserves, disseminates and manages institutional scientific publications, usually including thesis and dissertations, conference reports and papers, scientific reports and published and non-published articles. Institutional repositories are both thematic and multi-disciplinary, covering multiple subjects.	The open access archive of Cornell University Library (www.arXiv.org) The digital archive of La Sapienza University from Rome (PADIS) (http://padis.uniroma1.it/)

The archives may belong to organizations (universities, research institutes, laboratories) or may be organized by subject (economics, mathematics, library and information science, etc.). The authors may self-archive the papers with no restrictions, except for specific conditions concerning the self-archive of post prints. 95% of journals allow authors to self-archive six or twelve months after the article’s publishing in the journal. The main requirement for such archives is the observance of the *Open Archives Initiative Protocol for Metadata Harvesting (OAI PMH)* protocol, which makes possible a unique interface for discovering and sharing resources deposited in open access. Thereby, open access archives are compatible with other resources, which allow retrieval of information including where researchers do not know about the existence, location and content of such resources. Currently there is free software for creating and maintaining OAI, which are widely used worldwide (DSpace, E-print, Fedora, etc.).

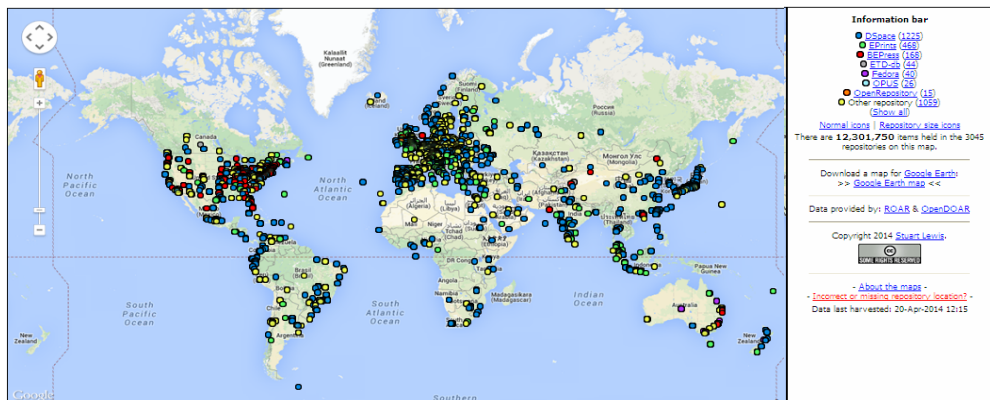


Fig. 1. *Repository registration in Roar and OpenDoar*

The Open Access Initiative is widely supported in many countries. According to *ROAR* (June 2014), there were 3193 [3] open access archives from 105 countries registered worldwide, but *DOAR* recorded 2419 archives, 62% of which were institutional, about 11% - thematic, 4% - aggregations and 3% - governmental (available at: http://europa.eu.int/comm/research/science-society/pdf/scientific-publication_study_en.pdf).

The leaders in the management of open access archives are USA with 522 archives, Great Britain with 231 and Germany with 176.

Using colour-based self-archiving, as a means of identifying the self-archive friendly editors, is key for the trend towards open access. These colours provide information not only for those who are looking to self-archive, but also information for the editors about the self-archiving editorial policies. The colours are used to encourage self-archiving practices and to convey a clear message, which actually represents open access self-archiving.

Digital archives have a crucial importance and an increasing role in raising the visibility of university research and university communities, influencing the institutional rating. This conclusion is supported by the recent results, independently obtained by many researchers: published articles, for which authors offered open access by subscription and which were developed by self-archiving the final version of the article, are downloaded and cited twice more frequently than the articles with no open access (Bohlin, 2004). This fact is also supported by statistical data (available at: <http://www.webometrics.info/about.html>, http://repositories.webometrics.info/en/top_Inst?page=1).

Clifford Lynch argues that fundamentally an institutional deposit is a recognition that the intellectual and scientific life of a university shall be represented, documented and shared in digital form and that the primary responsibility of the university is to manage this patrimony both for making it available, and for preserving it (Lynch, 2003). Steven Harnad in particular emphasizes that self-archiving provides an optimal and inevitable solution for the problems of scientific communication (Bohlin, 2004).

If we approach institutional repositories from the perspective of universities, several advantages should be mentioned: accumulation, storage, distribution and ensuring sustainable, permanent and reliable access to the research of university's scientists, faculty and students; the existence of a software that allows to easily post research results in well organized and reliable electronic archives, providing open access to research materials, archiving and keeping them (both physical preservation of e-publication and stability in the e-identification), as well as ensuring irreversibility of e-publication.

Nevertheless, there are opposing opinions claiming that over-euphoric expectations from university digital repositories did not become true. A study conducted by Cornell University determined that investments in the development and installation of institutional archive had been too big, while the universities' contribution and use of information did not meet the expected level. Similar results were found by another study conducted by the library of the Medical University of Vienna (Lucius, 2006). However, the constant increase in number of repositories confirms their role in archiving, disseminating and ensuring a sustainable access to scientific information.

The second strategy, open access publishing – *the Golden Road*, develops alternative publishing models of scientific papers, scientific journals, conference materials. Electronic journals also provide text review, but only approved materials are published in open access. The cost for electronic journals includes the cost of review, and preparing the manuscript for server upload.

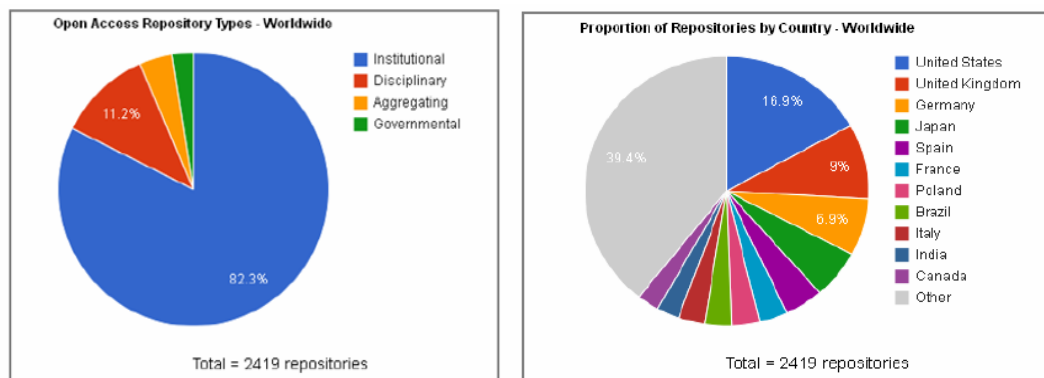


Fig. 2. *Statistics of Open Access repositories*

In order to finance these models, investments from organizations, research institutes and universities are attracted. In certain cases (which rarely happen) the journal editorial department charge the authors or sponsors (funders) a fee for processing the approved publications for their conversion in electronic format. The value of the fee is variable and mobile” (Turcan, 2009).

Dominguez (2006) lists four models of open access publications (Table 2). These models stand apart according to the payment method for the access to scientific information: free open access, partial open access, paid and a fourth model including specific access facilities for transition and developing countries; the access costs are calculated according to the number of inhabitants.

Open access publishing models: The Golden Road

Table 2

Open access publishing models	Description	Examples
Free open access	Authors and users do not pay charges. Online only access	<i>Information research journal</i>
Partial open access	Open access is provided for some articles in a number of journals, while for the other articles a subscription is necessary.	Many editors apply this model to promote the journal and increase audience, as the case is for Springer Publishing.
Open access per capita	Open access is offered to scholars and students in the developing countries for charity reasons, with limited costs for the institutions participating in an information system	Oxford University Press, INASP PERii
Paid open access	The fee is covered by the author or the institution as support for maintaining the open access (in some cases, the access is paid for the author). The access is free of charge for the user	Springer Open Choice, Public Library of Sciences, American Institute of Physics, Institute of Physics

3. Directory of Open Access Journals

The *Directory of Open Access Journal (DOAJ)* was created within the *Nordic Conference on Scholarly Communication* conference, conducted in Lund – Copenhagen in October 2002. The maintenance is ensured by the University of Lund (Sweden). DOAJ is one of the most renowned and prestigious list of open access peer-reviewed scientific journals. Currently, more than ten per cent of the peer reviewed journals in the world (9627 journals by 10.06.2014) were included in DOAJ, which makes DOAJ one of the leading peer reviewed journal collection worldwide. An analysis of DOAJ journals showed that about two thirds of them cover mathematical sciences, fundamental sciences, medicine and technical sciences. The number of open access journals is constantly increasing, evolving rapidly towards new publication models in order to extend the number of users and to offer new access methods.

The journal verification and evaluation process for inclusion in DOAJ requires the overview of the journal editors to ensure that the reviewing process and quality control measures are in force and meet the demands of real open access and meet the requirements of the definition of Open Access. In order to be included in DOAJ, a journal must have an ISSN, to go through the review process, which ensures the quality of the journal. The advocates of open access argue that thanks to open access the journal impact will be revealed by the increase in the number of readers. At the same time, other experts claim that, on the long term, journal quality is best preserved by traditional models.

4. Open Access repository at Transilvania University

At Transilvania University from 2009 we have this important instrument for visibility of scientific production, ASPECKT DSpace, at <http://aspeckt.unitbv.ro/jspui/> with 10 communities of Transilvania University, fig.3.

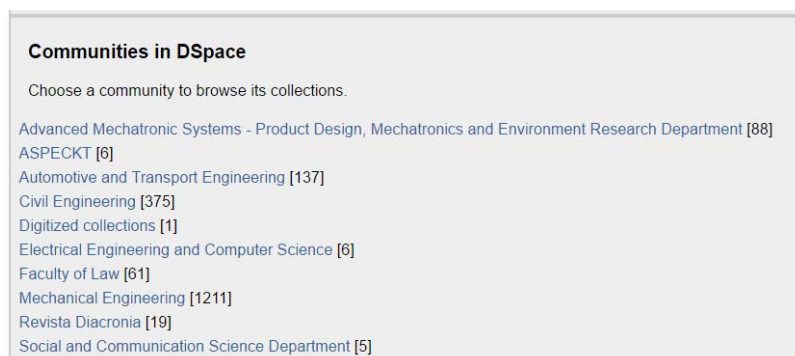


Fig. 3. *Communities in Transilvania University Repository*

5. Conclusions

Throughout this process, governments and non-governmental organizations implement Open Access initiatives and endorse open access by mandates. Universities, research institutes, publishers, funding institutes endorse open access by ordinances.

Universities, including libraries, develop open access electronic archives which guarantee not only unrestricted information of users, but also the extended visibility of scientific output. In turn, researchers may adopt a double publishing strategy of scientific papers - publishing in traditional journals or open access journals. Resorting to self-archiving procedure, researchers may also include published and non-published scientific papers in institutional and thematic archives.

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