

1. Introduction

Research journals on the significance, relative issues and initiatives concerning the modern information environment, have led to a significant progress in the field. It is a given fact that the conditions of the modern information environment have evolved through the years, touching upon every social aspect of our everyday life (Mpokos, 2001). It is also worth mentioning that among every generation of people/ end users there is a “gap” in ICTs skills, obtained through education or lifelong learning.

With the abovementioned skills one is able to fully satisfy his information needs through access to any information service. Thus, we are led to a social division between info rich – those who have access to information- and info poor individuals-those who are deprived of such access- , resulting to the existence of informational, and consequently social, inequalities (Papadakis, 2006).

Information Democracy, i.e. the sociopolitical system in which every person has the opportunity to profit from their access to information sources, is the only way to achieve information equality. According to Doctor, Information Democracy, as a phenomenon, empowers citizens providing them with the necessary tools and helping them learn how to use information sources that will resolve their everyday problems (Doctor, 2004).

Introducing the internet, in the 90s, has inflicted important change upon the use and accessibility to information. Several journals and editions changed their format from print to electronic and started publishing their content, a few months earlier than the printed edition, in an electronic format. As a consequence, their content became available to all registered users, limiting, at the same time, postal delay and annihilating distance by providing even home access to information.

Thus, it is clear that there is a “fertile ground” for introducing important changes to the information model through an upcoming “revolution” that could be brought through open access to information via digital repositories.

2. Open Access

The idea of open access has been largely debated among the scientific community and it was turned into the “foundation stone” for a number of declarations aiming to define and promote it. The most important ones are:

2.1. The Budapest Open Access Initiative

Published in 2002, this declaration touches upon the promotion of open access as a publication model for scientific work. It makes an appeal to institutions and scientists for publishing their entire, already evaluated, scientific work following the open access model, i.e. without any financial restrictions. At the same time, open access is characterized as “free access” to publications, offering the users the opportunity to read, download, copy, share, print, index, track and cite the full text of a publication or use it for any legal purpose without financial or technical restrictions. The only prerequisite is a reference to the author and their consequent right of full control upon their publication.

This declaration proposes the two following strategies in order to achieve open access:

1. **Self-archiving:** This strategy will allow users to self-archive their work on the internet with the use of the necessary tools. By using the appropriate tools and following the protocols of the Open Archives Initiative, information research and retrieval through search engines will be much easier, and this means that the user will not be required to know the subject of the publication and the repository in which it was published, since this information will be provided by the search engine.
2. **Open access journals:** A new generation of journals, published in accordance to the open access model, should be supported and promoted. Furthermore, the existing subscriber journals should be supported and transformed into open access journals (**Budapest statement, 2002**).

2.2 Bethesda Statement on Open Access

The Bethesda Statement on Open Access Publishing sets the basic principles for open access publishing:

- A. The copyright holder grants to all users a free, irrevocable access to, and a license to copy, distribute, transmit and display the work publicly and to make and distribute derivative works in any digital medium, subject to proper attribution of authorship.

B. A complete version of the work is deposited in at least one scientifically or academically acknowledged online repository, including a copy of the copyright permission.

Furthermore, the statement offers important publishing incentives in the framework of open access, since:

- It encourages researchers to publish their work according to the principles of the open access model.
- It urges holders of cultural heritage to publish their informational sources online, granting free access to all users.
- It seeks the development of means and ways of evaluating the deposited publications in order to guarantee the repository's quality and to obtain scientific acknowledgment (**Suber, 2006**).

2.1.3. Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities

This Declaration on Open Access to Knowledge in the Sciences and Humanities defines open access as a “comprehensive source of human knowledge and cultural heritage that has been approved by the scientific community”. A basic element of this declaration is that it supports, approves and uses as a “guideline” the Budapest Open Access Initiative, the Bethesda Declaration and the European Cultural Heritage Online Center (ECHO) Charter, in order to promote the internet as a tool for the creation of an international data base of scientific knowledge and thinking, in the long run. The signatories of the declaration note that they wish to specify the guidelines/ measures that research policy makers, research institutions, funding agencies, libraries, archives and museums need to consider.

The basic principle and aim of this declaration is the wide dissemination of knowledge, which is only half complete if the information is not made widely and readily available to the society. This requires a combination of the open access model and the Internet, as an ever-expanding means that provides alternative ways of knowledge dissemination.

As a consequence, there is a need, according to the declaration, for the future Web to be sustainable, interactive and transparent and its content and software tools must be openly accessible and compatible.

In conclusion, as far as the procedure that should be followed in order to include a publication in the open access model is concerned, the two basic conditions mentioned in the Bethesda statement are cited word for word (**Bethesda statement, 2003**).

3. The Transnational Significance of Scientific Information

At this point we should mention the increasing interest of the European Union on scientific information and its use in the digital age. A communication issued on the 14th of February 2007, touches upon the access, dissemination and preservation of scientific information, in our days, all over the EU (**European Committee, 2007, final**).

Thus, it is obvious that the access, dissemination and preservation of information have gained transnational interest that aims to the creation of a specific operational framework, which would include all the above mentioned significant parameters.

This communication expressed the long term goal of the “old” continent to increase the competitiveness of knowledge economy. At the same time it aims at signaling the importance and launching a policy process on

- (a) the access and dissemination of scientific information, and
- (b) strategies for the preservation of scientific information across the Union.

The above-mentioned aim is structured around 3 pillars (**European Commission, 2007, 56 final, page 2**)

- The production of knowledge through research
- The dissemination of knowledge through education, and
- The application of knowledge through innovation

More specifically:

1st Pillar: All research builds on former work and depends on scientists’ possibilities to access and share scientific publications and research data.

2nd Pillar: The rapid and widespread dissemination of research results can help accelerate information and avoid duplication of research efforts, and

3rd Pillar: The innovative system by which scientific information is published is pivotal for its certification and dissemination, and thus has a major impact on research funding policies and on the excellence of European research (**European Commission, 2007, 56 final, page 3**).

This communication comes from two policy strands, the i2010 digital libraries initiative and the Community policy on research. As far as the first is concerned, it aims at making information more accessible and usable in the digital environment. More precisely, it follows up on a letter of 26 April 2005, issued by six Heads of State and Government, asking the Commission to take the necessary steps and create methods in order to improve access to Europe's cultural and scientific heritage.

The Community policy on research aims at maximizing the socio-economic benefits of research and development for the public good. This communication represents an initial step within a wider policy process addressing how the scientific publication system operates and what impact it has on research excellence.

To sum up, it is apparent that the issue of the dissemination and preservation of scientific information presents an important challenge for the digital age at the transnational level.

4. Digital Repositories

The statistical graphs of the OpenDOAR project webpage demonstrate the existing situation and the need to improve digital repositories on an international level.

5. Institutional Repositories

At this point it is methodologically required to attempt a conceptualization of a fundamental category of repositories, i.e. digital repositories, by mentioning their main features, their advantages and disadvantages as well as the "cost" of obtaining information through them.

Nowadays, it is a common practice for academic institutions to create open access institutional repositories. In a first attempt to define them one could say that they are digital repositories (collections) that accumulate and preserve the intellectual products of a university or a multi-university community (**Crow, 2002**).

Lynch provides another quite interesting definition, according to which a digital repository is a total of services that are provided by the university to the members of its community aiming at administrating and disseminating digital objects that have been produced by university members (**Lynch, 2003**).

According to Ware, an institutional (academic) repository is an internet database for educational material that is scientifically approved and is characterized by duration, material accumulation, interoperability and accessibility. Furthermore, Ware notes that a fundamental aim of institutional repositories is to preserve, on a long term basis, the digital objects included in their collection (**Ware, 2004**).

To conclude this conceptual approach on institutional repositories and according to Crow, institutional repositories are digital collections that archive and preserve the intellectual products of a university or a multi-university community (**Crow, 2002**).

To sum up, institutional repositories are economical and effective projects that allow institutions to build solid relations among its scientific and research staff in order to promote scientific information.

Their content might include preprints or texts in process of writing, published articles, educational material, theses etc. Institutional repositories are accessible through the internet to all users without any cost and they guarantee a secure and proper storage of their content. They must be built according to international standards so as to be easy to use and to contain an easily indexed and retrievable content (**Katsarou, 2006**).

It is clear that institutional repositories provide an innovative, accessible and flexible way of obtaining scientific information.

5.1. Institutional Repositories' Features

In her paper for the 15th Hellenic Academic Libraries Conference, G. Katsarou, specifies the main features of an institutional repository (**Kastarou 2006**):

- An interface through which users can submit material,
- An interface that allows content search and retrieval,
- A data base that stores content, and
- An interface for repository administrators through which they can manage and preserve the collection.

5.2. Support Technologies and Available Software

The operability of an institutional repository is built upon the existence of the necessary hardware for the digitalization, digital processing, saving and disseminating objects through the internet. In cases where the digital material consists of old or fragile objects, the existence of specialized scanning equipment and high-definition digital cameras is required for digitization. Moreover, internet servers able to store and manage a large data volume are required (Mpanos, 2007).

As far as software is concerned there is a wide variety of digital library software packages that respond to the different needs and know-how of every university. The most popular software packages are:

- **DSpace**

DSpace software is an innovative digital library system that can receive, store, index and disseminate in digital form all intellectual products of universities. DSpace was created by the joint development project of M.I.T libraries and Hewlett-Packard (HP). With the creation of DSpace they aimed at building a solid, long term digital repository, which collects preserves and diffuses educational material for the research conducted by the members of the scientific community in any institution, on a local and global scale. DSpace is currently the most popular software package, since it is being used by eight Greek institutional repositories.

- **CDSware**

CDSware is an open-code software created by CERN in order to manage particularly large repositories that contain different types of materials, such as text, image and video. CDSware is currently being used by the Digital Collections of Modern Greek Literature and Art of the Aristotle University of Thessaloniki.

- **Fedora**

Fedora is a flexible software package that provides flexible tools for the management and dissemination of digital content. Fedora can be used as a basis for the development of specialized software for digital libraries and institutional repositories. Fedora is being currently used by the Pergamos Digital Library of the National and Kapodistrian University of Athens.

6. Greek Open Access Institutional Repositories

At the moment there are over ten institutional repositories, either functioning or under construction, in Greek universities and Technological Education Institutes, the most important of which are:

- Anemi- Digital Library for Modern Greek Studies of the University of Crete.
- Pergamos- Digital Library of the Libraries Computer Center in the National and Kapodistrian University of Athens (EKPA).

- Psifida- Digital Library and Institutional Repository of the University of Macedonia.
- Digital Collections of Modern Greek Literature and Art of the Aristotle University of Thessaloniki.
- The University of Piraeus Digital Library.
- Nimertis- The Patras University Digital Library.
- The National Technical University of Athens Digital Library
- The Pandimos Digital Library of the Panteion University.
- Eureka- Open Access Institutional Repository of the Technological Education Institute of Thessaloniki.

Furthermore, we should mention that other digital repositories are under construction, such as the institutional repository of the Hellenic Open University (EAP).

7. Conclusions

In conclusion, as a graduate in political science I would like to examine the issue of open access digital repositories as a political phenomenon. Needless to say that politics, as a phenomenon, can be examined through three different angles: as a relation, a value or a process (**Kouskouvelis, 1997**). We are currently witnessing the building of a relationship among the end users and the archivists-librarians, the trainers and the trainees of university institutions and a vast variety of other organizations and institutions wishing to exchange information through digital repositories.

New values are constantly emerging, based on the open access model and digital repositories. And as Smas puts it: “in the epicenter of every European university we can now find knowledge and information...” (Smas, 2007).

The processes involved may vary and range from the methodology used up to the final integration of objects (books, magazines, scientific publications, articles etc.) to the “information tanks” of digital repositories. It is, thus, quite obvious that the future of information is based upon the wise use of technological developments. Certainly, universities are quite reluctant as far as the use of open access publications or digital repositories are concerned. This may be due to the fact that scientists and researchers are not adequately informed about the procedures followed in digital repositories.

However, as demonstrated by the abovementioned case study on Greece, there is an increasing tendency to properly operate and administrate open access digital

repositories. The only way to mark progress to this direction is to constantly provide adequate information to the university administrations and the scientific and research staff in order to achieve a long term transition to this new information model.