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## OPEN ACCESS: AN OVERVIEW

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# OPEN ACCESS: An Overview

## Introduction

Openness is a concept that has come to characterize knowledge and communication systems, epistemologies, society and politics, institutions or organizations, and individual personalities. In essence, openness in all these dimensions refers to a kind of transparency which is the opposite of secrecy and most often this transparency is seen in terms of access to information especially within organization, institutions or societies. Certainly, this is part of the meaning of openness in relation to politics and societies—openness implies a form of open government which demands that citizens have access to official information and that reasonable grounds are advanced for withholding information from the public domain. This is the basis for the movement of freedom of information that led to the passage of legislation concerned with rights to information beginning with the Freedom of Information Act passed in the US in 1966 and then by seventy countries around the world since then (**Peters, 2010**).

The notion of openness began with open source software development, which involves software developers and organizations sharing code to develop and refine software programs (**Scacchi, Feller, Fitzgerald, Hissam & Lakhani, 2006**) mentioned that in the model of open software development, three factors emerge:

- a) The very fast diffusion of open source software;
- b) Much important capital investment in open source projects;
- c) New organizational structure - the collective nature of open source software development has been promoted as an important organizational innovation. For many decades, the openness has been hindered by technological limitations, but with technological progress and the development of information technologies (IT), those limitations vanished (**Morey, 2015**).

Nowadays, openness has an impact on many areas of education, government and business platforms, society and health provision. For education, research and science, openness is one of the most important values. In today's era, we cannot imagine modern education without its commitment to freedom, social progress, knowledge for all and individual transformation (**Peter, 2010**). The root of open access development can be followed back to 1960s with the dispatch of 'Task Guttenburg' by Michel Hart, It is esteemed as the principle turning point, It is ordinarily perceived that OA started in the West, specifically the USA and Western Europe, and afterward spread over the academic groups in whatever is left of the world (**Xia, 2012**).

The open access (OA) initiative regarding scientific literature proposes free access to publications as an alternative to the traditional model of distribution and access by

subscriptions, which was the mainstay from some 300 years. OA allows users to read, download, copy, distribute, print out, search, or link to the complete texts of the articles without any economic, legal, or technical barriers other than those intrinsic to the Internet (**BOAI, 2001**).

According to **Suber (2009)** the early OA development before 1990 existed dominantly in the USA. In the mid-1990s, an expanding Western European push to advance OA, for the most part the UK, was recorded. It was not until the last piece of the 1990s, and even after the turn of the new thousand years, that whatever is left of the world began joining the development by giving free online access to scientific and insightful research writing. However today, some creating nations, especially those in Africa, are as yet battling with effectively assembling a successful OA framework. This pattern of transnational OA movement is reflected in all aspects of the quantifiable OA hones.

The Berlin Declaration builds on the widely accepted Budapest Open Access Initiative, which calls for the results of research produced by authors without expectation of payment to be made widely available on the Internet and to carry permissions necessary for users to use and re-use results in a way that accelerates the pace of scholarship and research. The Declaration has been signed by nearly 300 research institutions, libraries, archives, museums, funding agencies, and governments from around the world (**Swan, 2012**). In the Budapest Open Access Initiative Declaration (2001), two routes were established for achieving OA: the gold road, or publication of articles in OA journals, and the green road, which consists of the self-archive or deposit of all articles published in traditional journals, on authors' web pages, or in institutional/thematic repositories that are OA either before (preprint) or after (postprint) their publication. These repositories, then, are archives of academic–scientific material available on the web containing articles published by researchers of a given institution or from a given field of knowledge (**Chan, 2004**). **Harnad (2004)** argued that the green road is the only option that would lead to 100% OA in the near future because it does not require complete restructuring of the system of scientific publication. He also urged institutions to create repositories according to the OAI protocol.

### **Open Access Routes**

- i) **Gold open access** - Gold OA makes the last form of an article unreservedly and for all time open for everybody, promptly after publications. Copyright for the article is held by the writers and a large portion of the consent boundaries are expelled. Gold OA articles can be published either in completely OA method (where all the substance is published ) or half method (a membership based journal that offers an OA choice which authors can pick in the event that they wish) (**Rodrigues & Abadal, 2014**).
- ii) **Green open access** - Green OA, likewise signify to as self-archiving, is the act of setting a variant of an author's original copy into a store, making it uninhibitedly open for everybody. The variant that can be kept into a storehouse is reliant on the funder or distributor. Not at all like Gold OA the copyright for these articles normally sits with the

publisher, or the general public partnered with the title and there are limitations concerning how the function can be reused. There are singular self-archiving approaches by journal or publisher that decide the terms and conditions e.g. which article rendition might be utilized and when the article can be made transparently open in the archive (**Harnad, Brody, Hitchcock, Gingras & Hilf, 2004**).

### **Open Access Movement**

The Open Access evolution dates back more than thirty years. Some significant landmarks in the development of the concept are Budapest Open Access Initiative released in February 2002 followed by Bethesda Statement on Open Access Publishing. Following the Budapest Open Access initiative in 2002 and the Bethesda Statement on Open Access Publishing in 2003, the Berlin Declaration was a third influential event in October 22, 2003. The Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities was released by the Max Planck Society and European Cultural Heritage Online in the establishment of the open access movement. Peter Suber has referred to the three events combined as the "BBB definition" of open access as the three overlap with and inform one another.

The Field of Open Access is broadly categorized into two routes namely Gold Open Access and Green Open Access. Gold OA makes the final version of an article freely and permanently accessible for everyone, frequently after publication. The Copyright for the article is received by the authors and most of the permission barriers are removed (**Laakso, 2014**). Green OA, also explains as self-archiving, is the practice of placing a version of an authors manuscript into a repository, making it freely accessible for everyone at every time. The variant that can be deposited into a repository is dependent on the funder or publisher. Unlike Gold Open Access, the copyright for these articles commonly relate with the publisher of, or the society connected with, the title and there are conditions as to how the work can be reused (**Laakso, 2014**). After years of debate on OA and grey literature, the international conference GL12 at Prague offered two different perspectives. **Ferreras-Fernandez, Garcia-Penalvo, Merlo-Vega and Martin-Rodero (2016)** stated that “open access is the key to knowledge” and that “web-base sharing facilities and distributed access to openly available information” are key features of grey literature. For the authors, Institutional Repositories became the future of grey literature, and grey literature hardly exists without or beyond OA.

These resources are widely been used in varied domains for addressing different requirements of stakeholders. Few such offshoots of Open Access are described for broader understanding under different headings as:

- i) Open Content
- ii) Open Education
- iii) Open Licenses
- iv) Open Data
- v) Open Access Repositories
- vi) Open Access Theses and Dissertations (OATD's)

- i) **Open Content:** Open Content is freely available for use, redistribution and modification under a license. Similar to those used by the Open Source / Free Software community. Simply the license relieves the author of any liability or implication of warranty. It grants others permission to use the Content in whole or in a part and insures that the original author must be credited when Content is used. It also allocates others permission to adapt the Content if they clearly mark what changes have been made, when they were made, and who made them. Others are free to redistribute this modified Content. Finally, the license insures that if someone else bases a work on Open Content, that the resultant work will be made available as Open Content as well (**Keats, 2003**).
- ii) **Open Education:** Open Education encompasses resources, tools and practices that are free of legal, financial and technical barriers and can be fully used, shared and adapted in the digital environment. Open Education ensures that teachers, learners and institutions can fully explore this potential (**SPARC, 2017**).
- iii) **Open Licenses:** Open source licenses are licenses that comply with the Open Source Definition — in brief, they allow software to be freely used, modified, and shared. To be approved by the Open Source Initiative (also known as the OSI), a license must go through the Open Source Initiative's license review process (opensource.org, 2017). Open licenses are concerned with Open Source Initiative approved various licenses which are commonly used by Open Access communities (Licenses & Standards, 2017). The creative commons licenses were originated at Stanford University in 2001. Total number of license developed at that time was six, these are Attribution CC BY; Attribution Share Alike CC BY-SA; Attribution-No Derivs CC BY-ND; Attribution Non Commercial CC BY-NC; Attribution-Non-Commercial-Share Alike CC BY-NC-SA ; Attribution-Non Commercial-No Derivs CC BY-NC-ND (**Licenses & Standards, 2017**).

- iv) **Open Data:** Open Data typically applies to a range of non-textual materials, including datasets, statistics, transcripts, survey results, and the metadata associated with these objects. The data is, in essence, the factual information that is necessary to replicate and verify research results. Open Data policies usually encompass the notion that machine extraction, manipulation, and meta-analysis of data should be permissible. Open Data Accelerates the pace of discovery. When datasets are openly available, they can be easily accessed and used to create a fuller picture of a given area of inquiry, or analyzed by data mining software that can uncover connections not apparent to those who produced the original data (SPARC, 2017).
- v) **Open Access Repositories:** Open Access repositories usage statistics are growing in importance, as a part of the measurement of research visibility and impact. Most OA repositories are built upon free open source software by the (usually nonprofit) communities that use them. Web robot detection is a very specialized technical challenge. Until this study, no one has measured how well a repository performs web robot detection or even described in one place how the major systems do this. Open Access repositories are institutional-based, which helps in build up the clarity and impact of the association, or they may be centralized, subject-based collections like the economics repository RepeC (research papers in economics) or the physics repository (ArXiv). Open Access (OA) repositories are those websites which are hosted by the universities and other research organizations which allow everyone to download scientific research papers without any cost. OA repositories are not simply data stores or back-up systems, but are actively planned, curated and managed, staffed by dedicated and specialist personnel who are dealing with multiple depositors, diverse interlinked data sets, and varying formats, standards, protocols and technologies, and seek to add value and ensure continuity (Kitchin, 2014).
- vi) **Open Access Theses & Dissertations(OATDs ):** OATD.org aims to be the best possible resource for finding open access graduate theses and dissertations published around the world. Metadata (information about the theses) comes from over 1100 colleges, universities, and research institutions. OATD currently indexes 4,192,361 theses and dissertations. To the extent possible, the index is limited to records of graduate-level theses that are freely available online (McMillan & Skinner, 2010). OATDs repositories are basically a subset of an institutions local digital repository. An institutional repository (IR), as defined by Crow (2002) is a digital archive of the intellectual product created by the faculty, research staff, and students of an institution and accessible to end-users both within and outside of the institution, with few if any barriers to access. OAETDs are an important part of the content of open repositories. Yet, their potential as a gateway to underlying research results has not really been explored so far (Schopf et al., 2014). Theses and dissertations are “the most useful kinds of invisible scholarship and the most invisible kinds of useful scholarship” (Suber, 2012). Open DOAR (Directory of Open Access Repositories) listed more than 1,400 institutional repositories with OAETDs,

representing roughly half of all registered open archives. The registry of Open Access Repositories lists more than 285 IRs with 100 per cent ETDs. Open Access Electronic theses and dissertations (OAEDTs) are a relatively new mode of research and scholarly communication. In the simplest terms, an OAETD is a thesis/dissertation created as an electronic document (or set of electronic documents). The electronic documents that make up an OAETD can be created using any popular word processing software program. One can also use advanced software programs to produce multimedia animations and sounds for use in an electronic version of thesis/dissertation. As a primary source of information, theses and dissertations are particularly useful to researchers. An OAETD program provides a process, standards, and software to automate functions, as well as a digital infrastructure for access and preservation (**Lynch & Lippincott, 2005**). Even today, some university libraries in India have not made their OAETDs available as open access, possibly to the lack of policies and are not harvested for bibliographic access to these important resources. Therefore, a central OAETD repository was needed to be better indexed and generally ranked higher by search engines and discovered; developing countries like USA, UK, Australia and Canada have already progressed in this direction.

- vii) **Open science:** Open Science represents a new approach to the scientific process based on cooperative work and new ways of diffusing knowledge by using digital technologies and new collaborative tools (**European Commission, 2016**).
- viii) **Open knowledge:** Open knowledge is any content, information or knowledge or data that people are free to use, re-use and redistribution without any legal, technological or social restriction (**Davies, 2014**).
- ix) **Open access journals:** Open access journals are those journals which provide access to full-text articles published in that journal to the reader without any financial charges. The open access journal may be author paid, financed by external grants, or use voluntary work (**kumar, 2013**).
- x) **Open Education:** Open Education encompasses resources, tools and practices that are free of legal, financial and technical barriers and can be fully used, shared and adapted in the digital environment. The term Open Educational Resources first came to use in 2002 at a conference hosted by UNESCO. Open Educational Resources are digitized materials offered freely and openly for educators, students and self-learners to use and re-use for teaching, learning and research ( **Hylén,2006**).
- xi) **Open source license:** An open-source license is a type of license for computer software and other products that allows the source code, blueprint or design to be used, modified or shared under defined terms and conditions. This allows end users and commercial companies to review and modify the source code, blueprint or design for their own customization, curiosity or troubleshooting needs. Opensource licensed software is mostly available free of charge, though this does not necessarily have to be the case. Licenses which only permit noncommercial redistribution or modification of the source code for

personal use only are generally not considered as open-source licenses ( **Lerner & Tirole,2002**).

- xii) **Open Government:** Open government used to carry a hard political edge, it referred to politically sensitive disclosures of government information .the phrase was first used in the 1950s in the debates leading up to passage of the freedom of information Act. But over the last few years, that traditional meaning has blurred and has shifted towards open technology, which makes the government as a whole more open or instead might refer to politically neutral public sector disclosures that are easy to reuse even if they have nothing to do with public accountability (**Yu & Robinson, 2011**).
- xiii) **Open access repositories:** The institutional open access repositories collects and preserves the intellectual output of the institution's faculty and students, researchers and scientists in digital form, and makes it accessible to end users. It includes materials such as research journal articles, preprints, post-prints, articles undergoing peer review, and theses and dissertations (**Kumar, 2013**). Open access Repositories are digital collections of the scholarly outputs created within a university or research institution. The main purposes of open access repositories are to provide open access to the institution's research output (**Creaser, Oppenheim, Proberts & White, 2010**). Open access Archives/repositories (OAAs) are electronic vaults of submitted material that may incorporate officially distributed articles (post-prints), predistributed articles (pre-prints), theory, manuals, showing material or some other material that the creators or their establishments wish to make openly accessible without money related or specialized hindrance. Such Archives might be founded on an organization's yield, or might be teach based or provincially based. We concentrate on the previously refereed and distributed logical yield, since it is this that structures the essential reason for future logical advancement (**Chan & Kirsop, 2001**).

### **Benefits of OA Archives**

Open access documents are particularly important for transitional economies like Brazil, China and India, who have been putting generously in scientific research in the most recent decade. These nations have seen a momentous rise in the quantity of publications in recent years. For instance, scientific productions from China (as listed by ISI) has emerged from 69,000 to 115,000 articles between the two four-year time frames 1993-1997 and 1997-2001. Moreover, Brazil has expanded its offer of the world's scientific publications from 0.84 to 1.21 percent in a similar period (**King, 2004**).

#### **i) Improved citation and research impact**

The most compelling explanation behind organizations, both in the developed and in the developing nations, to set up interoperable open access repositories is the developing proof that citation and the effect of papers that are transparently available are far more noteworthy than non OA publications (**Lawrene, 2001**). Preliminary outcomes propose that there is a detectable

distinction regarding the recurrence with which the articles are cited, and that the distinction is in the vicinity of 250% and 550% for the articles that writers have made OA (**Brody et.al, 2004**).

## **ii) Open source software and low infrastructure cost**

The technical framework for setting up institutional archives is currently set up and the expenses are minor. This is because there are various free open source programming applications for setting up institutional archives and the significant cost includes the purchase of a server, if one doesn't formerly exist, and availability cost. The best-known and most broadly utilized software are Eprints made accessible by the University of Southampton and D-Space by MIT (**Chan & Costa, 2005**).

## **iii) Improved access to primary data**

While the essential role of institutional repositories is to make accessible published material, numerous organizations likewise utilize their archive to give access to different materials, including thesis and dissertation, data-sets, specialized reports, instructional materials, doctoral thesis and different types of electronic publications that may include multimedia items. Large numbers of these digital objects don't have consistent publishing outlets however are in any case vital for instructing and research purposes. Making these scholarly items straightforwardly accessible through institutional archives is immensely expanding the profundity and diversity of raw material for innovative work (**Chan, 2004**).

## **Conclusion**

Open access has greatly influenced the modern way research and development activities world over government establishments, organizations, universities and research institutes are supporting and promoting open access to scholarly content. The present work further strengthen the belief that adaptation of open access procedures in different settings especially in modern day research is showing an increasing trend.

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