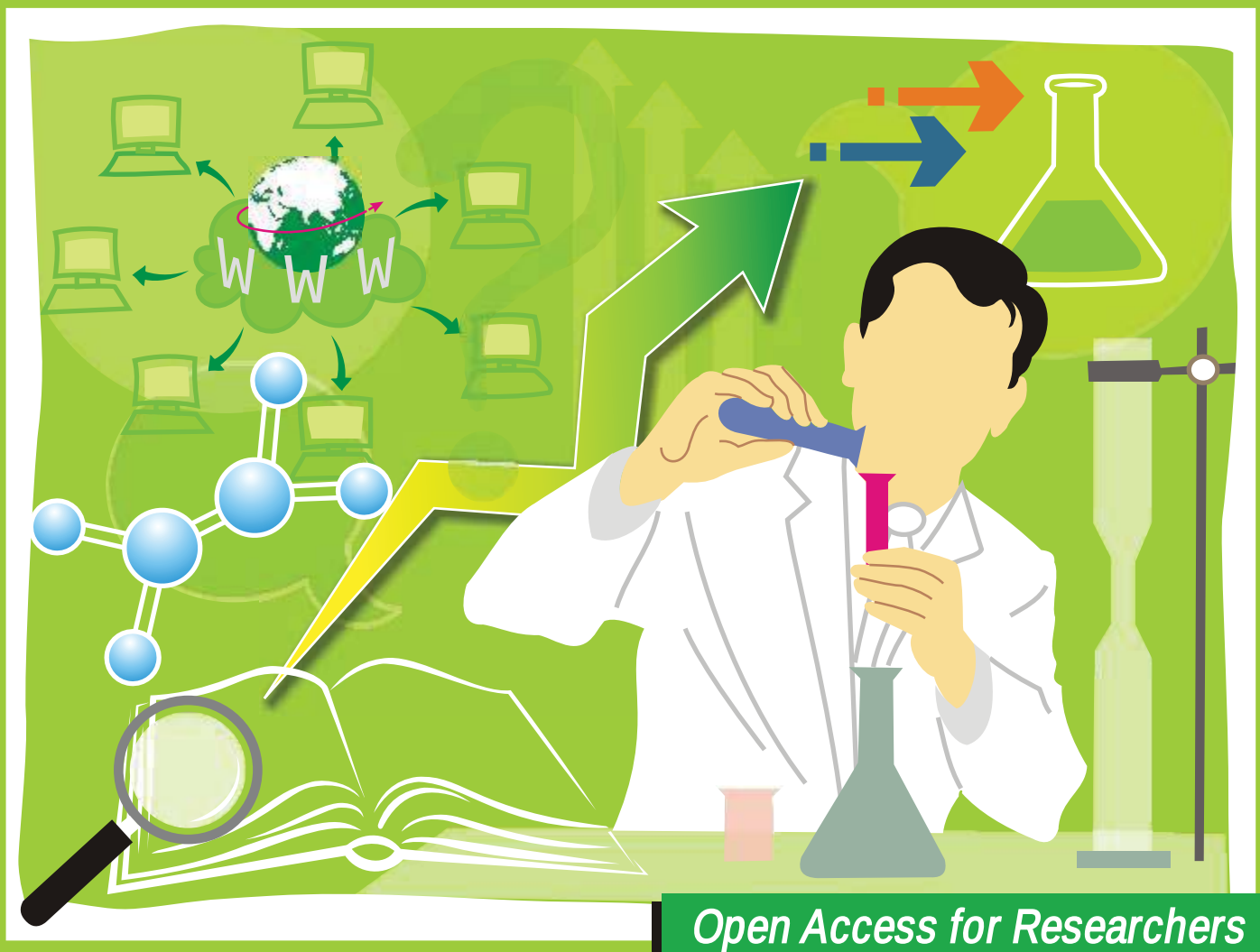
United Nations
Educational, Scientific and
Cultural Organization

2

Concepts of Openness and **Open Access**



Open Access for Researchers

United Nations
Educational, Scientific and
Cultural Organization

Module

2

Concepts of Openness and Open Access

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MODULE INTRODUCTION

Information and Communication Technologies (ICTs) in the late twentieth century had become enablers in empowering citizens worldwide in all segments. Openness in obtaining, processing, publishing and disseminating research information becomes easily achievable due to spread of ICTs and ICT-enabled services. Democratization of information and knowledge gets much impetus while bridging knowledge and digital divides necessitated with positive interventions by the inter-governmental fora. In the beginning of the 21st century, we see global leadership reached a consensus in harnessing global initiatives for facilitating social empowerment, economic progress, inclusive development and green economy. Global intergovernmental programmes introduced in the begging of the 21st century include United Nations Millennium Development Goals (UN-MDGs), World Summit on the Information Society (WSIS), and Internet Governance Forum (IGF) – which all have necessary action plans for bridging knowledge and digital divides. Open source software, open access research literature, open standards, open innovation and open research data have become dearer to researchers in developing countries as these promise openness and unrestricted access to information in ones' domains.

Openness is considered in today's world as a social construct, much required in the process of citizen empowerment. The notion of openness brings change in the society, provides sustainable solutions for bridging knowledge and digital divides in the society, more particularly in the forms of coherent North-South and South-South cooperation models. The openness also leads to development through the change enablers and local innovators, who will bring on board frugal, flexible and inclusive innovations for the benefits of the society. Open source software (OSS) development is an example of successful open innovation system, which led to development of a wide array of software applications as required in every sector of life, including in laboratories, educational institutions, R&D centres, and small scale enterprises. A majority of OSS developers belong to individual enthusiasts, who are undertaking a frugal innovation route for providing practical solutions to local problems, which they encounter day-to-day basis. Similarly, open access to scholarly literature primarily aims at bridging the knowledge divides as existed in the society and also to make public-funded research results freely accessible and available in public domain through online systems. There are global movements for achieving openness in diverse areas of ones' activities, including software, research literature, technical standards, innovation and research data sharing. Beginning of the 21st century was the right time to restart the whole process of research communications with freedom from the dependency of proprietary products and services. Richard Stallman of Free Software Foundation initiated a pervasive open source software movement in the 1990s for collaborative development of software applications. The same open innovation model is being replicated in bringing public-funded research results in public domain through the modes of open access to scholarly literature. Open access movement gets much support from the stakeholders when the countries experience the great resource constrains or shrinkage in journals subscription or R&D budgets. The economic recession during 2008-09 in the western countries led to shrinkage of scholarly journal subscriptions both in universities and research institutions. Similarly, the developing countries face worst effects of affordability while subscription prices got skyrocketed.

Openness also brings a cycle of creativity, engaging local talents in providing global solutions as well as global talents in harnessing local solutions. Interconnectedness in common internet-based platforms makes the knowledge flow more penetrative, consumable and oriented towards high degree of qualitative knowledge production. Knowledge workers in the 21st century are also increasingly collaborating with their

counterparts located in other parts of the world. All these aspects relate to social metabolisms and social constructs for the greater benefits of the knowledge societies.

Open access movement, thus, is mostly interlinked to broader perspectives of openness, where other social movements also share similar kind of experiences and social metabolisms. It is not an isolated movement, although, retains unique characteristics for serving the purpose of greater outreach of peer-reviewed research literature.

This Module, titled "Concepts of Openness and Open Access", has elaborately discussed different perspectives of openness, particularly which deal with open access movement. There are different modes of open access, namely, gold, green and hybrid, for making peer-reviewed research literature freely available to worldwide audiences. In addition making them freely accessible, certain OA literatures offer various degrees of rights exemptions, such as freedom to share, copy, distribute, modify, remix and reuse. This type of literature is known as Libre Open Access.

Unit 1 of this Module gives a general overview of open access movement, its genesis, and various actors. It also relates to two other interlinked public movements, namely, open source software (OSS) movement and open educational resources (OER).

Unit 2 titled "Routes to Open Access" gives overview and definitional approaches two different routes of OA – the Green and Gold routes. It also discusses a hybrid model, where toll-access e-journals are publishing open access articles. Here, subscription-based contents and open access contents coexist in a single platform.

Unit 3 titled "Networks and Organizations Promoting Open Access" elaborates roles of different regional and international networks and organizations in promoting OA. Various OA actors and advocates are found to harmonize global OA movement through formal networks and coalitions. These networks and organizations also strengthen capacity and capability of local institutions and help them in social capital formation.

Unit 4 titled "Study of OA Mandates and Policies" elaborates different institutional and funders' OA mandates. Some of these mandates have become model OA policies for similar institutions and organizations.

Unit 5 titled "Issues and Challenges of Open Access" discusses concerns, issues and challenges related to OA scholarly literature. No doubt, there is apprehension due to arrival of predatory OA journals in OA domain, with vested profiteering interest. But there are checks and balances to avoid such predatory journals. Due to OA advocacy and awareness raising efforts, OA knowledge producers have improved researchers' perceptions in quality and recognition of OA literature. This Unit briefly discusses different metrics and performance indicators available for assessing OA scholarly literature.

Hope you will enjoy this Module and understand importance of openness in research ecology.

UNIT 1 INTRODUCTION TO OPEN ACCESS

Structure

1.0 Objective
1.1 Introduction
1.2 Need of Open Access
1.3 History of Open Access
1.4 Open Information and Data Resources
    1.4.1 Open Data
    1.4.2 Open Educational Resources
1.5 Let Us Sum Up
1.6 Check Your Progress
1.7 References

1.0 OBJECTIVES

After reading this unit, you will be able to:

- explain the concept of Open Access (OA);
- discuss the need for OA;
- trace the history of OA and OA movement; and
- identify and explain the related strands of OA like Open data and Open Educational Resources

1.1 INTRODUCTION

Open Access (OA) refers to free and unbridled access to scholarly information. It aims to provide users with information unencumbered by the motive of financial gain or profits. "Open access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions" (Suber, 2012). We can say that OA is "barrier-free" access.

Information especially scholarly information, originates mostly in research and academic environments and is a result of innovation and thinking of individuals or teams working together on a theme or project. As per academic practices the work is normally published in journals so that results can be disseminated to learned communities as well as practitioners. However, one of the major problems in this cycle is the price tag for the content that is intended for the users. Information in the form of journal publications has become unaffordable by individuals. Even libraries are finding it extremely difficult to continue to subscribe to the list of journals as required by their users. Price rise in the costs of journals often forces libraries to cut down on the number of titles that they subscribe.

Copyright can also be a significant access barrier. It is generally described as an instrument that grants the creator of an original work exclusive rights to its use, distribution and replication (Suber, 2012). What it implies is that if we have to access a work for reading or want to translate it into another language,

distribute copies to colleagues, copy the text for mining or reformat it for reading with new technology, the permission of the copyright holder is needed, who we expect is indeed the creator of the work, such as author/s of an article(s). Often enough it is not the author who holds the copyright but the publisher of the journal to whom the author has transferred the rights.

The above mentioned are the salient issues among several others in access to scholarly information. The main issue is that in the publication cycle, academics, researchers and practitioners work and produce content but when they need to access the content in the course of their work they (or the libraries where they access information) have to pay to get access. The basic contradiction is that the creators are not paid for their content by the publishers who in turn get paid on every copy of the content sold whereas, they deny access (or make it prohibitive by costs and access restrictions) to the community that is made up of these very authors/creators.

It is in the context of the above discussion on copyright and issues in access to information resources that the concept of "Open Access (OA)" to information originated. OA ensures that there is free access to information and that the attribution and credit go to the original creators or authors of the content.

Open Access is defined as follows:

Open access refers to providing online access to scholarly publications and making that access free of charge and without most copyright and licensing restrictions (Suber, 2012)

Open access implies that "users must be able to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship". [The Bethesda and Berlin statements on OA].

1.2 NEED OF OPEN ACCESS

It can be said that OA came into existence as a logical answer to inaccessible information as a sort of bridge to join the divide between haves and have nots. As more and more academicians found that information was increasingly getting unaffordable, what it meant was that in time only the elite of communities engaged in academics and research could afford access to information. OA helps overcome the divide in information access. Another fact is that OA (as known today) came into the picture predominantly due to the internet.

The easy mode of access in a distributed environment that the Internet provided soon led to new age users who quickly transformed from users of traditional libraries and journals to online information users. They soon became aware of what they could access and what they were denied access to. In the academic and research communities soon the questions delving into why access was denied and by whom were raised. The answers offered were unsatisfactory to academicians who themselves were contributing majority content.

The other fact is that of attribution, as well as income or profits from an information resource. Copyright is more often quoted as a law that *prohibits* free access to information rather than its true intent of copyright which is to *protect* the rights of creators or authors over their works. This misinterpretation led to middlemen such as journal publishers who somehow over a period of time introduced the practice of absolute transfer of rights from authors to themselves. In effect the practice took away the right of the author on his/her work(s) to further disseminate it or the right of other users to use it, enhance it, or transform it in anyway.

When we consider the publication cycle of a resource, it starts with the intellect of an author or a research team who work and then write regarding their work and need to publish it. The channel they find is that of journal publication as it the most accepted form of disseminating scholarly information. Journals especially ranked journals are the yardsticks to measure performance of scientists and academics. This being the case the authors often are more enthusiastic in getting their papers accepted than pausing to judge whether their work will be accessible easily to the academic colleagues in future when they transfer their rights to the journal publishers. This situation spirals off into a vicious cycle where academics continue to contribute content in journals and continue to be denied access by publishers to other such content they may need to refer. It is due to such factors that OA gained momentum. Scholars and supporters of OA started to spread awareness and question the unfair practices that denied access to information resources. Over the years individual efforts merged into institutional and country wide efforts in several regions of the world that together is referred to as the OA Movement.

1.3 HISTORY OF OPEN ACCESS

The origin of open access movement can be traced back to 1960s with the launch of ‘Project Guttenburg’ by Michel Hart. It is deemed as the first main milestone of the movement. Emergence of OA journals formally is attributed to the later part of 1980s with publication of the journal 'Psycoloquy' as a free online journal by Stevan Harnad in 1989. In the same year another journal 'Computer Systems Review' was published as a free online journal. The progress of the OA movement is directly related to advances in the Internet. In November 1991 Tim Bernes Lee published the World Wide Web which was to revolutionize the way information would be hosted and accessed.

The first OA peer reviewed journal appeared in 1990 when the journal 'Psycoloquy' transformed into its peer reviewed content. This was quickly followed by other peer reviewed journals such as ‘Electronic Journal of Communication’, ‘Journal of Postmodern Culture’ and ‘Surfaces’.

A paradigmatic shift in publishing practice was heralded with the concept of ‘self archiving’ proposed by Stevan Harnad in 1994. Self archiving is described as “act of depositing a free copy of an electronic document on the world wide web in order to provide open access to it” (Harnad, 2001). Self archiving by authors brought about a huge change in the manner in which

primary information in the form of scholarly publication could reach the end users surpassing all barriers with the WWW being the key facilitator for hosting, searching, retrieving and access mechanisms. Self archiving was first explicitly suggested by Steven Harnad in his online posting "Subversive Proposal" (Okerson & O'Donnell, 1995). However, it was discovered that the community of physicists were practicing self archiving a few years before the term was coined. Developed by Paul Ginsparg in 1991 ArXiv[1] is an open access repository of preprints in physics which later expanded to include other related domains such as astronomy, computer science and mathematics among others.

Self archiving lead to repositories, which at first started as collections of digital documents, but later transformed as publishing models for academics. The major fillip came from the US National Science Foundation funded Digital Library Initiative[2] which led to six major digital library projects in phase I and several others in phase II. The tools for hosting digital libraries also provided workflows for publishing, including the peer review process. One of the major advantages was the much shorter time taken for publishing an article compared to the time taken by traditional journal publishers. The other major advantage being the instant visibility of resources through metadata that facilitated their discovery easily. The open access movement itself in a way strengthened due the proliferation of repositories in different domains and culture of academics shifting to consider repositories and online publishing medium as an alternative to traditional publishing through journal publishing houses.

Gradually institutional level policies were pronounced that included open access publishing as a requirement of public funding for projects and research. One of the first moves was by the U.S. National Library of Medicine that made 'Medline' a bibliographic index to medical literature accessible freely as PubMed. This was instantly recognized and used by practitioners as well as public, increasing the visibility of the database, positively impacting its use factor by several folds. PLoS, Public Library of Science[3] was founded in 2000 with a letter that urged scientific community especially medical publishers to make research literature available for distribution through free online public access archives. Nearly 34000 scientists from 180 nations joined in support of the idea.

OA awareness and advocacy spread across countries and continents. Several conferences and seminars deliberated on the issues and methods of OA. The efforts and thoughts can be summarized by three popular public statements on international platform. These are, the Budapest Open Access Initiative (February 2002), the Bethesda Statement on Open Access Publishing (June 2003), and the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (October 2003). OA activists emphasize that-publicly funded research must be made freely publicly available.

[1] http://arxiv.org
[2] http://www.cise.nsf.gov/iis/dli_home.html
[3] http:// www.plos.org

OA was at first viewed with skepticism. However, it is slowly but surely gaining ground. Many traditional for-profit publishing houses have given in and declared their own open access policies. For example: Elsevier has 2 distinct types of licenses. They are:

1) **Author Agreement:**
   Elsevier has the right to publish and distribute an article but at the same time authors retain copyright in their article.

2) **User license:**
   Articles published under an Elsevier user license are protected by copyright and may be used for non-commercial purposes. Users may access, download, copy, display, redistribute, adapt, translate, text mine and data mine the articles.

After an embargo period these publishers allow the authors to self archive and some also completely grant copyright to the author. Other publishers only require signing 'non-exclusive rights contracts' which allows the authors to retain their rights over their work.

OA movement has strengthened and its success is marked by OA mandating by governments, funding agencies, international bodies, associations and organizations. For example:

1) US Government Office of Science and Technology Policy (OSTP) memorandum directs "Federal agencies with more than $100M in R&D expenditures to develop plans to make the published results of federally funded research freely available to the public within one year of publication and requiring researchers to better account for and manage the digital data resulting from federally funded scientific research."

2) ICAR(Indian Council of Agricultural Research) adopts the policy that "the authors of the scholarly literature produced from the research funded in whole or part by the ICAR or by other Public Funds at ICAR establishments are required to deposit the final version of the author's peer-reviewed manuscript in the ICAR institute's Open Access Institutional Repository".

3) European Commission's FP7 grant recipients in seven areas (energy, environment, health, information and communication technologies [only cognitive systems, interaction, and robotics], research infrastructures [only e-infrastructures], science in society, and socioeconomic sciences and humanities) have to deposit peer-reviewed research articles or final manuscripts resulting from their FP7 projects into an online repository.

1.4 OPEN INFORMATION AND DATA RESOURCES

In addition to articles, other forms of resources such as learning resources, theses, dissertations, technical reports are also being published as open access

materials. OpenCourseWare[4] is a well-known project of the Massachusetts Institute of Technology that hosts all the course materials at the graduate and undergraduate level online. NDLTD, the Networked Digital Library of Theses and Dissertations, promotes the creation, use, dissemination and preservation of electronic theses and dissertations. In India NPTEL[5] hosts e-learning material in engineering, science and humanities streams. Looking at the future it is not only open information resources but also different kinds of data that needs to be open, that is freely accessible.

While open information resources are main part of the knowledge generation, dissemination and growth cycle, open data will help in new interpretations, trend predictions and diverse and innovative applications of data. Information resources such as learned articles were owned and maintained by journal publishers while data were being hoarded and guarded by the laboratories, research communities, corporates and also governments. They were data held confidential in order to exploit their potential as a tool to produce results or products. With the open access movement however attention has now turned to open data as well.

The Openness Definition

According to opendefinition.org, a work is open if its manner of distribution satisfies the following conditions:

1. Access

The work shall be available as a whole and at no more than a reasonable reproduction cost, preferably downloading via the Internet without charge. The work must also be available in a convenient and modifiable form.

2. Redistribution

The license shall not restrict any party from selling or giving away the work either on its own or as part of a package made from works from many different sources. The license shall not require a royalty or other fee for such sale or distribution.

3. Reuse

The license must allow for modifications and derivative works and must allow them to be distributed under the terms of the original work.

4. Absence of Technological Restriction

The work must be provided in such a form that there are no technological obstacles to the performance of the above activities. This can be achieved by the provision of the work in an open data format, i.e. one whose specification is publicly and freely available and which places no restrictions, monetary or otherwise upon its use.

5. Attribution

The license may require as a condition for redistribution and re-use the attribution of the contributors and creators to the work. If this condition is

[4] http://ocw.mit.edu
[5] http://www.nptel.ac.in/

imposed it must not be onerous. For example if attribution is required, a list of those requiring attribution should accompany the work.

6. Integrity

The license may require as a condition for the work being distributed in modified form that the resulting work carry a different name or version number from the original work.

7. No Discrimination against Persons or Groups

The license must not discriminate against any person or group of persons.

8. No Discrimination against Fields of Endeavor

The license must not restrict anyone from making use of the work in a specific field of endeavor. For example, it may not restrict the work from being used in a business or from being used for university research.

9. Distribution of License

The rights attached to the work must apply to all to whom it is redistributed without the need for execution of an additional license by those parties.

10. License Must Not Be Specific to a Package

The rights attached to the work must not depend on the work being part of a particular package. If the work is extracted from that package and used or distributed within the terms of the work's license, all parties to whom the work is redistributed should have the same rights as those that are granted in conjunction with the original package.

11. License Must Not Restrict the Distribution of Other Works

The license must not place restrictions on other works that are distributed along with the licensed work. For example, the license must not insist that all other works distributed on the same medium are open.

So, we can say that "**open**" in "**open content**" "refers to granting of copyright permissions above and beyond those offered by standard copyright law. "**Open content**," then, is content that is licensed in a manner that provides users with the right to make more kinds of uses than those normally permitted under the law - at no cost to the user.

The primary permissions or usage rights open content is concerned with are expressed in the "4Rs Framework[6]"

1. "Reuse - the right to reuse the content in its unaltered/verbatim form (e.g., make a backup copy of the content).
2. Revise - the right to adapt, adjust, modify, or alter the content itself (e.g., translate the content into another language).
3. Remix - the right to combine the original or revised content with other content to create something new (e.g., incorporate the content into a mashup).

[6] http://www.opencontent.org

4. Redistribute - the right to share copies of the original content, your revisions, or your remixes with others (e.g., give a copy of the content to a friend)".

1.4.1 Open Data

"Open data is data that can be freely used, reused and redistributed by anyone – subject only, at most, to the requirement to attribute and sharealike."[7]

The full Open Definition gives precise details as to what this means. To summarize the most important[8]:.

"**• Availability and Access**: The data must be available as a whole and at no more than a reasonable reproduction cost, preferably by downloading over the internet. The data must also be available in a convenient and modifiable form.

• **Re-use and Redistribution**: the data must be provided under terms that permit re-use and redistribution including the intermixing with other datasets.

• **Universal Participation**: everyone must be able to use, re-use and redistribute - there should be no discrimination against fields of endeavour or against persons or groups. For example, 'non commercial' restrictions that would prevent 'commercial' use, or restrictions of use for certain purposes (e.g. only in education), are not allowed".

1.4.2 Open Educational Resources

Open Educational Resources (OER) can be defined as free and open digital publications of high quality materials organized as courses that include lectures, related reading materials, snapshots of discussions, assignments, evaluations, etc used in academic environments such universities, training institutes, schools and colleges. Access to these resources radically breaks down the barriers to quality education and allows free access course material that is prepared and evaluated by experts. These are prepared in open standard format and are interactive in nature.

MIT has been one of the first universities involved in the generation of OER. Others include Carnegie Mellon, Yale and John Hopkins University. Universities in other countries also joined the movement. Courses abound in the area of science, technology, medicine and engineering, liberal arts OER 'have remained behind.

India has not remained behind in OER. IITs along with IISc and some other premier institutions in engineering launched the first OER platform as National Programme in Technology Enhanced Learning (NPTEL). Funded by MHRD, it has web based courses in basic sciences & engineering. It is a facility for learners and trainers of far-flung areas who do not have direct, first- class facilities in teaching and learning.

[7] http:// OpenDefinition.org
[8] http://okfn.org/opendata/

Another example is the Ekalavya project launched by IIT, Bombay. The content developed in Ekalavya is in various Indian languages. It has also developed an Open Source Educational Resources Animation Repository (OSCAR) and provides web-based interactive animations for teaching and learning. OSCAR provides a platform for mentors/professors to suggest ideas for animation and for developers/students to create content based on the suggested ideas and guidance. Industry has funded the project.

E-Grid is the third main Open Educational Resources initiative of India that develops and maintains pedagogically sound and refereed Educational Resources in identified subjects.

1.5 LET US SUM UP

OA movement brought about a paradigm shift in the way content is contributed and accessed in the online world. It is the collective thinking and efforts of several OA activists that it is slowly but surely being accepted as choice for publishing. Today not only individual scientists and activists but organizations, international bodies and countries at governmental levels are announcing open access policies. It is indeed an encouraging trend for free flow of information in the scientific worlds and removes financial and legal barriers in access to information and thus ensures true democratization of knowledge**.**

1.6 CHECK YOUR PROGRESS

1. What are the barriers to information access?

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2. What is 'openness' ? What is 'open access' ?

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3. Describe the important are the milestones in the open access movement.

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☞ **Activity I**

Describe a scenario depicting the different ways in which information can become inaccessible by users.

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☞ **Activity II**

Imagine and describe workflows in repositories to make content open.

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1.7 REFERENCES

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Report of the Working Group on Open Access and Open Educational Resources (2007). NKC: New Delhi, Available at http://knowledgecommission.gov.in/downloads/documents/wg_open_course.pdf

Further Readings

COAR (Confederation of Open Access Repositories). https://www.coar-repositories.org/

Cold Spring Harbor Laboratory, Guide to Open Access, http://cshl.libguides.com/content.php?pid=222607&sid=1847688.

OASIS(Open Access Scholarly Information Sourcebook). http://www.openoasis.org/

Open Access Quiz, https://sites.google.com/site/cunyoaccess/

SPARC. (Scholarly Publishing and Academic Resources Coalition), Open Access, http://sparc.arl.org/issues/open-access.

The Centre for Internet and Society. Openness, http://cis-india.org/openness.

PKP(Public Knowledge Project). http://pkp.sfu.ca/

UNIT 2 ROUTES TO OPEN ACCESS

Structure

2.0 Objectives
2.1 Introduction
2.2 Green and Gold Open Access
    2.2.1 Comparison
    2.2.2 Advantages and Disadvantages
2.3 Gratis and Libre Open Access
2.4 Hybrid Model
    2.4.1 Origin
2.5 Let Us Sum Up
2.6 Check Your Progress
2.7 References

2.0 OBJECTIVES

After reading this unit, you will be able to:

- identify and explain different models of OA based on mode of publication and price and permission distinctions:
- discuss and compare green with gold OA modes and gratis with libre OA models;
- describe the advantages and disadvantages of the different modes; and
- discuss the origin and relevance of hybrid model of OA.

2.1 INTRODUCTION

Open access to information emphasizes on providing free access to scholarly material. There are many definitions of open access but the intent is always the same, that is removing barriers and providing access to information for all with no bias or restrictions. Traditionally publishing an article entailed approaching a publishing house to get it printed in prestigious journals. With the onset of e-publishing the process of publication from traditional printing changed to electronic forms of publishing and providing access. E-published content has several advantages such as instant access, simultaneous access to several users, searchability, easy replication, ease of use of multimedia components and easy detection of plagiarism to name only a few. E-publishing and online content raised the expectations of end users who needed answers to their information need quickly and accurately. More than that end users were at a loss to understand that when the network allowed them to access learned resources, why were information resources still inaccessible. Such questions and thinking lead to the widespread awareness of copyright and its implementation by publishers in ways that deterred free access and use of information resources.

Open access as a concept existed before the internet manifested through world wide web but it gained impetus and much more support in the online technology facilitated environment of the Web. By definition though open

access is about providing free access to information the question arises how to go about actually making content open? There is much discussion about modes of providing open access content (Harnad et al., 2004).

Willinksy (2005) argues that that there are several factors that affect open access to scholarly information such as user rights, availability, funding for OA publishing and technological tools among others. These factors notwithstanding there are two main ways that is 'Green' and 'Gold' routes to open access.

2.2 GREEN AND GOLD OPEN ACCESS

The terms *green* and *gold* were coined in 2004. However authors were already providing content by these means much before but the explicit distinction was made by Harnad et al. (2004) that defines Green Open access as:

"mode of publishing in non open access journal but also self archiving it in an Open Access archive"

What it means is that "the author can self-archive at the time of submission of the publication (taking the 'green' route) whether the publication is grey literature (usually internal non-peer-reviewed), a peer-reviewed journal publication (with required permissions), a peer-reviewed conference proceedings (with required permissions) paper or a monograph".

Usually green OA publishing includes articles such as preprints that precede formally published versions. the advantage for end users is that the preprints maybe a near enough version of final formally published article and would suffice for their reference without having to pay heavy prices to acquire or access the published version (Bjork et al., 2008).

In green OA, the main types are institutional repositories and disciplinary repositories. Institutions often offer incentives and assistance for deposit, and to adopt policies to ensure deposit. A growing number of universities have policies to encourage deposits into university repositories. On the other hand, scholars who regularly refer to research in a large disciplinary repository, such as arXiv for physics or PubMed Central for medicine, readily grasp the rationale for depositing their work in OA repositories (Harnad et al., 2004).

'Gold' route to open access aims to make articles and information resources open for access by publishing in a journal that is open access journal or an open access publisher. For example, Public Library of Science publishes only in open access mode (Harnad, 2004). There is no embargo period before an article is openly accessible. An open access journal may charge authors for making their articles as open access content but it is not true of all Gold OA publishers. Also the authors' parent institution or organization and even funding agencies may support the costs in open access publishing. Hence it means that "the author or author institution can pay a fee to the publisher at publication time, the publisher thereafter makes the material available 'free' at the point of access (the 'gold' route). The two are not, of course, incompatible and can co-exist".

2.2.1 Comparison

Broadly speaking self archiving as in *green* open access is mainly through OA repositories and publishing in OA journals or *gold* route is considered to be through Open access journals that have publication workflows including peer reviews. Gold and green OA differ in two fundamental respects (Suber, 2012). "First, OA journals and repositories differ in relation to peer reviewing. OA journals perform their own peer review, just like conventional journals. Repositories generally do not go for peer review, although they may host and disseminate peer-reviewed" articles from other sources. While this is not true for all repositories it is still true for most of them. Due to costs involved in publication cycle gold and green OA differ in their support costs.

Second, OA journals obtain the rights or permissions they need directly from the rights holders, while repositories ask depositors to obtain the needed rights or permissions on their own. Even when the depositors are the authors themselves, they may already have transferred key rights to publishers and in such cases may only deposit a pre-print of the article. Sometimes the author have even given undertaking that article published with commercial publishers will not be in any form, including drafts and pre-prints be deposited in any repository and not even on their own websites! Anyway leaving this apart, it is true that OA journals can generate permissions for reuse at will, and OA repositories generally cannot (Suber, 2012).

2.2.2 Advantages and Disadvantages

Green and gold OA are basically complementary and synergistic, the binding factor is that they both stem out from the same thoughts of OA and implemented by and for academic and research purpose upholding the basic philosophy of OA. Green and gold have different supporters from the community of open access advocates and activists. Some of them rank green higher than gold and yet others believe in the vice-versa. Green OA has some advantages over gold OA as the publication cycle can be very short as the wait for peer review process is absent. The OA journals however are dependent upon time and intellect of scholars performing reviewing. For the same reason green OA is deemed to be less expensive than gold OA, though there is an argument, that is largely true, that peers are not paid to review and ensure quality of content and even if they are paid it is only a very nominal token. Further green OA model can scale up quickly and inexpensively to meet demands of growing contents as most are based on Open source software. Another argument in favour of Green OA is that it can be mandated without infringing academic freedom, but gold OA cannot (Suber, 2012).

From an institutional repository point of view, green OA enables institutes to completely record their research output while in gold OA it is up to the authors what they are willing to, or allowed to deposit. Further, green OA may host preprints as well as post prints while gold OA is only for post prints.

Another advantage of green is that they can host a variety of resources such as theses and dissertations, datasets, multimedia such as video lectures, artifacts while gold OA is about formally publishing research articles only.

One of most significant advantages is that green OA models are naturally amenable to providing metadata in the resource acquisition workflow itself. The advantages of having detailed metadata that too from authors (or depositors themselves) cannot be over-emphasized. Also most of these are OAI-PMH complaint which is a worldwide standard for interoperability of digital repositories. Some OA journals predate the OAI PMH standard and hence are not compliant. Others do not run on platforms such as OJS that is naturally complaint with OAI. Hence OAI-PMH compliance may be an issue with gold published content.

Gold OA has its advantages on certain counts (Suber, 2012). Gold OA is immediate, that is immediately after receiving a payment from the author or institution the resource could be made open access with no embargo period restrictions. The other advantage is that since peer review is seen as important bench mark of quality which is true of Gold OA. OA journals normally enlist experts in respective domains as reviewers to ensure quality. They have the required workflows between the system, reviewers, editors and authors to take care of the entire process.

Sustenance is a major concern in Open access. The end users do not have to pay for accessing content. Though OA is meant to provide free access, the setup to provide OA is not free. It entails some expense. Then the questions arises how to sustain the whole process. Here gold OA scores higher than green, as OA journals can show income by charging for publishing.

2.3 GRATIS AND LIBRE OPEN ACCESS

Apart from gold and green, there is another distinction of OA that is Gratis and Libre OA. "One removes price barriers alone and the other removes price barriers and also tries to remove permission barriers. The former is *gratis OA* and the latter *libre OA"*. These are better explained by the concept of fair use (Suber, 2012).

According to (Suber, 2012), " fair use has four characteristics that are pertinent to the present discussion. First, the permission for fair use is granted by law and need not be sought from the copyright holder. The statute assures us that no permission is needed because fair use "is not an infringement of copyright." Second, the permission is limited and does not cover all the uses that scholars might want to make. That is to say to exceed fair use, users must obtain permission from the copyright holder. Third, most countries have some equivalent of fair use, though they differ significantly in what they allow and disallow. Finally, fair use is vague".

Re-focussing on gratis and libre OA, gratis OA is free of charge but that is about it. Users must still seek permission to exceed fair use that is if they want to use for other purpose transform the resource in any way, translate it or any such requirements. "Gratis OA removes price barriers but not permission barriers. Libre OA is free of charge and also free of some copyright and licensing restrictions. Users have permission to exceed fair use, at least in certain ways. Because there are many ways to exceed fair use, there are many

degrees or kinds of libre OA. Libre OA removes price barriers and at least some permission barriers".

It is important to note that "the gratis/libre distinction is not the same as the green/gold distinction. The gratis/libre distinction is about user rights or freedoms, while the green/ gold distinction is about modus of publication or vehicles. Gratis/libre answers the question, *how open is it?* Green/gold answers the question, *how is it delivered*? (Suber, 2012). Green OA can be gratis or libre but is usually gratis. Gold OA can be gratis or libre, but is also usually gratis".

Looking back at green versus gold, we realize that it is possible for gold OA to be libre than green OA. The reason is that gold OA already negotiates and implements OA rights over a resource at the time of its publication itself. This is the reason why OA activists insist to go beyond gratis OA to libre OA and the focus hence is more on OA journals than OA repositories. OA journals have definite statements regarding the published content often giving readymade citation to the articles that users may use for attribution. But in the case of repositories if a user discovers a green article, they often may not be aware that it withholds certain rights over the resource. It is in this parlance that licenses such as Creative Commons[9] can be implemented to ensure that a resource is put to its right use.

2.4 HYBRID MODEL

From the past 15 years almost all publishing of scholarly peer reviewed journals has migrated to electronic web publishing as the main dissemination channel. It is only the form that has changed from paper based journal to e-journals. The fundamental revenue model of scholarly publishing, that of charging readers and their intermediaries for access, has largely remained the same in the case of renowned commercial publishers. At the same time new stakeholders, both individual scientists and innovative publishing companies, have launched Open Access (OA) journals, which offer the full content of the journals to read to anybody with Internet access (Björk, 2011). Many society journals have also made the electronic versions of their journals free, either directly or after a delay of typically one year. For example: Journals of the Indian Academy of Sciences. The use of article processing charges (APCs) as the central mechanism for funding Open Access publishing was pioneered by the publishing company BioMedCentral in 2002. As an alternative to the OA availability of articles at the original source ("gold OA"), authors have also started to make manuscript copies of articles published in subscription journals available for free on the web ("green OA"). In this context, a majority of publishers have had to accept green OA in their copyright agreements with the authors, due to pressure from academics and in particular important research funders like the NIH and the Wellcome trust. A recent study estimated the global uptake of Open Access in 2009 to be 20.4 %, split into 8.5 %

[9] http:// creativecommons.org

directly in journals and 11.9 % as manuscript copies in different types of repositories (Björk et al., 2010).

In an attempt to build a gradual transition path between the traditional subscription journals and Open Access ones, several major publishers have started offering so-called "**hybrid**" journals. These are traditional closed access subscription journals, which offer individual authors the possibility to open up their articles for free access from day one, against a payment.

2.4.1 Origin

The section below describes finding of a study on proliferation of hybrid journals by Walker (2004 and 2012) and APS (2007 and 2008). The idea of allowing individual authors the opportunity to pay to make their articles in subscription journals openly available in electronic format on the web was first mentioned by Thomas Walker in 1996, building on the established culture of authors ordering paper off-prints of their articles to send to colleagues (Walker, 1996). When the Entomological Society of America started offering authors this possibility for its four journals in 2000, the initial price was in fact set to be equivalent to 75% of the price of 100 paper reprints, roughly about 100 USD. Currently the charge is 287 USD for a 9-12 page article, in addition to page charges for all articles. The possibility was eagerly taken up by authors, with the uptake increasing rapidly from 25% in 2000 to a level between 62- 67 % in 2003-2008 (Walker, 2012). The journal Limnology and Oceanography also started offering such a possibility in 2001 with a price equal to 100 reprints (126 USD), resulting by 2003 in an uptake of 66 %. The high uptake worried the publishers about the effects on subscription income and the price was increased to 350 USD for 2004 (Walker, 2004).

In 2003-2004 three other publishers (American Physiological Society, Company of Biologists and Hindawi publishing Corporation) followed suit, but with much higher fees in the range 800-1,500 USD. Walker found initial uptake percentages of between 7 % and 13 % for these (Walker, 2004). The OA fee of Physiological Genomics, published by the American Physiological Society, was initially 1,500 USD. In 2006 when the journal started imposing page charges on all authors and offered a lowered additional charge of 750 USD for the Open Access, this resulted in an increased uptake of 18 %. When the publisher in 2007 started to offer a hybrid option for all its 10 journals this price level was deemed unsustainable and the price was set at 2,000 USD for research articles in all the journals (APS, 2007). In a press release about the increase in the 2009 subscription prices the publisher indirectly hinted that the uptake in 2007 would have been around 2-3% (APS, 2008). The year 2004 saw the massive launch of the Springer "Open Choice" program covering almost all of the publisher's journals. The price level was set at 3,000 USD per article, in line with the publisher's calculation for the average price of publishing an article, which would need to be recovered if the journals would gradually transition into full author pay mode. This was rapidly followed by the launch of similar schemes by other major publishers, however usually for a smaller share of their journals. The price level of Springer seems to have set a

precedent for the APCs of the other major publishers, since prices have clustered very narrowly around 3,000 USD. Strong informal signals from some research funders that this price level would be the maximum that they would allow to be paid from their grants, in particular Wellcome Trust, may also have influenced this pricing strategy. After a period of growth when authors became familiar with the concept, and when some publishers offered price reductions for society members and subscribers, the uptake percentage seems for most publishers to have stabilized in 2007-2008. In the last couple of years growth has for most publishers come through the extension of the hybrid possibility to a larger share of their journals, rather than higher uptake levels. At the same time many publishers seem to have turned their attention to starting new full Open Access journals, following the success of start-up OA publishers such as BioMedCentral and Public Library of Science.

2.5 LET US SUM UP

Green and gold OA are complementary as soon as we recognize that green is better than gold for registration (its time stamps are faster) and preservation, and that gold OA is better than green OA for quality assurance of content (peer review). Green OA is deemed by some as mainly a tool to force a transition to gold OA. There is however a synergy between green and gold. Gold OA journals may need to move resources to repositories with metadata adequate for preservation of content.

On the other hand green OA may serve as platform for aspiring authors who need to publish in peer-reviewed journals for their professionals progress. publishing the idea on green such authors can collect ideas and discussions from wide range of audience. After collecting views and refining their content they may then opt to publish in OA journals.

Green journals are needed so that research institutes especially those that are publicly funded may have mandates for OA publishing without limiting the freedom of authors to submit to the OA journals on others also. However with repository tools being refined to include formal publication workflows the distinction between green and gold may only remain at policy level whether or not to go for peer review.

2.5 CHECK YOUR PROGRESS

1. What are advantages and disadvantages of Green OA publishing?

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2. What are advantages and disadvantages of Gold OA publishing?

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3. What is the difference between gratis-libre distinction and green/gold distinction?

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☞ **Activity I**

Trace the lifecycle of an article in green model and gold model.

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☞ **Activity II**

Prepare a chart of green open access and gold open access journals and repositories and do comparative study of their usefulness through their uses.

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2.7 REFERENCES

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Suber, Peter (2012), Open Access, MIT Press: Cambridge, MA, Available at http://mitpress.mit.edu/sites/default/files/titles/content/9780262517638_Open_Access_PDF_Version.pdf

Further Readings

OASIS(Open Access SCHOLARLY Information Sourcebook). http://www.openoasis.org/

COAR(Confederation of Open Access Repositories). https://www.coar-repositories.org/

PKP(Public Knowledge Project). http://pkp.sfu.ca/

Centre for internet and Society, Openness, http://cis-india.org/openness.

Cold Spring Harbor Laboratory. Guide to Open Access. http://cshl.libguides.com/content.php?pid=222607&sid=1847688.

SPARC.(Scholarly Publishing and Academic Resources Coalition), Open Access. http://sparc.arl.org/issues/open-access.

UNIT 3 NETWORKS AND ORGANIZATIONS PROMOTING OPEN ACCESS

Structure

3.0 Objectives
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3.2 OA Initiatives and Scenario
3.3 OA Supporters (Persons)
3.4 OA Organizations
3.5 OA Journals
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3.0 OBJECTIVES

After reading this unit, you will be able to:

- identify and describe the contributions of individuals contributing to OA movement;
- discuss the different types of OA journals and repositories; and
- describe the activities in brief of various networks and coalitions in OA.

3.1 INTRODUCTION

The Open Access (OA) movement started in 1960s and gained momentum in the 1990s with the advent of Internet and digital archiving. The world famous physicist Leó Szilárd was one of the first supporters of the basic principle of OA. It is said that in the 1940s itself he suggested that at the beginning of the career each scientist should be issued with 100 vouchers to pay for his papers. Szilard's light comment was indeed to become a reality much later. It is now possible to publish a scholarly article and also make it instantly accessible

anywhere in the world through computers and internet connection or any other digital data access system. The social movement towards Open Access is mainly carried out by academia, dedicated to the principle of open access to information without any financial barrier to the reader/user, especially for communities of the developing and under-developed countries. This movement slowly became the subject of much discussion among researchers, academics, librarians, university administrators, funding agencies, government officials, commercial publishers and learned-society publishers. In the sections that follow major worldwide OA projects, databases, initiatives and networks are highlighted.

3.2 OA INITIATIVES AND CURRENT SCENARIO

The first major database to be offered as OA was that of NLM. In 1997, the U.S. National Library of Medicine (NLM) made Medline which is the most comprehensive index to medical literature, freely available in the form of PubMed. While indexes are not the main focus of the open access movement, free Medline is important in that it opened up a whole new form of use of scientific literature - by the public, not just professionals. In 2001, 34,000 scholars around the world signed "An Open Letter to Scientific Publishers", calling for "the establishment of an online public library that would provide the full contents of the published record of research and scholarly discourse in medicine and the life sciences in a freely accessible, fully searchable, interlinked form"[10].

In 2002, the Open Society Institute launched the Budapest Open Access Initiative. In 2003, the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities was drafted and the World Summit on the Information Society included open access in its Declaration of Principles and Plan of Action. In 2006, a Federal Research Public Access Act was introduced in the US Congress by senators John Cornyn and Joe Lieberman. In November 27, 2009, the Manchester Manifesto came as an initiative from philosopher John Harris, Nobel-winning biologist Sir John Sulston, and 48 others from the Institute for Science, Ethics and Innovation (iSEI) at The University of Manchester". It introduced PubMed as the most comprehensive index to medical literature available free. It was earlier known as Medline.

OA movement is slowly becoming one of the strongest movements in scholarly publication and information sharing history. Along with articles, open educational resources also are popular form of OA access material. "MIT Open Course Ware, an initiative of the Massachusetts Institute of Technology put all of the educational materials from their undergraduate and graduate level courses online". Since 2003, efforts have been towards open access mandating by the funders of research such as governments, national and international research funding agencies, and universities". "Many countries, funders, universities and other organizations have now either made commitments to open access, or are in the process of reviewing their policies and procedures,

[10] http://www.sciencedomain.org

with a view to opening up access to results of the research that they are responsible for". Harvard University through the Harvard Open-Access Publishing Equity (HOPE) provides funds for the reimbursement of reasonable article processing fees for articles authored or co-authored by Harvard researchers published in eligible open-access journals. Stanford university, MIT, York university, Boston university, Duke University, University College London, etc. are also supporting OA movement. As per SPARC (Scholarly Publishing and Academic Resources Coalition), only in US more than 120 presidents, provosts, and chancellors of many large, small, public, and private U.S. universities and colleges have gone on record in support of the Federal Research Public Access Act (2009-2010 introduction). SPARC international currently has members from over 800 institutions in North America, Europe, Japan, China and many other countries.

3.3 OA SUPPORTERS (PERSONS)

Many Nobel laureates and luminaries are supporting Open Access to facilitate wide dissemination of research results. Some of them who lent prominent contributions and comments regarding open access, are as follows:-

Sir John Edward Sulston, FRS, is a British biologist and the 2002 Nobel prize in Physiology or Medicine laureate**.** He is currently Chair of the newly-founded Institute for Science, Ethics and Innovation (iSEI) at the University of Manchester. He is one of the supporters of OA movement. Along with him, philosopher John Harris he is one of the main architects of the Manchester Manifesto that came into being in November, 2009.

Peter Suber is a leading voice in the open access movement. He is a senior research professor of philosophy at Earlham College, Fellow at Harvard's Berkman Center and Office for Scholarly Communication. He is the open access project director at Public Knowledge and a senior researcher at SPARC (Scholarly Publishing and Academic Resources Coalition). He is also a member of the Advisory Boards at the Wikimedia Foundation, the Open Knowledge Foundation, and other organizations devoted to open access.

Alma Swan is a consultant working in the field of scholarly communication. She is a director of **Key Perspectives Ltd**, Director of Advocacy Programmes for **SPARC Europe** and Convenor for **Enabling Open Scholarship**, the organization of universities promoting the principles of open scholarship in the academic community. Her work covers market research and business modelling, project management and evaluation, research communication practices and behaviours, and the study and promotion of new forms of scholarly communication in the age of the Web.

Steve Harnad is a cognitive scientist. Harnad was the founder of **Behavioral and Brain Sciences**, of which he remained editor-in-chief until 2002. In addition, he founded **Psycoloquy** (an early **electronic journal** sponsored by the **American Psychological Association**), **CogPrints** (an electronic **eprint** archive in the **cognitive sciences** hosted by the University of Southampton), and the **American Scientist Open Access Forum** (since 1998; now the **Global**

Open Access List, GOAL). Harnad is an active promoter of **open access** (**EPrints**, **EnablingOpenScholarship** (EOS), Open Access Scholarly Information Sourcebook (OASIS), **SPARC** Campus Open Access Policies).

Jean Claude Guedon is the founder of the first Canadian scholarly electronic journal ***Surfaces*** (started in 1991) and a Steering Group member of **Open Humanities Press**, an international **Open Access** publishing collective specializing in critical and cultural theory

Bill Hubbard is a Project Manager of **Sherpa/Romeo**. The Sherpa/Romeo site offers information about publishers' policies with respect to self-archiving pre-print and post-print research papers.

Rick Johnson is the founder of SPARC (Scholarly Publishing and Academic Resources Coalition). He is part of the international alliance of academic and research libraries to promote open access to scholarship. It acts as a catalyst for action and focuses on supporting the emergence of new scholarly communication models that expand the dissemination of scholarly research and reduce financial pressures on libraries and create a more open system of scholarly communications. SPARC's strategy focuses on reducing barriers to the access, sharing, and use of scholarship.

Sir Brian Follett is the director of The **Research Support Libraries Group** (RSLG) which is launched by the four UK higher education funding bodies, in collaboration with the British Library and the national libraries of Wales and Scotland started. He played an instrumental role in reforming and establishing governance policy of **JISC**.

MIT Faculty Chair Bish Sanyal, a supporter of OA movement, described the anonymous vote for MIT-open-access-mandate as "a signal to the world that we speak in a unified voice; that what we value is the free flow of ideas." [http://www.sciencedomain.org/]. In September 2008, Faculty Chair Bish Sanyal appointed an MIT Faculty Ad-hoc Committee on Open Access Publishing to coordinate a faculty-wide discussion of how our scholarly publications are and should be disseminated, with particular attention to the possibility of providing "open access" to those publications. **Hal Abelson** is a professor at Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology**.** He is a vocal supporter of OA movement. Under his chairmanship, the committee formulated the MIT Faculty Open-Access Policy which became university-wide OA mandate.

Daniel Shek, is a professor at Chinese University of Hong Kong, Hong Kong. He opines that: "Open Access journals offer an innovative and efficient way of publication for academics and professionals in a wide range of disciplines. The papers published are of high quality after rigorous peer review and they are indexed in major international databases. I read Open Access journals to keep abreast of the recent development in my field of study." [http:/www.sciencedomain.org]

M. Bendandi, professor, University Clinic of Navarre, Spain, opines that, "Open access journals have become a fundamental tool for students, researchers, patients and the general public. Many people from institutions

which do not have library or cannot afford to subscribe scientific journals benefit of them on a daily basis. The articles are among the best and cover most scientific areas." [http://www.sciencedomain.org/]

J.C. Jones is professor at Mechanics of Materials Research Group, University of Aberdeen, Scotland**.** He is the author of 300 publications including six university-level textbooks. In support of the OA movement he said, "The advantage of the Open Journal series is that it is just that: open, and accessible to anyone with a PC at no charge I appeal to scholars across the disciplines to consider the Open Journal series as a forum for their work." [http://www.sciencedomain.org/]

3.4 OA ORGANIZATIONS

Individual researchers and scientists who realized the benefits of OA and who supported its idea became early advocates of the concept of OA. However it is important to note that while OA advocates for free access to information and knowledge resources facilitating OA itself needs finances. Hence OA needs to be planned and supported by organizations. After years of advocacy and activities of the open access movement there are many organizations across the globes, who are taking initiative to promote Open Access movement.

Listed below are some of the important region wise organizations that are working in the field of Open Access:

Africa

- Academy of Science of South Africa (ASSAf)
- African Journals Online
- Association of African Universities (AAU)
- Scholarly Communication in Africa Programme (SCAP), University of Cape Town
- Southern African Regional Universities Association (SARUA)
- UN Economic Commission for Africa (UNECA)

Asia and the Pacific

- Asia Pacific Internet Association(APIA)
- Asian Network for Open Educational Resources(OERS)
- Centre for Internet and Society
- Creative Commons Asia
- Korea Institute of Science and Technology Information (KISTI)
- Open Society Foundations
- PAN Asia Networking Distance and Open Resource Access

Europe and North America

- Confederation of Open Access Repositories (COAR)
- Electronic Information for Libraries (EIFL)
- Joint Information Systems Committee (JISC)
- International Federation of Library Associations and Institutions (IFLA)

- International Network for the Availability of Scientific Publications (INASP)
- Max Planck Society
- National Centre for Biotechnology Information
- National Institute of Health, USA
- Open Access Infrastructure Research for Europe (OpenAIRE)
- Public Knowledge Project (PKP)
- Scholarly Publishing and Academic Resources Coalition (SPARC)
- United Kingdom Council of Research Repositories (UKCoRR)
- United Nations Educational, Scientific and Cultural Organization (UNESCO)
- Wellcome Trust,UK
- European Commission
- Royal Society, UK

Latin America and the Caribbean

- CLACSO (Red de Bibliotecas Virtuales)
- CLAD(Latin American Center for Development Administration)
- FAPESP (Scielo) (Foundation for Research Support of the State of São Paulo)
- FLACSO (Latin American Social Sciences Institute)
- IICA (SIDALC) (Inter-American Institute for Cooperation on Agricultural)
- RedCLARA (COLABORA, Red Federada Latinoamericana de Repositorios Institucionales)
- SciELo (, BIREME, BVS, SciELO) (Scientific Electronic Library Online)
- UAEM (Redalyc) (Universities Allied for Essential Medicines)
- UNAM (Latindex, CLASE, PERIÓDICA) (National Autonomous University of Mexico)

3.5 OA JOURNALS

Open access journals are scholarly journals that are available online to the reader "without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself"(Suber, 2013). Some are subsidized and some require payment by the authors or by someone on behalf of the authors. The payment is made toward processing of the articles. Sometimes these payments are made by institutions on behalf of the authors.

Open access journals may be entirely OA or partially OA such as hybrid open access journals and delayed open access journals. Open access journals are deemed as equivalent to Gold Road and Self-Archiving is considered equivalent to Green Road. Wikipedia categories OA journals as:

- Journals entirely open access
- Journals with research articles open access (hybrid open access journals)
- Journals with some research articles open access (hybrid open access journals)
- Journals with some articles open access and the other delayed access

- Journals with delayed open access (delayed open access journals)
- Journals permitting self-archiving of articles

3.5.1 Fee-based

Fee-based open access journals require payment on behalf of the author. The money might come from the author but more often comes from the author's research grant or employer. Many of these open access journals referred as 'gold' OA, waive the publication or part of the fee. This is generally true for authors from less developed countries.

3.5.2 No-fee based

No-fee open access journals use a variety of business models. As summarized by Peter Suber: "Some no-fee OA journals have direct or indirect subsidies from institutions like universities, laboratories, research centers, libraries, hospitals, museums, learned societies, foundations, or government agencies. Some have revenue from a separate line of non-OA publications. Some have revenue from advertising, auxiliary services, membership dues, endowments, reprints, or a print or premium edition. Some rely, more than other journals, on volunteerism. Some undoubtedly use a combination of these means" (Suber, 2012).

3.5.3 Popular

Pioneers in open access article publishing are in the biomedical domain with journals like the BMJ (British Medical Journal), Journal of Medical Internet Research and Medscape, that made content freely accessible in the late 90s. BioMed Central published its first article in the year 2000. The Public Library of Science launched its first open access journal, PLOS Biology in 2003, with PLOS Medicine following in 2004, and PLOS ONE in 2006.

Directory of Open Access Journals (DOAJ)

The DOAJ [www.doaj.org] is a web directory that lists open access journals and is maintained by Infrastructure Services for Open Access (IS4OA). Until January 2013, the DOAJ was maintained by Lund University. As of December 2013, the database contains 9804 journals from 124 countries, with an average of four journals being added each day in 2012. The aim of DOAJ is to increase the visibility and ease of use of open access scientific and scholarly journals thereby promoting their increased usage and impact.

Journals for Free

Journals for Free is a directory of open access journals and/or journals with some kind of open access to their materials. Journals for free has now more than 11400 as of by December 2013. It includes all open access journals indexed in the most recognized reference databases such as PubMed, Scopus and ISI Master databases[11].

JURN

[11] http://www.journals4free.com/about.jsp

JURN[12] is a search-engine dedicated to indexing free 'open access' e-journals in the arts and humanities, along with other relevant arts and scholarly publications offering free content.

African Journals OnLine[13]

AJOL is an online service to provide access to African-published research and increase worldwide knowledge of indigenous scholarship. It is a non-profit organization based in South Africa. AJOL's Mission: "to increase online visibility, access and use of African-published research output in support of quality African research and higher education".

AJOL provides free hosting for over 400 peer-reviewed journals from 30 African countries. AJOL's partner journals cover the full range of academic disciplines with particularly strong sections on health and agriculture. African Journals OnLine (AJOL) was initiated in May 1998 as a pilot project managed by the International Network for the Availability of Scientific Publication (INASP). At its re-launch in August 2000, AJOL featured 50 English language African published journals in agricultural sciences, science and technology, health and social sciences.

Journals are selected for inclusion in AJOL using the following criteria:

- They are scholarly in content, and contain original research
- Their content is peer-reviewed and quality controlled
- They are able to provide all content for inclusion on AJOL (tables of contents, abstracts and full text) in electronic format (e.g. Word files and PDF's)
- They guarantee permission from the authors to allow AJOL to operate a document delivery (article download) service
- They are published within the African continent. Management of publishing strategy, business development and production operation are all run from an African country.

Open Access Journals Search Engine[14]

OAJSE service covers free, full text, quality controlled journals. The aim is to cover journals in all subjects that are published in English language. There are now 4,775 journals in the directory. All are searchable at article level.

BMJ

BMJ[15] is a weekly open-access, peer-reviewed medical journal. It is one of the world's oldest general medical journals and has been described as among the most prestigious British Medical Journal, the title was officially shortened to BMJ in 1988. The journal is published by the BMJ Group, a wholly owned subsidiary of the British Medical Association.

[12] http://www.jurn.org/
[13] http://www.ajol.info
[14] http://www.oajse.com/
[15] http://bmjopen.bmj.com

Journal of Medical Internet Research

The Journal of Medical Internet Research[16] is a peer-reviewed open-access medical journal established in 1999 covering eHealth and healthcare in the Internet age. According to the Journal Citation Reports, the journal has a 2010 impact factor of 4.663. Its ranking is first out of 22 in the category Medical Informatics journals and 2nd among 71 journals in the category Health Care Sciences & Services.

BioMed Central (BMC)

BioMed Central[17] (BMC) is a United Kingdom-based, for-profit scientific publisher specializing in open access journal publication. BioMed Central and its sister companies Chemistry Central and PhysMath Central publish over 200 scientific journals. Most BioMed Central journals are now published only online. BioMed Central describes itself as the first and largest open access science publisher. It is owned by Springer Science+Business Media.

PANDORA

PANDORA[18], Australia's Web Archive was established by its National Library in 1996 and is a collection of historic online publications. Online publications and web sites are selected for inclusion in the collection with the purpose of providing long-term and persistent access to them. The PANDORA Archive is a selective collection of web publications and websites relating to Australia and Australians. It includes materials that document the cultural, social, political life and activities of the Australian community and intellectual and expressive activities of Australians.

PLOS Biology

PLOS Biology[19] is an open access peer-reviewed scientific journal covering all aspects of biology. Publication began in October, 2001. It was the first journal of the Public Library of Science. All content in PLOS Biology is published under the Creative Commons "by-attribution" license. To fund the journal, the publication's business model requires that, in most cases, authors pay towards publication costs.

Hong Kong Journals Online

HKJO[20] is a full-text image database providing access to selected academic and professional journals, both in English and Chinese, published in Hong Kong. Titles included in this database cover a wide range of disciplines including law, medicine and education. The University of Hong Kong Libraries, with a rich collection of Hong Kong journals, developed this database with the objectives of facilitating efficient information retrieval and preserving archival materials. Issues included in this database vary from

[16] http://www.jmir.org/
[17] http://www.biomedcentral.com/
[18] http://pandora.nla.gov.au/about.html
[19] http://www.plosbiology.org
[20] http://hkjo.lib.hku.hk/exhibits/show/hkjo/home

journal to journal with the earliest going back to 1872 . Currently, more than 491,290 images from over 60 titles will be accessible on the database.

3.6 OA SCHOLARLY PUBLISHERS ASSOCIATION

The Open Access Scholarly Publishers Association[21] (OASPA) is an industry association which aims to promote open access publishing (Gold Open Access) and to establish best practices in the field. It brings together the major open access publishers on the one hand and independent — often society-based or university-based and publishers on the other, along with some hybrid open access publishers. While having started out with a focus on open access journals exclusively, it is now expanding its activities to include matters pertaining to the open access publishing of books as well.

Major funding members

- BioMed Central
- Co-Action Publishing
- Copernicus Publications
- Hindawi Publishing Corporation
- Public Library of Science
- SAGE Publications
- Utrecht University Library (Igitur)
- Journal of Medical Internet Research JMIR (Gunther Eysenbach) (now JMIR Publications)
- Medical Education Online
- SPARC Europe

3.7 OA REPOSITORIES

Open Access repositories may be institution-based, increasing the visibility and impact of the institution, or domain based collections like the economics repository RePEc[22] (Research Papers in Economics) or the physics repository, arXiv[23]. Institutional repositories are digital collections of the scholarly outputs created within an organization, university or research institution. Although the purposes of repositories may differ (for example, some universities have teaching/learning repositories for learning resources), in most cases they are built to provide Open Access to the institution's research output.

There are presently over 1,400 repositories around the globe. For the past three years the number has been growing at an average rate of one per day. Registry of Open Access Repositories[24] (ROAR) and in the Directory of Open Access

[21] http://oaspa.org
[22] http://repec.org/
[23] http://arxiv.org/
[24] http://roar.eprints.org/

Repositories[25] (OpenDOAR) furnish the statistics and information regarding where they can be found.

Repositories help in scholarly communication

Repositories form an everlasting and critically significant part of the scholarly communication process. Their first role is to make available the Open Access literature. In addition to that, services may be added to repositories to provide extra functionality. For example, a usage-reporting service gives authors and the institution information on how the content of the repository is being used. This in turn acts as boosting factor for the researcher and for the institute that he belongs to. A search service may enable users find specific items more easily. A service that organizes content in specific ways may help authors, for example, to download a list of articles into their CV, or aid institutions in assessing the institution's research programs for reporting data to governments or for other statutory requirements. Repositories also play a significant role in the publishing process.

DOAR

The OpenDOAR service is responsible for providing a quality-assured listing of open access repositories around the world. OpenDOAR staff harvest and allocate metadata to allow categorization and analysis in order to assist users in exploitation of repositories. Each of the repositories has been visited by OpenDOAR staff to ensure a high degree of quality and consistency in the information provided. OpenDOAR is mainly a service to boost and support the academic and research activities of the global community. OpenDOAR maintains a comprehensive and authoritative list of institutional and subject-based repositories. It also encompasses archives set up by funding agencies such as

- National Institutes for Health in the USA
- Wellcome Trust in the UK and Europe.

Users of the service are able to analyze repositories by location, type, the material they hold and other measures. One key point about OpenDOAR is that this information is of use not only for users wishing to find original research papers but also for third-party service providers, like search engines or alert services, who require an easier means to use tools for developing tailored search services to suit the needs of specific user communities.

OpenDOAR aims to:

- Survey the growing field of academic open access research repositories and categories them in terms of locale, content and other measures.
- Produce a descriptive list of open access repositories of relevance to academic research.
- Provide a comprehensive and authoritative list for end users wishing to find particular types of, or specific repositories.
- Deliver a comprehensive, structured and maintained list with clear update and self-regulation protocols to enable development of the list.
- Play a prominent international role in the organization of and access to

[25] http://www.opendoar.org/

open access repository services.

- Support Open Access outreach and advocacy endeavors within institutions and globally.

3.7.1 Institutional Repositories

An institutional repository is an online archive for assembling, preserving, and disseminating digital copies of the intellectual output of an institution, particularly a research institution. For a university, this includes materials such as academic journal articles, both before (preprints) and after (postprints) undergoing peer review, as well as digital versions of theses and dissertations. It might also include other digital assets generated by academics, such as administrative documents, course notes, or learning objects. Deposit of material in an institutional repository is sometimes mandated by that institution.

Some of the main objectives for having an institutional repository are to provide open access to institutional research output by self-archiving it, to create global visibility for an institution's scholarly research, and to store and preserve other institutional digital assets, including unpublished or otherwise easily lost grey literature such as theses or technical reports.

Some of the repositories around the world are:

I Repositories in Asia Pacific

Open Access in Asia Pacific started in the form of subject gateways and as informal collections of articles on web pages and directories. Subsequently the region witnessed the transition to Open Access journals and full text repositories and digital libraries. Research departments, institutions and universities and coordinating bodies of higher learning are the major contributors to Open Access though some dedicated OA publishers have also contributed.

Asia Pacific hosts several repositories and digital libraries as Open Access. The repositories often are based upon documents types such as theses and dissertations while many others are domain specific such as the Indus service in Agricultural Domain. However, some countries have shown constant progress, some in spurts of activities and some others are yet to begin with repositories as is shown in the country-wise reports in Asia Pacific.

Asia Pacific is the third biggest contributor to OA content contributing to 16.6% of the total institutional repositories. Asian region is host to about 346 repositories and Australasian region hosts 79 repositories. Japan (39%), Taiwan (16.8%) and India (15%) are major contributors in Asia.[source: OpenDOAR]

India

India has seen rapid and drastic growth in digitized and born digital data. Major part of the information produced may be attributed to government research establishments such as CSIR (Council of Scientific and Industrial Research) laboratories, institutes of higher learning mostly universities, both central and state level universities and reputed institutes such as IITs (Indian Institute of Technology), IIMs (Indian Institute of Management). R&D organizations such as Regional Research Labs, Industrial R&D divisions also

contribute to scientific data.

With advocacy for OA access some major research councils such Indian Council for Agricultural Research (ICAR) and the National council for education, teaching and research have moved towards OA policies and mandates in India. It can be said that open access acceptance is growing both in public sector information as well as in academic institutional mandates. According to Registry of Open Access Repositories, in India, there are over 70 repositories.

Major National Projects and Initiatives include:

- eGyankosh
- ePrints@IISc
- LDL@DRTC
- OpenAgri
- Mahatma Gandhi University - Online Theses Library
- NISCAIR's Online Periodicals Repository
- OpenMED@NIC
- Shodhganga@INFLIBNET Centre
- CSIR repositories

II Repositories in Africa

Open Access (OA) movement in Africa is growing. Over 300 OA journals are published in sub-Saharan Africa and there are over 40 OA repositories in the region with many being planned. Although there have been great strides in OA in the region, more awareness raising, advocacy work as well as capacity building are still needed to introduce OA policies and mandates in the region and to convert subscription-based journals into OA journals. Fostering activities are needed to launch new OA journals and to set up OA repositories as well as to make them sustainable and encourage researchers and students to self-archive.

South Africa

South Africa is a leading African country in terms of Open Access (OA) policies on the governmental level and grass-roots OA initiatives in universities and research organizations.

All 11 traditional universities (or at least their departments), two universities of technology (Cape Peninsula University of Technology and Durban University of Technology), three comprehensive universities (University of Johannesburg, University of South Africa and University of Zululand) and Council for Scientific and Industrial Research (CSIR) have set up OA repositories.

University of Pretoria and University of Johannesburg have adopted OA policies (mandates) to ensure that results of researches funded by institutions are made freely available.

Academy of Science of South Africa (ASSAf) manages the Scientific Electronic Library Online (SciELO) SA – a premier OA searchable full-text journal database that covers a selected collection of peer-reviewed scholarly

journals (20 OA journals and growing) implementing recommendations from its Report on a Strategic Approach to Research Publishing in South Africa. SciELO SA is funded by the South African Department of Science and Technology and endorsed by the South African Department of Higher Education and Training (DHET).

43 OA journals are registered in DOAJ (the Directory of Open Access Journals covering free, full text, quality controlled scientific and scholarly journals).

Major National Projects and Initiatives include:

- Scientific Electronic Library Online
- AOSIS OpenJournals
- Health and Medical Publications Group
- The Human Sciences Research Council Press
- African Journals OnLine
- Open Access, A2K and Scholarly Communication

III Repositories in Europe and North America

Open Access in Europe and North America presents a varied picture from countries with the most OA depositories and journals globally, national funding mandates and OA legislation (USA) to those with limited internet connectivity (e.g. Albania). Although OA developments often follow economic development this is not always so: Moldova, for example, in partnership with INASP and eIFL, has developed active OA programmes. Its work with eIFL has enabled a consortium of international recognition with representation at UN World Intellectual Property Organization.(Global Open Access Portal)

According to the latest data available on DOAJ and ROAR, throughout Europe there are now more than 200 repositories with a further addition of almost 100 repositories in North America (UA and Canada). More than 4000 of DOAJ's OA journals are from Europe and North America.

Major Projects

DOAJ (Directory of Open Access Journals[26]) is a service that provides access to quality controlled Open Access Journals. According to its stated objectives, the directory aims to be comprehensive and cover all open access scientific and scholarly journals that use an appropriate quality control system, and it will not be limited to particular languages or subject areas. The aim of the directory is to increase the visibility and ease of use of open access scientific and scholarly journals thereby promoting their increased usage and impact.

DRIVER II (Digital Repository Infrastructure Vision for European Research)

DRIVER[27] has established a network of relevant experts and Open Access repositories. DRIVER-II consolidates these efforts and transform the initial testbed into a fully functional, state-of-the art service, extending the network to a larger confederation of repositories. DRIVER is integral to the suite of

[26] http://www.doaj.org/
[27] http://www.driver-repository.eu/

electronic infrastructures that have emerged in the worldwide GÉANT network and is funded under the e-Infrastructures by European Commission's 7th framework programme.

e-SciDR (Towards a European Infrastructure for e-Science Digital Repositories)

e-SciDR is a study led by the Digital Archiving Consultancy on behalf of the European Commission to drive forward the development and use of digital repositories—widely defined constructs from data to publications to tools, in the EU in all areas of science and the humanities to the earth sciences.

OpenDOAR directory

OpenDOAR is a directory of open access repositories, searchable by location, contents and statistics. OpenDepot allows all academics worldwide to deposit their research in an Open Access repository.

B. Disciplinary Repository

A disciplinary repository (or subject repository) is an online archive containing works or data in a particular subject area or domain. In contrast to institutional repositories, disciplinary repositories can accept work from scholars from any institution". A disciplinary repository shares the roles of collection, dissemination and archiving of work with other repositories, but is focused on a particular area. These collections can include academic and research papers.

Some of the popular disciplinary repositories are as follows:

arXiv: The arXiv is an archive for electronic preprints of scientific papers in the fields of physics, mathematics, astronomy, computer science, quantitative biology and statistics which can be accessed via the world wide web. In many sub-fields of mathematics and physics, almost all scientific papers are self-archived on the arXiv. (http://arxiv.org/)

RePEc : RePEc(ResearchPapers inEconomics) is a collaborative effort of hundreds of volunteers in 74 countries to enhance the dissemination of research in economics. The heart of the project is a decentralized database of working papers, journal articles and software components. The RePEc database holds over 1,060,000 items of interest, over 925,000 of which are available online (http://repec.org/)

MEDLINE: Medical Literature Analysis and Retrieval System Online, or MEDLARS Online is a bibliographic database of life sciences and biomedical information. It includes bibliographic information for articles from academic journals covering medicine, nursing, pharmacy, dentistry, veterinary medicine, and health care. MEDLINE also covers much of the literature in biology and biochemistry, as well as fields such as molecular evolution. The database is freely accessible on the Internet via the PubMed interface. (http://www.nlm.nih.gov/bsd/pmresources.html)

PubMed Central: PubMed Central is an open access digital database of full-text scientific literature in biomedical and life sciences. It grew from the online Entrez PubMed biomedical literature search system. PubMed Central was developed by the U.S. National Library of Medicine (NLM) as an online archive of biomedical journal articles. Access to PubMed Central is free and unrestricted. Participation in PubMed Central is voluntary and publishers can

deposit journal articles at any time. (http://www.ncbi.nlm.nih.gov/pubmed)

Other disciplinary repositories include:

- AgEcon: Agriculture and Applied Economics (http://ageconsearch.umn.edu/)
- Astrophysics Data System - Astrophysics (http://adswww.harvard.edu/)
- CiteSeer - Computer and Information Science (http://citeseerx.ist.psu.edu/index)
- Dryad - Biosciences (http://datadryad.org/)
- PhilPapers - Philosophy (http://philpapers.org/)
- Social Science Research Network - Social Sciences (http://www.ssrn.com/en/)

3.8 MAJOR OA NETWORKS, FACILITATORS, COALITIONS AND INITIATIVES

3.8.1 INASP

INASP (International Network for the Availability of Scientific Publications), was established by the International Council for Science (ICSU) in 1992. INASP works with a global network of partners to improve access, production and use of research information and knowledge, so that countries are equipped to solve their development challenges. The network aims to strengthen access to, production and use of knowledge and evidence in Africa, Asia and Latin America.[www.inasp.info]

3.8.2 JISC

Joint Information Systems Committee (JISC) is simply known as JISC. Jisc is an Open access facilitator that supports many OA initiatives, workshops and projects. it also hosts valuable resources to fostering OA such as the Open Mirror platform.[www.jisc.ac.uk]

3.8.3 SPARC

The Scholarly Publishing and Academic Research Coalition. Sparc is an international alliance of research and academic libraries, an endeavour to create a more open system for scholarly communications. Sparc supports advocacy for open access. Sparc assigns priority to advancing the understanding and implementation of policies and practices that ensure Open Access to scholarly research outputs. SPARC's primary focus is on journal literature, but its strategy has evolved to reflect an increasing focus on Open Access to research outputs of diverse kinds – including digital data and open educational resources (OER). [www.sparc.arl.org]

3.8.4 SHERPA Project

SHERPA Project, UK [http://www.sherpa.ac.uk/about.html] emerged from a research-led universities with an active interest in establishing an example

open access institutional repository in 2002. Sherpa now has 34 partners and affiliates overall, consisting of 32 higher education institutions. Sherpa is investigating issues in the future of scholarly communication. It is developing open-access institutional repositories in universities to facilitate the rapid and efficient worldwide dissemination of research.

3.8.5 Global OA Portal -UNESCO

UNESCO hosts Global Open Access Portal (GOAP), that presents a current snapshot of the status of Open Access (OA) to scientific information around the world. The portal provides a high-level view of the Open Access environment. The primary target audience includes policy-makers, advocates, and delegates from national, regional, and non-governmental organizations as well as members of the OA community. The portal provides an overview of the framework surrounding Open Access in UNESCO Member States by focusing on: *[http://www.unesco.org/new/en/communication-and-information/portals-and-platforms/goap/]*

- the critical success factors for effectively implementing Open Access
- each country's strengths and opportunities for further developments
- where mandates for institutional deposits and funding organization have been put into place
- potential partners at the national and regional level and
- funding, advocacy, and support organizations throughout the world.

3.8.6 OpenAIRE

OpenAIRE which is a European commission FP7 project aimed to support the implementation of Open Access in Europe. It provides the means to promote and realize the widespread adoption of the Open Access Policy, as set out by the ERC Scientific Council Guidelines for Open Access and the Open Access pilot launched by the European Commission.[www.openaire.eu]

OpenAIREplus is the next version of the openaire that aimed at linking the aggregated research publications to the accompanying research and project information, datasets and author information. Research output, whether it is publications, datasets or project information is accessible through the OpenAIRE portal. Extra functionalities are also offered, such as statistics, reporting tools and widgets that make OpenAIRE a useful support service for researchers, coordinators and project managers.

3.8.7 COAR

COAR is an association which unites organizations from across the world. Its core mission is to enhance greater visibility and application of research outputs through global networks of Open Access digital repositories. COAR aims to enable every citizen in the world to get access to – and be able to benefit from – knowledge produced from publicly-funded research.[www.coar-repositories.org]

3.8.8 EOS

EnablingOpenScholarship (EOS) [http://www.openscholarship.org] is an organization for universities and research institutions worldwide. The organization is both an information service and a forum for raising and discussing issues around the mission of modern universities and research institutions, particularly with regard to the creation, dissemination and preservation of research findings. The stated aim of EOS is to further the opening up of scholarship and research that is visible through the growing open access, open education, open science and open innovation movements.

3.8.9 NDLTD [www.ndltd.org]

Networked Digital Library of Theses and Dissertations (NDLTD) is an international organization dedicated to promoting the adoption, creation, use, dissemination, and preservation of electronic theses and dissertations (ETDs). It supports electronic publishing and open access to scholarship in order to enhance the sharing of knowledge worldwide.

3.9 LET US SUM UP

In this unit we discussed about Open Access initiatives and what its current scenario is. We also discussed about various prominent people who are supporting in the OA movement and brief idea of their contributions. We also discussed about various organizations across the globe that are currently working on OA movement. OA offerings such as OA journals and repositories are also highlighted.

☞ **Activity I**

Trace the major projects world-wide that facilitate open access journals.

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3.10 CHECK YOUR PROGRESS

1. Discuss disciplinary open access repositories.

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2. Who are prominent persons in the OA movement? What are their contributions?

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3. Describe the major initiatives and network for Open Access.

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UNIT 4 OPEN ACCESS MANDATES AND POLICIES

Structure

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  4.2.2 National Centre for Atmospheric Research Open Access Policy
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4.8 Data Archiving Policies
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4.10 Check Your Progress
4.11 References

4.0 OBJECTIVES

After reading this unit, you will be able to:

- appreciate and explain the importance of mandate in OA;
- discuss the OA policies of institutes encouraging OA;
- highlight the contributions of some government funding bodies in research in OA by discussing their policies, and
- discuss the OA policies of institutions regarding theses and research data.

4.1 INTRODUCTION

OA is a new route to publishing research and other learned literature. The long tradition of publishing in scholarly journals and recognition given to them by the society needs formulation of policies towards OA. These have been turned also as OA mandates of institutions. The institutions could be national research institutions funding agencies or even government. The direct the authors to self-archive their works or publish in Gold OA journals to provide free access to their publications.

Funding agencies and organizations have started supporting and promoting OA by mandating that research papers originating from publicly funded projects must be made open. These are mostly non-profitmaking institutions that make it their mission to ensure that research is beneficial and extensively accessible to the intellectual community.

The first mandate on OA can be traced back to 2003 when the School of Electronics and Computer Sciences, University of Southampton declared a program based policy for OA [provide OA self-archiving policy at www.ecs.soton.ac.uk]. This was a departmental policy. An institutional mandate gives a major impetus to strength of OA repositories as more authors tend to deposit articles when OA is mandated by their institution than when it is not mandated. Accordingly to a study (Gargouri, 2010), IRs having an institutional mandate has resulted in deposits close to 100% while those without such mandates could only attract about 15% of research output into institutional repositories.

4.2 INSTITUTIONAL MANDATES

An institutional open access mandate requires authors to submit copies of their works to the institutional repository. Even though authors are ready to self-archive; it appears self archiving if incentivized, will yield better results as authors will have to contribute consistently. The philosophy of open access is found quite acceptable to academicians. They are willing to deposit their articles whenever they reply to questions whether they would consider OA as a possible mode of publication. But then repositories are not populated at the same rate at which academics are producing papers. The main reason for this is that even today academics prefer to publish in journal of commercial publishers with high ranking. The reason is that institutions are still considering 'ranking' as the main indicator of the quality. In this context if institutional mandates along with incentives linked to OA productivity would encourage authors to deposit into OA repositories. In this regard some of the institutional mandate policies have a significant impact of growth of OA published material.

4.2.1 NIH Public Access Policy

US National Institute of Health (NIH) policy became a mandate in 2007. On December 26, 2007, President Bush signed a bill that required the US National Institutes of Health (NIH) to mandate open online access to all research it

funded. It is the first mandate for a chief public funding agency in the US that involves research to be openly accessible. It changed the 2005 NIH Public Access Policy, which requested, but did not require, open access to NIH-funded research. The mandate clearly instructed that investigators sponsored by the NIH submit their peer-reviewed manuscripts to the National Library of Medicine's open access repository PubMed Central when the manuscript is acknowledged for publication. The manuscript would then become openly available via PubMed Central within 12 months of publication in a journal. (http://libraries.mit.edu/..../research-funders/)

4.2.2 National Center for Atmospheric Research Open Access Policy

The National Center for Atmospheric Research (NCAR), US, a national lab, passed an Open Access policy in October 2009, that necessitates that peer-reviewed research published by its scientists and staff in scientific journals must be made freely available online through its institutional repository. NCAR is sponsored by the National Science Foundation (NSF) and is the first of the NSF's Federally Funded Research and Development Centers to adopt an OA mandate.(http://legacy.earlham.edu/..oa-mandate-at-us-national-lab.html)

4.2.3 Coalition of Open Access Policy Institutions (COAPI)

The Coalition of Open Access Policy Institutions (COAPI) brings together representatives from North American universities with established faculty open access policies and those in the process of developing such policies. It was formed to share information and experiences and to illuminate opportunities for moving faculty-led open access forward at member institutions and advocating for open access nationally and internationally. COAPI offers a collection of best and evolving practices to act as a roadmap for inspiring, promoting and implementing open access polices at institutions without existing or effective open access policies.(http://www.sparc.arl.org/COAPI)

4.2.4 MIT Faculty Open Access Policy

This OA policy[28] at MIT was undertaken on 2009.The Faculty of the Massachusetts Institute of Technology is committed to disseminating its research results and scholarship as widely as possible. In keeping with that commitment, the Faculty adopts the following policy: 'Each Faculty member grants to the Massachusetts Institute of Technology nonexclusive permission to make available his or her scholarly articles and to exercise the copyright in those articles for the purpose of open dissemination. In legal terms, each Faculty member grants to MIT a nonexclusive, irrevocable, paid-up, worldwide license to exercise any and all rights under copyright relating to each of his or her scholarly articles, in any medium, provided that the articles are not sold for a profit, and to authorize others to do the same'. The policy is applicable to all scholarly articles written while the person is a member of the Faculty except for any articles completed before the adoption of this policy and

[28] http://libraries.mit.edu/scholarly/mit-open-access/open-access-at-mit/mit-open-access-policy/

any articles for which the Faculty member entered into an incompatible licensing or assignment agreement before the adoption of this policy.

4.2.5 Harvard Business School Open Access Policy

The Faculty of the Harvard Business School is committed to open access[29]. In keeping with that commitment, the Faculty adopts the following policy: 'Each Faculty member grants to the President and Fellows of Harvard College permission to make available articles that he or she has prepared for journal peer review and to exercise the copyright in those articles. More specifically, each Faculty member grants to the President and Fellows a nonexclusive, irrevocable, worldwide license to exercise any and all rights under copyright relating to each of these articles, in any medium, and to authorize others to do the same, provided that the articles are not sold for a profit'.

4.2.6 Rutgers Open Access Policy

Rutgers scholars deposit legal copies of scholarly articles in the University's digital repository (RUcore), making scholarship freely accessible to the readers and researchers on the Internet. The policy states that, the State University of New Jersey, is committed to disseminating the fruits of its research and scholarship as widely as possible. The Rutgers author remains the copyright owner unless that author chooses to transfer the copyright to a publisher.(Otto, 2012)

4.2.7 Princeton University Open Access Policy

Princeton university OA policy[30] states that : "The members of the Faculty of Princeton University strive to make their publications openly accessible to the public. To that end, each Faculty member hereby grants to The Trustees of Princeton University a nonexclusive, irrevocable, worldwide license to exercise any and all copyrights in his or her scholarly articles published in any medium, whether now known or later invented, provided the articles are not sold by the University for a profit, and to authorize others to do the same". This grant applies to all scholarly articles that any person authors or co-authors while appointed as a member of the Faculty, except for any such articles authored or co-authored before the adoption of this policy or subject to a conflicting agreement formed before the adoption of this policy.

4.2.8 University of Leicester OA Mandate

The University of Leicester has joined a growing number of UK institutions in adopting an open access mandate[31] for research publications. Academic staff are now required to submit their research publications to the open access, externally-accessible, Leicester Research Archive (LRA) via the internal Integrated Research Information System (IRIS). Research students are required to submit an e-copy of their thesis to LRA in order to graduate.

[29] https://osc.hul.harvard.edu/hbspolicy
[30] http://www.princeton.edu/dof/policies/publ/fac/open-access-policy/
[31] http://www2.le.ac.uk/offices/researchsupport/policyandstrategy/open-access/pubpolicy

4.3 PUBLICATION POLICIES OF MAJOR RESEARCH FUNDERS

OA advocacy has impacted OA growth gradually. One of the major reasons for growth can be attributed to major funding agencies' OA policy. The well-known slogan of OA is that *research results out of public funds must be available to public free of costs*. Hence it is evident that OA concept was tied to the funding modes. When one of riders for funding research is that research results must be published as OA, naturally it gives a major impetus to the growth in OA content. Some of the OA policies of funding agencies are discussed in the sections that follow.

4.3.1 IES Mandate

The Institute of Education Sciences (IES), part of the US Department of Education, has an open access mandate for IES-funded research. The mandate functions in the same way as NIH, in that the author's final version of the manuscript must be deposited, and there can be up to a 12-month delay before it is made available. The difference is that deposits go to the Educational Resources Information Center (ERIC) rather than PubMedCentral.

4.3.2 Wellcome Trust (UK) OA Mandate

The Wellcome Trust, an independent charity that funds research to improve human and animal health, is the largest private funder of medical research in the UK. In October, 2005, it became first research funding agency in the world to require open access to all publications resulting from its grants. The Wellcome Trust position statement in support of open and unrestricted access to published research requires that "any research papers that have been accepted for publication in a peer-reviewed journal, and are supported in whole or in part by Wellcome Trust funding, to be deposited into PubMed Central (PMC) or UK PMC, to be made freely available as soon as possible and in any event within six months of the journal publisher's official date of final publication."

4.3.3 The World Bank OA Policy

The World Bank has employed an Open Access policy for its intellectual outputs and knowledge products, effective since July 2012. The policy aims to increase access to information at the World Bank and to make is research as extensively accessible as possible. For the first phase of this policy, the Bank launched a new Open Knowledge Repository and adopted a set of Creative Commons copyright licenses.

4.3.4 UNESCO Open Access Policy

UNESCO adopted an Open Access policy[32] in 2013, which grants access to its digital publications to millions of people. The organization has become the first member of the United Nations to adopt this type of Open Access policy

[32] http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ERI/pdf/oa_policy_rev2.pdf

for its publications. Hundreds of files will be available through a specially launched Open Access Repository with a multilingual interface. All new publications will be released with an open license. UNESCO policy aims increase visibility, accessibility, and rapid distribution of its publications. In addition to adopting open access policy for its own publications UNESCO has been one of key facilitators of open access activities and initiatives. In order to create an enabling policy environment for OA UNESCO published Policy Guidelines for development and promotion of Open Access (Swan, 2012). This publication is intended serve the needs of OA policy development at the government, institutional and funding agency level. The overall objective of the *Policy Guidelines* is to promote Open Access in Member States by facilitating understanding of all relevant issues related to Open Access.

4.3.5 Canadian Institutes of Health Research OA Policy

The Canadian Institutes of Health Research (CIHR) announced an open access policy that took effect in January, 2008. It requires those receiving grant funds from CIHR to "make every effort to ensure" their research works are made accessible to public within six months of publication.

4.4 GOVERNMENT LEVEL MANDATES

4.4.1 UK Government Mandate

Free and open access to publicly-funded research offers significant social and economic benefits. The UK Government declared[33], in line with its overarching commitment to transparency and open data, that it is committed to ensuring that such research should be freely accessible. In June 2012 the report from the (UK) National Working Group on Expanding Access to Published Research Findings (the 'Finch Group') - *Accessibility, sustainability, excellence: how to expand access to research publications* was published. In order to help the implementation of the policy, the Research Councils UK, introduced from April 2013 a new funding mechanism - a block grant to universities and eligible research organizations to cover the cost of article processing charges (APCs). However the UK government policy only includes Gold OA publishing and has come under severe criticism for this as green is often the preferred route to OA.

4.4.2 US Government Mandate

Sustained and persistent support and advocacy for open access finally made the US government to mandate open access for research out of public funds. An official statement from US Office of Science and Technology Policy[34] (OSTP) declared that "'The Obama Administration agrees that citizens deserve easy access to the results of research their tax dollars have paid for." The

[33] http://www.rcuk.ac.uk/RCUK-prod/assets/documents/documents/2005statement.pdf

[34] http://www.whitehouse.gov/sites/default/files/microsites/ostp/ostp_public_access_memo_2013.pdf

Administration sent a memorandum to all federal agencies with research budgets greater than $100 million instructing them to adopt a policy similar to that of the NIH that all taxpayer-funded research must become freely available within 12 months of its publication. The individual agencies have the option to change the embargo period as needed.

4.4.3 European Government Mandate

EU's Research & Innovation funding programme (European Commission)

In July 2012, The European Commission committed[35] to making open access to scientific publications "a general principle of Horizon 2020, the EU's Research & Innovation funding programme for 2014-2020." As of 2014, all articles created with funding from Horizon 2020 will have to be openly accessible and made available to public, either through immediate open access by the publisher (with publication charges possibly suitable for reimbursement by the European Commission); or through an open access repository no later than six months (12 months for articles in the fields of social sciences and humanities) after publication. The goal is for 60% of European publicly-funded research articles to be available under open access by 2016.

In addition, the following major European research funding organizations are among those which have established Open Access mandates or recommendations:

- European Research Council
- France: Inserm (Institut national de la santé et de la recherche medicale) – OA required from 2008
- Germany: Deutsche Forschungsgemeinschaft (DFG)

4.4.4 Canadian Government Mandate

The Canadian government, under the Department of Canadian Heritage, provides funding for the publishing of books, magazines, newspapers, films, music and other cultural industries. The department's mandate is to create *"...national policies and programs that promote Canadian content, foster cultural participation, active citizenship and participation in Canada's civic life, and strengthen connections among Canadians.* It however still does not 'require' that all research published out of government funding must be made Open access but recommends it. Canada has signed the 2013-G8 Science ministers statement that includes a statement on "Expanding Access to Scientific Research Results". An open data pilot launched in 2011. Following this the Government of Canada's next-generation open data portal was launched in June 2013. Open Data portal [data.gc.ca] offers government data in machine readable formats to enable citizens, the private sector, and non-government organizations to leverage it in innovative and value-added ways. The Open Data Pilot is part of the Government of Canada's commitment to open government, which is being pursued along three streams: open data, open

[35] http://ec.europa.eu/research/science-society/index.cfm?fuseaction=public.topic&id=1294&lang=1

information and open dialogue, and aims to drive innovation and economic opportunities for all Canadians.

4.4.5 Indian Government Mandate

Though there is no mandate for open access in India, there is however the National Data Sharing and Accessibility Policy. Important governmental councils such as Indian Council for Agriculture have announced their OA policy and implemented green OA for publications. The data policy of Government of India, ICAR policy and NROER (open educational resources) are discussed below

National Data Policy

The National Data Sharing and Accessibility Policy [NDSAP] aims to provide an enabling provision and platform for proactive and open access to the data generated by various Government of India entities. The objective of this policy is to facilitate access to Government of India owned shareable data (along with its usage information) in machine readable form through a wide area network all over the country in a periodically updatable manner, within the framework of various related policies, acts and rules of Government of India, thereby permitting a wider accessibility and usage by public. The National Data Sharing and Accessibility Policy applies to all data and information created, generated, collected and archived using public funds provided by Government of India directly or through authorized agencies by various Ministries/Departments/Organizations/Agencies and Autonomous bodies.

Indian Council of Agricultural Research (ICAR)

ICAR is a research council under the federal government. Each ICAR institute is mandated to setup an Open Access Institutional Repository. ICAR shall setup a central harvester to harvest the metadata and full-text of all the records from all the OA repositories of the ICAR institutes for one stop access to all the agricultural knowledge generated in ICAR. Metadata and resources are licensed for use, re-use and sharing for academic and research purposes. Commercial and other reuse requires written permission. All publications viz., research articles, popular articles, monographs, catalogues, conference proceedings, success stories, case studies, annual reports, newsletters, pamphlets, brochures, bulletins, summary of the completed projects, speeches, and other grey literatures available with the institutes are to be placed under Open Access. The institutes are free to place their unpublished reports in their open access repository. The authors of the scholarly articles produced from the research conducted at the ICAR institutes have to deposit immediately the final authors version manuscripts of papers accepted for publication (pre-prints and post-prints) in the institute's Open Access repository. Scientists and other research personnel of the ICAR working in all ICAR institutes or elsewhere are encouraged to publish their research work with publishers which allow self- archiving in Open Access Institutional Repositories.

National Repository of Open Education Resources (NROER)

NROER[36] was launched in 2013. NROER aims to offer "resources for all school subjects and grades in multiple languages. The resources are available in the form of concept maps, videos, audio clips, talking books, multimedia, learning objects, photographs, diagrams, charts, articles, and textbooks

4.4.6 Argentinian Government Mandate

The Argentine Senate unanimously passed a law establishing the institutions of the National System of Science and Technology that received funding from the National State should create institutional digital repositories using FOSS. According to the law, the open access model allows users to read, download, copy, distribute, print, search, or link to the full texts of scientific papers and use them for legitimate purposes related to scientific research, education management or public policy, free and without other economic, legal or techniques involving the Internet itself barriers. The Act also asks for mandatory publication of primary research data after 5 years of collection that can be used by other researchers.

4.5 THESES MANDATES

When compared to research publications populating repositories with theses found consensus without insurmountable issues of copyright and IPR. The audience for the thesis mandate comprises of graduate students within a college or institute or university setting. Usually the mandate states that the researcher must deposit a copy of the thesis from research work in the institutional repository giving non-exclusive rights to the university to disseminate its contents. Almost all of the mandates are very short, specifying only the kind of items to be deposited (including Master's theses, PhD dissertations, or both).

Thesis mandates of US Universities:

- Virginia Polytechnic Institute and State University
- Georgia State University
- Brandeis University
- San Jose State University
- Oregon State University
- Kansas State University
- University of Tennessee
- UT Graduate School of Biomedical Sciences at Houston
- California Institute of Technology
- University of Illinois at Urbana-Champaign
- University of Tennessee
- University of Florida

[36] http://nroer.gov.in/home/

Thesis mandates of UK Universities:

- University of Southampton
- Loughborough University
- University of Nottingham
- University of Sussex
- Brunel University
- University of Glasgow

4.5.1 Shodhganga: A Reservoir of Indian Theses

The UGC Notification (Minimum Standards & Procedure for Award of M.Phil. / Ph.D Degree, Regulation, 2009) dated 1st June 2009 mandates submission of electronic version of theses and dissertations by the researchers in universities with an aim to facilitate open access to Indian theses and dissertations to the academic community world-wide. Online availability of electronic theses through centrally-maintained digital repositories, not only ensure easy access and archiving of Indian doctoral theses but will also help in raising the standard and quality of research. As per the Regulation, the responsibility of hosting, maintaining and making the digital repository of Indian Electronic Theses and Dissertation (called "Shodhganga"[37]), accessible to all institutions and universities, is assigned to the INFLIBNET Centre.

4.6 ROARMAP

The **Registry of Open Access Repositories Mandatory Archiving Policies** (ROARMAP) is a searchable global registry registering the development of open-access mandates approved by universities, research institutions and research funders that need researchers to provide open access to their peer-reviewed research article output by uploading it in an open access repository. ROARMAP was created by EPrints at University of Southampton in 2003. It indexes the world's institutional, funding agencies and governmental OA mandates. It also includes the Open Access Scholarly Information Sourcebook (OASIS) as well as EnablingOpenScholarship (EOS) graphs the quarterly outcome.

4.7 SHERPA/JULIET – RESEARCH FUNDERS' OPEN ACCESS POLICIES

Sherpa/Juliet[38] is a principal service under the SHERPA initiative that provides information on funders' open access policies. It works as an advisory service for academic researchers who can verify what the grants conditions are regarding compliance to open access. Juliet complements Romeo service under the Sherpa, which provides information on publishers' copyright contracts and

[37] http://shodhganga.inflibnet.ac.in/
[38] http://www.sherpa.ac.uk/juliet/

guides authors regarding what are the available provisions legally to publish information resources.

4.8 DATA ARCHIVING POLICIES

Much of the focus in open access has been on published research articles or what is referred as 'scholarly communication'. However the data based on which such scholarly articles are written is also important. While many articles may have been made open access, the data behind them is often not. This leads to the question whether there can be open data in the same way as open access information resources. Funding organizations are also gradually demanding grantees to deposit their raw research data in suitable public archives or stores, in order to enable the authentication of outputs and further work and interpretations by other researchers. There several issues in achieving open data repositories and archives and many organizations are already making statements with regards to data.

The Open Data Foundation [www.opendatafoundation.org] provides a platform for its members of different communities to work on standards and tools that will facilitate visibility and re-use of data. The stated aim of the foundation is to aide decision-making in many fields of research and policy making using open data sets.

Open data is the idea that certain data should be freely available to everyone to use and republish as they wish, without restrictions from copyright, patents or other mechanisms of control. The goals of the open data movement are similar to those of other "Open" movements such as open source, open hardware, open content, and open access. The philosophy behind open data has been long established, but the term "open data" itself is recent, gaining popularity with the rise of the Internet and World Wide Web and, especially, with the launch of open-data government initiatives such as Data.gov and Data.gov.uk.(http://en.wikipedia.org/wiki/Open_data)

Data.gov is a U.S. government website launched in late May 2009. According to its website, "The purpose of Data.gov is to increase public access to high value, machine readable datasets generated by the Executive Branch of the Federal Government." The site seeks to become "a repository for all the information the government collects". The site would publish to the public any data that is not private or restricted for national security reasons.(http://bits.blogs.nytimes.com..)

Data.gov.uk is a UK Government project to make available non-personal UK government data as open data. It was launched January 2010. As of January 2013 it contained over 9,000 data sets. All data is non-personal and provided in a format that allows it to be reused. data.gov.uk intends to increase the use of Linked Data standards, to allow people to provide data to data.gov.uk in a way that allows for flexible and easy reuse

Data.gov.in (Data Portal of India) is a platform for single-point access to datasets and apps published by Ministries/Departments/Organizations of the Government of India. It combines and expands the best features of India's "India.gov.in" and the U.S. government's Data.gov project.

4.9 LET US SUM UP

In this unit open access policies and mandates were discussed. A worldwide perspective of the mandating is provided. Institutional polices that lead to repositories of scholarly articles are highlighted. Some international mandates of funding agencies are discussed. Data archiving policies are discussed.

4.10 CHECK YOUR PROGRESS

1. Describe institutional open access mandates and policies.

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2. What are government level intervention in OA mandates?

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3. How does funding agency mandating for OA foster it? Give examples of OA mandates of funding agencies.

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4. What are the policies and initiative regarding open data?

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☞ **Activity I**

Build an argument why mandating Open Access is necessary?

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UNIT 5 OPEN ACCESS ISSUES AND CHALLENGES

Structure

5.0 Objectives
5.1 Introduction
5.2 Issues related to Open Access
    5.2.1 Issues of Quality
    5.2.2 Notion of Ranked Journals and Prestige
    5.2.3 Lack of Awareness of Open Access
    5.2.4 Sustenance and Financial Matter
    5.2.5 Copyright and Licensing
    5.2.6 Preservation
5.3 Issues for Developing Countries
5.4 Let Us Sum Up
5.5 Check Your Progress
5.6 References

5.0 OBJECTIVES

After reading this unit, you will be able to:

- Discuss various issues and challenges in OA related to awareness, quality, payment and sustenance.

5.1 INTRODUCTION

Open Access information refers to free availability of scholarly resources in Internet, mostly journal articles. Users can not only consult them for free but can also download, copy, print and distribute them. There are several advantages to this model. But there exist many issues and challenges that hinder the progress of OA and raise questions about its feasibility. There are several issues related to the quality of the OA journals, regarding their economic sustainability, funding etc.

This Unit highlights several issues and challenges of OA. The outcome is awareness of issues, challenges and noting some successful, sustained practical open access publishing efforts. The issues of OA are in multidimensional in nature and a multipronged approach of mandates, policies, funding and implementations is needed to overcome the challenges. At the end of this unit the reader will know issues and challenges enroute to achieving Open access.

5.2 ISSUES RELATED TO OPEN ACCESS

Awareness of OA and advocacy has gathered momentum with significant mandates and policies being framed at governmental as well as institutional levels in just past two years (2012-13). However, there are several issues that

have to be addressed before open access can be fully implemented. A fundamental issue is that academics are simply used to publishing being taken care of by publishers over the years while they are only concerned about publishing count for career advancement. OA brings about a paradigmatic shift in mode of publishing. It puts the onus on authors to choose how they make their research publication accessible to users. Open access has an ideological basis in 'knowledge for all' by giving access to resources freely and with no legal or technological barriers.

Traditional commercial journal publishers have the advantage of being much older than OA journals which when compared to former are quite recent. Traditional journal publishers are an organized sector with established workflows for soliciting content, for peer reviewing, publishing, promoting and archiving content. By virtue of their experience in publishing the journal publishers have managed to establish notions of 'value' and 'quality' around the journals. In contrast to this OA journals are more recent and will take some time to establish the same quality assurance as the commercial journal publishers. However it is important to study and note that the parameters of quality associated with 'ranked' journals originate from academia who are the generators, peers and also the consumers of knowledge. Hence if OA journals could leverage the expertise to complete the cycle of knowledge they could very well stake their claim to 'quality' content.

In the context of the above discussion, there exist several open access challenges and issues.

5.2.1 Issues of Quality

Commercially published journals enjoy the status of top ranked journals and the concept of quality is associated with them. It is true that these journals adopt a rigorous peer review process through which they attempt to ensure that only high quality papers are published. By sheer period of time they have existed the processes are well documented, promoted and are accepted by the research and academic communities. Contrary to this OA journals are new. Establishing the same workflows will take time. As already stated it is matter of time only that will credit OA journals with the same authenticity as that of commercially published journals.

Peer review as a process of quality assurance is well accepted in academic publishing. The assurance out experience and expertise of peers is the benchmark used to declare that content of journal is of very high quality and of research value. Though, OA journals also have peer review process. (Abadal, 2012).

5.2.2 Notion of Ranked Journals and Prestige

Journal ranking is a measure to show the comparative standing of journal in a domain. It is deemed also as an indicator of how difficult it is for a publication to make it to higher ranked journals. Impact Factor (IF) is computed mainly by the number of citations received by articles in journals. IF has been most favoured measure to assess performance of journals as well as that of the authors publishing in journals. There have been several arguments against the

way journals' impact factors have been calculated and hence the arguments that IF need not necessarily be the only factor to judge scholarship. Peter Suber (2009) opined that the dominance of IFs is an impediment to the growth and acceptance of OA journals. Further that '...new journals can be excellent from beginning, but even the best journal cannot be prestigious from its very birth'.

The issue of prestige is perhaps the toughest one for OA journals to address. OA journals' editorial committees have strived to include the best of researchers, scientists and academics as reviewers to assure quality. Some renowned scientists have voluntarily quit being on editorial committees of certain profit making journals after protesting the high price of publication that made journals out of reach of the common academicians. Many of these have joined editorial boards of journals from professional associations and some even back the OA journals. Hence OA journals will gain both by the expertise of committed OA scientists and researchers. According to Peter Suber (2009) it will take a while for OA journals to gain the respectability of ranked journals, therefore, the only short cut available maybe to adopt the prestigious ranked journals as OA journals.

5.2.3 Lack of Awareness of Open Access

Open access movement is by and for academicians, scientists and researchers. It is however ironic that many members of this very community worldwide are not aware of what 'open access' is. According to a study conducted by the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG) in 2005, many researchers do not know what Open Access means and due to their ignorance have not included this form of publishing into their normal publications. A number of authors also believe that an Open Access publication in an institutional repository will not be given the similar acknowledgment as a publication in scholarly journals.

It is often the case that authors are impressed with the philosophy and significance of Open access. Even then they do not choose OA journals to publish their research articles. One of the main reasons is that the higher level administrators of their organizations, institutions and universities are not themselves aware of the Open access. Hence 'journal ranking' is still taken as the only indicator of quality of publications. Hence for performance assessment, they still go by number of publications in ranked journals as the touchstone of quality. Institutes and administrators of those show off their productivity in terms 'how' many such publications their institutes contributed in top ranked journals.

5.2.4 Sustenance and Financial Matter

The greatest challenge involved in the setting up of a new journal is always to get it established. In the case of OA journals the widespread misconception is that they are free and hence have no financial implications. While the OA content itself is meant to be free for access, the production of such journals have costs attached to them.

Gold OA usually sustains through charging authors publication fee. Such fees are often challenged by authors who feel that despite contributing valuable research contents to journals they are still required to pay to get published. In the traditional commercial journal publication authors were not required to pay for publishing their articles. Such journals recovered publication costs and made profit by promoting their titles and soliciting subscriptions.

For both traditional and Open Access publications, start-up financial assistance is essential. It is true for any journal but more for OA journals as they do not intend to make money from subscriptions. Often journals are supported by professional associations, research foundations and institutes. For instance the New Journal of Physics (NJP) was supported by the Deutsche Physikalische Gesellschaft and the Institute of Physics. The German Research Foundation (Deutsche Forschungsgemeinschaft) has formal grants for scholars who seek support towards publication costs. The Max Planck Society provides financial assistance for publications in the NJP from its central funds. The Joint Information Systems Committee (JISC) also provides financial assistance for publications by British authors. In addition, universities, university libraries and research institutes offer support for publication cost as well.

Business Models for Sustainability of OA

The concept of sustenance is directly related to profit. There is hence a disbelief regarding sustenance of OA, the question being if it does not sell how will sustain?' Notwithstanding the other belief that 'if something is free it will be of low quality'. To defy such questions and doubts it is useful to note that there are exemplary OA access publishers who have shown that they are open access and have managed to have business models that have succeeded in securing self-sustenance. A case study shows very popular OA journals and publishers making profits such as BioMed Central, Hindawi, Medknow, Optics Express, PLoS ONE.[http://www.upf.edu....challenges-for-open-access-journ-sustainability.html]

a) BioMed Central (http://www.biomedcentral.com/)

It is a British group founded in early 2000 and publishing some 220 open access journals in the areas of biology and medicine. It was purchased by Springer, the second scientific publisher in the world, in 2008. BioMed Central charges article processing charge (APC) but has also tiers of different payment modes. For example, they have institutional membership that allows an institution to pay a lumpsum annually in advance, for publishing articles of their scientists and researchers and making it available as OA content.

b) Hindawi Publishing Corporation (http://www.hindawi.com/)

Hindawi was founded in 1997 in Cairo, Egypt, as a traditional commercial publisher specialized in mathematics and engineering, but quickly added biomedicine too. This is a particular case of transition from the subscription model to open access, and has been the object of some specific studies (Loy, 2011). It is currently publishing more than 300 journals. Hindawi seeks to sustain through APC. It charges institutions annual memberships or prepaid

memberships so that articles by authors of those member institutes are published as OA.

c) PLoS (http://www.plos.org)

It published PLoS Biology in 2003 and currently has several titles that are very well situated in impact indexes. It only accepts 10% of the submitted articles. PLoS showed profits from 2012 onwards. Its sustenance is through APC.

Consortium Approach to OA

Library consortia were formed in order to subscribe to content with consortium price rather than individual libraries ordering copies of the same titles. This arrangement was perceived to be a win-win situation for libraries as well as publishers. In a similar way open access consortia would lead to win-win situation between OA authors and OA publishers that need to sustain themselves. A salient example is the SCOAP3 (Sponsoring Consortium for Open Access Publishing in Particle Physics) consortium in high energy physics. "The SCOAP3 consortium is a collection of institutions, research laboratories and scholarly societies which, together with national research funders, are to pay fees to the publishers of journals in high energy physics in return for making the entire contents of those journals Open Access" (www.openoasis.org).

Funding Channels

OA focus is on two issues; one to make content freely accessible and usable and second one is that the authors get to retain their rights over the content they produce. However to achieve these goals OA journals have to find the financial support or they should strive to be self-sustained. Developing business models around a commodity that is to be freely 'sold' is indeed a difficult proposition. Villarroya et al. (2012) provide a complete bibliographic update regarding business models in open access. This article highlights the importance of analyzing beyond the funding sources and taking into account other economic and funding components as well as the operative and strategic dimensions of the publishing house. This discussion depicts the different funding channels for open access journals as below:

i. Fees (payment for publishing)

The author has to pay a charge for publishing their scholarly work. The cost of publishing an article can range between 600 and 2,500 €, which can vary depending upon the journal and some characteristics of the article. In most cases this amount is paid by the author's institution or through project funding. In other scenarios, these publishing charges are directly expected from the institution the author belongs to. In such cases usually it is an understanding between the OA publishers and institution themselves where the institution agrees to pay publication fee. For instance, BioMedCentral has institutional membership. More than 90% of revenues in this kind of journals is from institutional funds.

ii. External subsidies

In this case, there is an essential economic influence external to the publishing action. It might come from public administrations, scientific societies or users' consortia, among others.

a) Public funding

In this model, the costs are directly and entirely supported by the public administration (university faculties and departments, research centers, government or other types of public organisms) that funds the publishing activity of the journals. This channel is very much extended in Humanities and Social Sciences. A clear example would be that of Revistas CSIC, which has the economic support of the Spanish research organization. [http://revistas.csic.es/]

b) Membership fees

In order to meet the cost of publishing, generally authors are asked to pay an open access fee or article-processing charge (APC) per publication. This model tends to remove this burden from the individual authors, by incorporating Open Access Membership Program. The Membership Program enables academic and research institutions, societies, groups, funders and corporations to actively support open access in scholarly publishing, and help ensure the most widespread dissemination of the work published by their researchers or members. Depending on the type of Membership, member institutions cover some or all of the publication cost for their individual researchers.(http://www.springeropen.com/libraries)

c) Users' OA consortia

Those libraries subscribing to journals of a specific scientific discipline together with agencies supporting research, fund publishing houses so that they publish journals and distribute them freely to the authors. A particular example is that of the SCOAP3 (Sponsoring Consortium for Open Access in Particle Physics Publishing) project, a consortium of research centers, funding agencies and libraries that propose an economic model to transform all scientific journals to open access in the areas of particle physics. They have already received worldwide support and specially in the US.

iii. Advertising

Advertising can be one way of fund generation. Several journals carry advertisement. Nevertheless, the percentage of revenues obtained through this path is mostly low.

iv. Institutional subscriptions

It refers to the annual contributions to publishers by universities, research centers, etc., so that, in return, the authors belonging to the paying institution enjoy important discounts to publish their articles: for instance, Hindawi has 25 subscribed institutions providing 2% of its revenues (Loy, 2011).

v. Services sales

This channel refers to the benefits from prints, offprints, etc. In Hindawi, this

source of revenues means 9% of the total (Loy, 2011).

It is evident from the above that there are several channels of funding apart from the widespread belief the Gold OA requires authors to pay. While it is true that a payment is required for publication costs it is not necessary that the authors only is required to pay. As discussed above other modes of sustenance could be explored.

5.2.5 Copyright and licensing

Open access content providers are more focused on making content open but often do not specify copyright and licensing on the OA content. It is important to study what types of licensing will set free content in the true sense. It is also important that the copyright ensures right to producer of knowledge resources and not to middlemen or providers only. In any case what the authors or such content producers want to do with their content and under what licensing they want to provide content should ideally be their choice.

There are very few OA journals listed in DOAJ that use some kind of CC license. There is main divide between Gratis and libre OA. Gratis OA removes price barriers but not permission barriers. Even though it allows content free of charge it may not be free from copyright or licensing restrictions. It provides users no-fee access for reading but not the reuse rights. They may be allowed to use it to the extent that fair use or the local equivalent laws permit. On the other hand, libre OA not only removes price barriers but also some permission barriers. It lifts some copyright and licensing restrictions and certifies at least some uses beyond fair use.

The first step is for authors towards OA is to retain rights over their work, who utmost should only grant non-exclusive rights when they are required to sign copyright forms. Awareness of types of licensing and restrictions will help authors choose the license pertinent for their purpose. Authors can involve libre OA to their work by affirmatively waiving some of their rights. Creative Commons (CC) licenses [creativecommons.org] are designed to help the authors waive some rights without losing their ability to enforce rights that they wish to retain. There are many levels of rights that can be assigned using CC licenses. To enable access under libre OA, CC provides CC-BY licenses which waives all rights except the right of attribution and the CC-BY-NC waives all rights except the right of attribution and the right to block or control commercial reuse. It is the right of authors to make a choice of whatever license they find appropriate for their content. After making the choice the authors should make sure that the content is released with explicit mention of what licensing is used.

5.2.6 Preservation

Authors fear that their ideas and work will be lost and institutions fear that they will not be accessing the most illustrious information. Preservation is an issue often connected with e-published content. The fear of whether content will be lost over time due technological overhauls is widespread (Rothenberg, 1999]. Commercial publishers of journals have preservation policies and also attached are various subscription costs when they allow access to preserved back

volumes. OA journals and repositories need to assure prospective authors and OA contributors that their content will be time proofed. Fortunately preservation options are neither expensive or difficult. Several of the best options are free of charge, both for the journals and for users who want to access the content. LOCKSS (OA at least for the hosting institutions) and the DOAJ are the two very popular preservation system (OA for all). Both are free of charge for the journals. Another free and stable option is to deposit the digital content with a trusted, financially secure, and well-equipped library. For example, BioMed Central has been depositing its digital output since 2003 in the National Library of the Netherlands. The DOAJ preservation program offers to preserve journal content. National libraries and university libraries with digital preservation programs could render a great service by opening their vaults to peer-reviewed ejournals (OA and TA). BioMed Central and the Public Library of Science routinely deposit their articles in PubMed Central.

5.3 ISSUES FOR DEVELOPING COUNTRIES

Many developing countries still depend on paper format articles in journals so the changeover from print to electronic form requires to be assessed on a local basis. Open access presumes electronic content to be delivered over internet though it could be traditional paper based environment but it would be very cumbersome, slow and difficult to replicate. The cost of open access (in its Gold form) is very high for many in developing countries and authors cannot often afford to pay publication fee. The onus is on the publishers to find alternative arrangements for these authors in developing countries. Many publishers, including Elsevier, offer alternative pricing options to developing countries. Countries that are part of the Research4Life program can benefit from free to low-cost access to subscription journals and in many cases reduced or free open-access publishing. Humanitarian programs are a good way to initiate access to journals in these countries, but ultimately market-based models (whether gold OA or subscriptions) will be most effective in ensuring that services from publishers are tailored to fit the local needs of funders, institutions and researchers.

5.4 LET US SUM UP

Open access movement is decades old but there are various issues and challenges on the way to realizing OA. This discussion highlighted the issues and challenges in Open access. Some initiatives which successfully addressed the issues such as sustenance have been discussed. Issues that concern OA in developing countries have also been highlighted.

☞ **Activity I**

Enlist the issues in Open access and discuss remedies with respect each.

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As an author reflect upon whether Gratis OA is sufficient or Libre OA is necessary. Is this distinction an issue that needs to be addressed and how?

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5.5 CHECK YOUR PROGRESS

1. What are issues in sustenance of OA? How can these issues be addressed?

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2. What are issues in licensing and copyright that prevent content from going OA?

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