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Chapter

Overview of the Principles and Practices of Open Access Publishing

Omer Hassan Abdelrahman

Abstract

This chapter provides an overview of the principles and practices of open access (OA) publishing. It discusses various aspects of this emerging mode of scholarly publishing, including the definition of Open Access and its different types and models in addition to its growth and impact. The chapter also highlights the implications of open access publishing on copyright issues and how creative commons licenses are used to deal with this issue. The main focus of the chapter is to outline and discuss the different advantages and benefits of open access publishing, refuting a number of myths and misconceptions about OA publishing, and to highlight how authors and researchers can benefit from publishing their intellectual works in an open access channel. The chapter adopts the literature review as a methodology and a tool of data collection.

Keywords: open access publishing, types of open access publishing, open access and copyright, creative commons licenses, benefits of open access publishing

1. Introduction

Proprietary or "paywall" publishing mode dominated the scholarly world throughout the late 20th and early 21st centuries. This is for-profit commercial publishing where publishers make their returns by the collection of research of scholars, application of peer-review, offering of editorial and formatting services, the collation of this research into subject-specific journals, and then selling subscription-based access of these works to academic libraries, scholarly societies and individual researchers. Access to individual articles on a short-term basis (typically 24 hours) is also supplied on a pay-for-use model. Commercial publishers also provide publishing facilities for books and monographs, although these have been on the decline [1]. The advent and wide use of the internet have strongly affected the process of scholarly publishing worldwide. A new mode of publication has emerged and widely employed by scholars and researchers. This new mode is Open Access (OA) publishing of scholarly work. This chapter will discuss OA focusing on its benefits to all the stakeholders and presenting other aspects of this new way of scholarly communication including its definition, types, development, its pros and cons and the myths and misconceptions surrounding it.

2. Definition and types of open access

2.1 Definition

Open access refers to free, unrestricted online access to research outputs such as journal articles and books. OA content is open to all, with no access fees. Open access is more than free access. When people think about open access (OA), they immediately relate it with free access. Providing reuse rights is another important asset of open access. Open access in its purest form is "digital, online, free of charge, and free of most copyright and licensing restrictions". Open access entails a new model of publishing wherein the author, supported by an institution or funding agency, pays the publishing costs and owns the copyright. The publisher manages the peer review process and publishes directly to the Internet, where content is accessible free of charge to the public. Open access publishers take full advantage of available computing technology to streamline the publishing process [2]. Open Access aims to provide users with information that is unconstrained by the motive of financial gain or profits [3]. Furthermore, 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" [4, 5].

In subscription-based publishing, authors are required to transfer the copyright of their works to the publisher who makes profits via the dissemination and reproduction of the works. Contrary to this, with OA publishing, authors can retain copyright to their work and license its reproduction to the publisher. The most commons licenses used in open access publishing are the Creative Commons (CC) licenses. The widely used Creative Commons By Attribution (CC BY) license is one of the most permissive, only requiring attribution to be allowed to use the material (and allowing derivations and commercial use). A range of more restrictive creative commons licenses are also used. More rarely, some of the smaller academic journals use custom open access licenses. Some publishers (e.g. Elsevier) use "author nominal copyright" for OA articles, where the author retains copyright in name only and all rights are transferred to the publisher [6].

2.2 Brief background of the development of the OA movement

The OA movement can be said to have started in the year 1971 with Project Gutenburg Founded by Michael Hart [7]. This project is now providing free public domain text files with more than 60,000 eBooks. However, the modern open access movement began in the 1990s with the wide availability and access to the World Wide Web and online publishing became the norm. Starting in the early years of the 21st century there was a significant momentum towards making access to published research free of charge to scholars and universities through the Open Access movement. Three pioneering initiatives laid the foundation for the ideas and principles of OA movement. These are The Budapest Open Access Initiative on Feb. 14, 2002, The Bethesda Statement on Open Access Publishing on Apr. 11, 2003, and The Berlin Declaration on Open Access on Oct. 22, 2002 [8]. The Budapest Open Access Initiative was worked out during the human rights proponents gathering for the Open Society Institute meeting in December 2001. During the meetings a number of participants suggested that a global support is needed to create open information access within the scientific community. A draft was created during that meeting, and formalized two months later, in February 2002 as the Budapest Initiative. In April 2003, the United States and the United Kingdom based biomedical community

convened and drafted a set of publishing principles guiding scientific dissemination. These principles were finalized and published in June 2003 as the Bethesda Statement. In October 2003, the European scientific community called for support by European researchers to engage in Open Access, with the Berlin Declaration [9].

Many stakeholders contributed to building institutions and resources for shaping up the global OA movements. Some of the institutions emerged during the first two decades of the third millennium are namely, Public Library of Science (PLOS), BioMed Central (BMC) – publishers of peer-reviewed OA journals, the Scholarly Publishing and Academic Resources Coalition (SPARC), and Open Access Scholarly Publishers Association (OASPA) [10]. In addition to the previously mentioned (BBB); the Budapest, Berlin and Bethesda OA declarations or statements got signed by the scholarly communities, particularly by the funding agencies, research councils, learned societies, institutions, universities, and scientists for the OA dissemination of public funded research.

The latest strong support for the OA movement is represented by what is known as PLAN S where the s could stand for "science, or shock" but "speed" is the most relevant where it refers to speed with the transition to direct and open access [11]. Plan S is an initiative for Open Access publishing that was launched in September 2018. The plan is supported by cOAlition S, an international consortium of research funders. Plan S requires that, from 2021, scientific publications that result from research funded by public grants must be published in compliance with Open Access journals or platforms.

2.3 Types of open access

There are three basic types of open access publishing. These are Green Open Access, Gold Open Access, and Hybrid Open Access [12].

2.3.1 Green open access

Green Open access publishing refers to the self-archiving of published or pre-publication works for free public use. Authors provide access to preprints or post-prints of their works with publisher permission in an institutional or disciplinary digital repository. Thus, Green open access refers to the practice of republishing a publication in an open access institutional or disciplinary repository. In this case the publication is first published in a traditional, closed-access journal. These materials are then made available to all via the internet, without restrictions or pay walls. In the "Green Route" of open access, institutions create repositories for their own research which is made open after an appropriate embargo period agreed upon with commercial publishers. As such Green Open Access generally refers to the post-print of an article [1]. In this context, there are three basic version types that can be self-archived in repositories: These are:

- Pre-Prints – The author's copy of article before it has been reviewed by the publisher, or pre-reviewed.

- Post-Prints – The author's copy of article after it has been reviewed and corrected, but before the publisher has formatted it for publication, or post-reviewed.

- Publisher's Version – The version that is formatted and appears in print or online.

2.3.2 Gold open access

Gold open access publishing refers to works published in an open access journal and accessed via the journal or publisher's website. The Gold Route involves publishing in an open access journal, which then provides the dissemination and curation services in the same way as current proprietary publishers. This form of publishing is funded through government, society or institutional grants, and sometimes through charging authors a fee for deposit, known as an article processing charge (APC). However, the latter practice is implemented by a minority of open access journals and most journals do not charge any fees at all [13].

2.3.3 Hybrid open access

Hybrid open access publishing is mostly associated with gold open access. It takes place in journals that offer authors the option of making their articles open access, for a fee. Hybrid journals are subscription-based journals that make individual articles openly available in return for a fee. The hybrid route has been suggested as a means for traditional publishers to make a transition to open access publishing without significantly decreasing revenue, by charging fees for open access articles equal to the average subscription revenue per article. In the Hybrid Open Access publishing type, sometimes called Paid Open Access, the fee is paid to the publisher or journal by the author, the author's organization, or the research funder [14, 15].

There are a number of other variations of these major types of open access publishing types. These include the Diamond Open access and the Platinum Open Access. The Diamond Open access journals provide scholarly publishing free of fees and access charges. They have direct or indirect subsidies from institutions like universities, research centres, government agencies etc. Whereas the Platinum model of open access publishing refers to the situation in which journals are published directly by the research or funding institutions themselves.

In Gold and Hybrid OA models, publishers usually publish articles with Creative Commons (CC) licenses. Open Access does not imply there is no copyright attached to the open document; rather, in most cases the Creative Commons Attribution License (CCAL) model is used. Founded in 2001, the CCAL states that users are free to share, adapt, or use the work as long as they give attribution in the manner specified by the author or licensor [16]. The Attribution License is one of six codes under the Creative Commons License. Thus Open Access journals do not charge subscription or pay-per-view fees compared to traditional journals. The authors, their institutions, or the research funders pay the "open access" fee to make it free to readers; authors retain copyright for the article and most permission barriers are removed [17, 18].

There is a controversial type of open access called the Bronze Open Access. In the Bronze model no open access Fee is paid but the publisher chooses to make a publication freely available to read. Many Open Access advocates and research funders would not regard Bronze as truly Open Access because the publisher can stop the publications being freely available at any time, whereas genuinely Open Access publications have a specific licence that means the publication is irrevocably open access and the terms of use and reuse are clearly stated [19].

Although bronze OA lacks a license, it is temporarily free to read only on the publisher's website, and Publishers can deny access to the majority of open-access articles at their discretion [20].

2.3.4 Gratis vs. libre open access

These two terms are interlinked to the basic three types of open access. But in contrast to Gold, Green and Hybrid OA, they do not describe forms of publication,

but define the attributes of an article published in OA. Therefore an article might be described jointly as Gratis Open Access, or Gratis Gold or Green Open Access, etc. [21]. Gratis Open Access means free of charge Open Access. This means that price barriers alone are removed from access to the publication. It allows no uses beyond what is considered legitimate under copyright and fair use. Libre Open Access, on the other hand, means free of charge and free of at least some permission barriers. This means that the article is free for some kinds of further use and reuse, and presupposes some kind of open licence that allows types of uses that are not permitted by default [22].

3. Advantages and disadvantages of open access publishing

3.1 Advantages and benefits

Open access publishing has a plethora of advantages for authors, institutions and readers across all sections of society. These advantages can be summarised as follows [8, 23]:

i. Increased accessibility of research work by users and other researchers. This leads to the enhancement and acceleration of the research cycle when results are available on an Open Access basis, where work is published, read, cited and then built upon by other researchers.

ii. Increased visibility for authors and institutions, resulting in a higher impact of the research. There are no financial or copyright barriers so the readership continues to increase, enhancing the visibility and impact of the author's Work. There is a greater chance of research results being seen when scientific journals are free to read and use, thus influencing the thinking of others. This state of affairs results in the increase of the academic's impact factor.

iii. Immediacy and Shorter publication times compared to non-open access publishing. Open access publishing takes shorter period of time from the date of submission of an article to a journal to its publication date.

iv. Increased citations. A number of studies revealed that open access publishing leads to a greater number of citations. There is accumulating evidence showing that open access research articles are cited more often than those closed access articles. The studies reveal that across most subject areas there is at least a twofold increase in citation rate and that in some subject areas it is even higher [24].

v. Removing of price barriers. Open access removes price barriers and that openly accessible works are often full-text indexed, helping potential readers easily locate a work using a search engine, and access the work without being turned away by pay walls.

vi. Contribution to author royalties. Some authors found that widespread dissemination of their openly accessible works stimulates demand for print copies of their works, contributing to royalties for these authors [23].

Those seeking wider visibility of their research work, higher impact for their research, less publication cost, and a shorter period of time from the date of submission to the publication date, should opt for publication in an OA journal [25].

3.2 Disadvantages

The most prominent and prevalent disadvantage of OA publishing is the emergence of predatory publishers and predatory journals. A predatory journal will not maintain the academic standards that are expected of a reputable scientific journal. The objective of the predatory journal is to make money for the owners without concern for the quality of the research published. A predatory journal will pretend to follow the essential editorial processes required for authentic academic publishing, but will not so do. Thus the quality of the research published in a predatory journal is likely to be low. Predatory journals can be identified by a number of characteristics, the most important of which may be the fact that they tend to market themselves through intensive e-mailing to invite selective victims who might otherwise have difficulty in having their research published in reputable journals. This lead to the development of what has become known as the predatory journal, which for a fee paid by the author delivers an un-scrutinised and unedited piece of writing purporting to be a high quality report on a piece of rigorously conducted scientific research. These journals are then presented to the public as Open Access journals [8, 26, 27].

Another claimed disadvantage of Open Access publishing is that some OA journals do not have high impact factors and this is considered detrimental to a researcher, though this is questionable as many OA journals are new and have not yet received their first impact factor (IF). However, high-IF OA journals are available in a variety of fields [25].

4. Myths and misconceptions about OA

There are a number of myths and misconceptions surrounding open access publishing mode. Some of the most common myths include the following:

i. Myth 1: “open access journals are not peer reviewed”.

ii. Myth 2: “all open journals charge publication fees”.

iii. Myth 3: “authors must choose between prestigious publication and Open Access publication”.

iv. Myth 4: “post-print archiving violates copyright”.

v. Myth 5: “OA invites plagiarism.”

vi. Myth 6: “OA helps readers but not authors.”

vii. Myth 7: “All OA is gratis OA.”

Below is a discussion of these myth and misconceptions about open access publishing with points that help dispel them.

4.1 Myth 1: “open access journals are not peer reviewed”

Studies show that the majority of OA journals are peer-reviewed with the same or higher standards as traditional scholarly journals. However, it takes time for a new OA journal to build a high impact factor [18, 28]. Indexing of a journal in a major

citation database is also considered a reflection of a journal's quality. Indexing newly established OA journals in major citation databases is complex and time-consuming, furthering existing misconceptions of quality [8]. This myth entails that Open access journals are intrinsically low in quality. But as early as 2004, it was found that in every field of the sciences there was at least one open access title that ranked at or near the top of its field in citation impact. It's quite normal that open access journals can be of high quality and first-rate: the quality of a scholarly journal depends on its authors, editors, and referees, not its business model or access policy [29, 30].

4.2 Myth 2: "all open journals charge publication fees"

There are a number of OA journal business models and a number of OA book business models available. The models include the following options and variations:

- *Author-Pays model*, author pays publishing fee.
- *Research funder subsidies*, funding organisations pay author fees.
- *Institutional membership*, author fees are paid as a lump sum.
- *Publishing support funds*, institutions reserve funds for author fees.
- *Hybrid business model*, journals mix subscription based and author pays content.
- *Community-fee model*, societies fund journals by both subscriptions and membership fees.
- *Institutional subsidies*, institutions support their own university presses.

Charging publication fees in the form of author fees or article processing charges is the best-known business model for open access journals, but it is not the most common. Most peer-reviewed open access journals nowadays charge no fees at all. The Directory of Open Access Journals (DOAJ) [31] provides information about open access journals that do and do not charge fees. It is also well known that most conventional or non-open access journals do charge author-side fees, on top of reader-side subscription fees.

4.3 Myth 3: "Authors must choose between prestigious publication and Open Access publication"

OA is compatible with prestige for two reasons: First, a growing number of OA journals have already earned high levels of prestige, and others are earning it. The second reason is that most pay wall (Toll Access) journals allow OA archiving. When authors retain the right to self-archive, all journals willing to publish their work also allow self-archiving. The current misunderstanding has some negative effects. When scholars know about OA and don't choose it, they are generally not opposed to it; many support it strongly. They are simply giving higher priority to prestige. But because OA is compatible with prestige, authors rarely have to choose. But they have to choose only when a prestigious journal doesn't already permit post print archiving and when it rejects the authors' individualized request for permission. Authors rarely have to choose between them, but to have both at once they will often have to choose to self-archive [32].

4.4 Myth 4: "post-print archiving violates copyright"

Most publishers allow their authors to self-archive their articles in institutional repositories or on their own personal websites. However, conditions and restrictions are frequently imposed. For example, authors are often obliged to observe an embargo period between the publication date and the date on which the document is made openly accessible online. The SHERPA/Romeo Listings provide information on the self-archiving policies of individual publishers. They used to classify publishers in different colours depending on their archiving policies; green publishers let authors archive preprint and post print or publisher's version/PDF, blue publishers let authors archive post print or publisher's version/PDF, yellow publishers let authors archive preprint, and white publishers do not formally support archiving. But they recently stated that they have now retired the Romeo colours, as open access policies have become more complicated and the colours no longer gave a clear overview [33]. Many of those authors, whose publishers do not allow self-archiving, supplement their standard publishing agreements with contract addenda which enable them to provide open access to their work in parallel with publication [34].

4.5 Myth 5: "OA invites plagiarism"

In the early days of the OA movement some authors worried that OA would increase the incentive to plagiarize their work. On the contrary, OA might make plagiarism easier to commit, for people trolling for text to cut and paste. But for the same reason, OA makes plagiarism more risky to commit. Plagiarism from OA sources is the easiest kind to detect. Some of the misunderstanding here may arise from confusing plagiarism and copyright infringement. Plagiarism and infringement are two separate things although they are overlapping offenses. "Someone can commit plagiarism without infringing copyright (by copying a fair-use excerpt and claiming it as one's own) and infringe copyright without committing plagiarism (by copying a larger excerpt but with attribution). One can also commit both together (by copying a large excerpt and claiming it as one's own)" [32].

4.6 Myth 6: "OA helps readers but not authors"

OA articles are accessible to everyone with an internet connection, a vastly larger audience than any scholarly journal can claim. Not all internet users will care to read your research, of course. But making your work universally accessible to the connected guarantees that it will be accessible to the subset which does care. If there's an exception for the digital divide, there's a larger exception for the non-digital or print divide. Moreover, there's abundant evidence that OA articles are cited more often than non-OA articles, even more than non-OA articles from the same issues of the same journals [35, 36]. Many different studies have tackled this phenomenon, taking on different bodies of literature, using different methods, controlling different variables. They disagree on whether the OA impact advantage is large or small, and whether OA causes the increase in citations or is merely correlated with it. But they agree that OA articles are cited more often than non-OA articles. Authors may hope to earn royalties from their books, but they write journal articles for impact, not for money [37].

4.7 Myth 7: "All OA is gratis OA"

Gratis OA removes price barriers but not permission barriers. It makes content free of charge but not free of copyright or licensing restrictions. It gives users no

more reuse rights than they already have through fair use or the local equivalent. Libre OA removes price barriers and at least some permission barriers. It loosens copyright and licensing restrictions and permits at least some uses beyond fair use [38]. There is some excuse for the opposite view, that all OA is libre OA. The Budapest, Bethesda, and Berlin definitions of OA all describe forms of libre OA. The current misunderstanding accepts that gratis OA is a kind of OA, but goes one step too far and assumes that gratis OA is the only kind of OA. The misunderstanding is that there is no libre OA, that libre OA adds nothing to gratis OA, or that what libre OA adds isn't necessary or desirable. In general, OA repositories have good reasons to stick to gratis OA but OA journals don't. Repositories can't generate the needed permissions on their own, but journals can [37].

5. Future of open access

5.1 Prevalence of open access

A large-scale study that investigates the prevalence and impact of OA publishing found that almost half of the scholarly papers that people attempt to access online are now freely and legally available [39]. The study tracked 100,000 online requests for journal papers in 2017. It examined reader data from a web-browser extension called *Unpaywall* which finds free-to-read versions of pay-walled papers in the Internet. The study authors analysed server logs of 100,000 papers that Unpaywall users tried to access during one week, and found that 47% of accessed studies were legally available to read for free somewhere on the web, and that around half the content being accessed was published in the previous two years. Their study also revealed that more than 20% of scholarly articles searched for through *Unpaywall* were available directly from journals, with clear licences describing whether the papers were free not just to read, but also to download or redistribute. Another 9% of the papers were still published behind a pay-wall, but authors later uploaded their paper to an online repository. The most intriguing category of papers was the 15% that were posted on a publisher's site as free to read, but without any explicit open licence. The authors say this type of open-access — which they call 'bronze', in contrast to the widely used 'gold' and 'green' definitions — has been scarcely discussed. Of papers published in the most recent year examined –2015- 45% were freely available, which suggests that newer articles are more likely to be open. The authors of the study concluded that the percentage of literature that is OA continues to grow steadily, and that "In the next few decades, we're going to be seeing nearly all the literature available freely." [39].

5.2 Plan S and the future of open access

Plan S is the latest initiative to promote and support open access publishing. Below is an excerpt from the Coalition website [40] which is the body responsible for the Plan S, revealing the target of this open access plan:

> *With effect from 2021, all scholarly publications on the results from research funded by public or private grants provided by national, regional and international research councils and funding bodies, must be published in Open Access Journals, on Open Access Platforms, or made immediately available through Open Access Repositories without embargo [41].*

6. Conclusion

This chapter presented an overview of the basic principles and common practices of open access publishing as an emerging and expanding mode of scholarly publishing. The chapter started with an introduction to the concept of open access publishing with a brief background of the development of the open access movement. The different types of open access publishing are then highlighted and defined. These types include Gold Open Access, Green Open Access, and Hybrid Open Access, in addition to other variations of these basic types namely, the Diamond Open Access and the Platinum Open Access. The concepts of Gratis vs. Libre Open Access are also defined and explained. The chapter then discussed the advantages and disadvantages of open access focusing on the various advantages of this mode of scholarly publishing to authors and readers as well. The chapter then proceeded to discuss and refute the most common myths and misconceptions about open access publishing. The chapter is concluded with some views on the prevalence and future of open access publishing.

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